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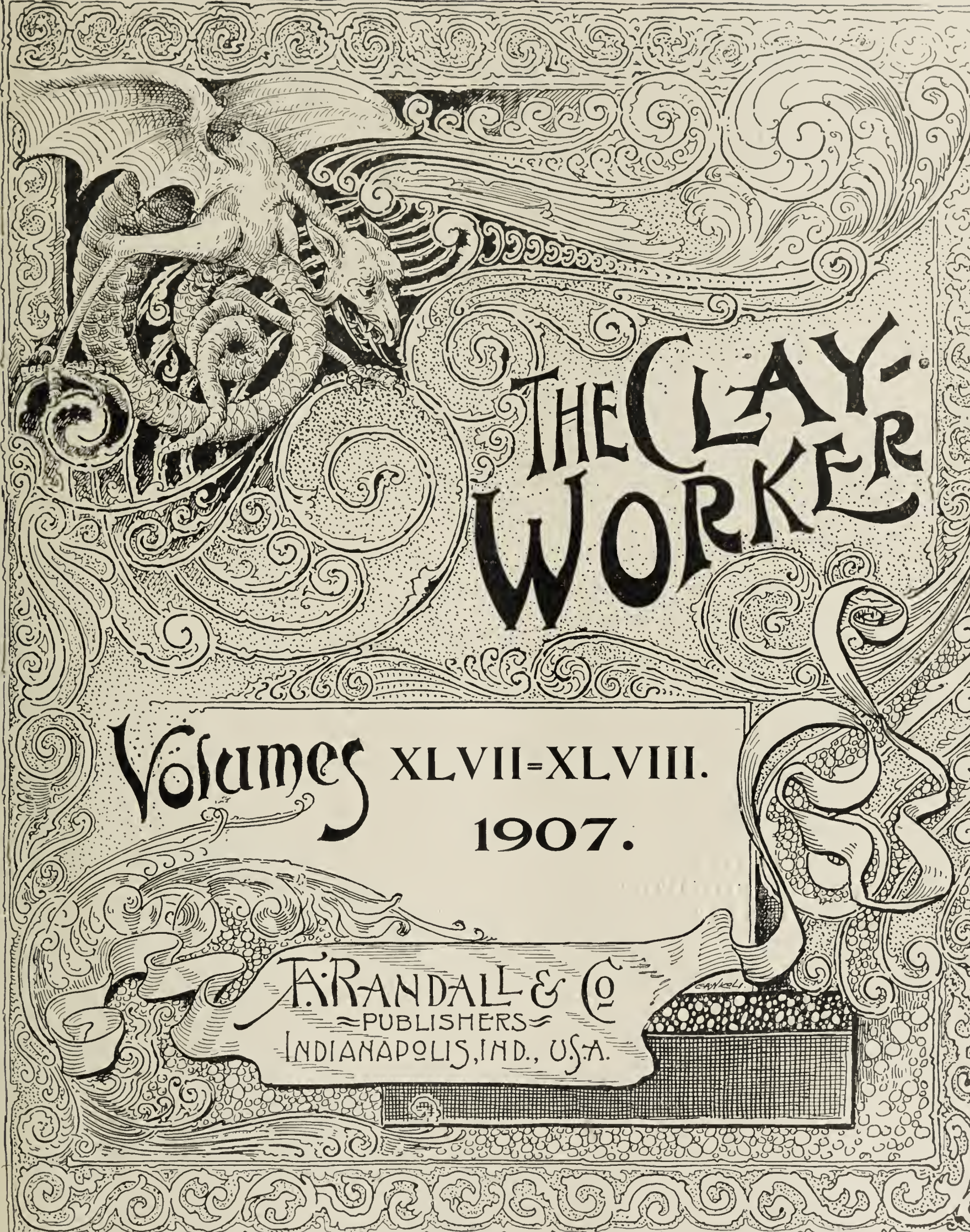
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REMOTE STORAGE



THE CLAY WORKER

Volumes XLVII-XLVIII.
1907.

A. RANDALL & CO.
PUBLISHERS
INDIANAPOLIS, IND., U.S.A.

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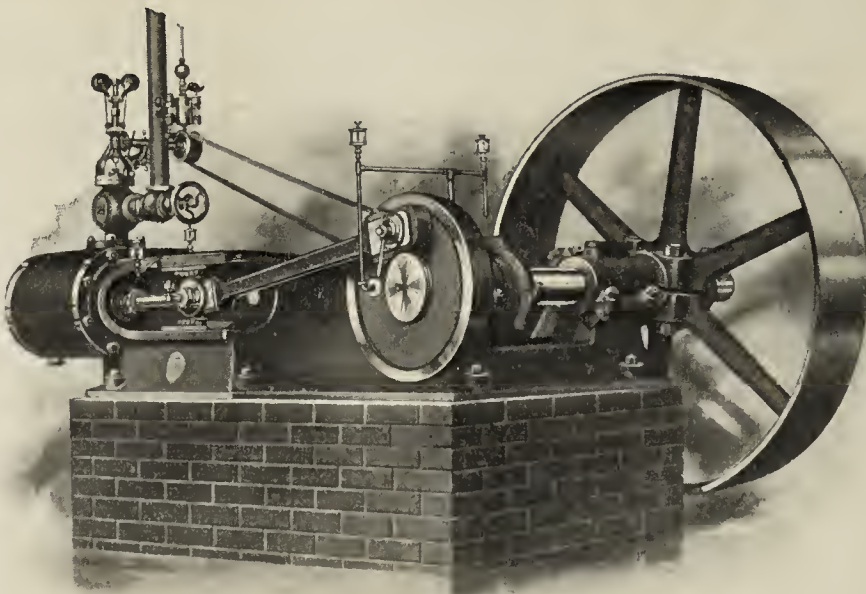
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CLAY-WORKER

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SAINT LOUIS

FEB. 4-9 1907

JANUARY 1907

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The 21st Annual Convention
OF THE
National Brick Manufacturers' Association,
The American Ceramic Society and the
National Paving Brick Manufacturers' Association
WILL BE HELD AT
St. Louis, MONDAY TO SATURDAY,
February 4th to 9th, 1907.

SPECIAL RAILROAD RATES FROM ALL POINTS, TICKETS GOOD RETURNING UNTIL FEBRUARY 13th.

The Sessions of the Ceramic Society will be held Monday and Tuesday, the 4th and 5th.

The Sessions of the National Paving Brick Manufacturers' Association will begin Tuesday the 5th.

The Sessions of the N. B. M. A. will be held Wednesday, Thursday and Friday, the 6th, 7th and 8th.

It is intended to hold but one session each on Thursday and Friday, leaving the afternoons of those days for visiting plants and sightseeing. Trips to the clay plants will be made under the guidance and direction of the local Committee of Entertainment.



FULL VERBATIM REPORT of the Convention, which bids fair to be the most successful in the history of the N. B. M. A. will be given in the February CLAY-WORKER, including all papers, discussions and portraits of prominent members. Next to attending the Convention, the best thing a brickmaker can do is to read the CLAY-WORKER's report. It is so full and complete that those who attend the Convention would not be without it, and those who don't go can't afford to miss it. The concensus of opinion among progressive brick makers is that the Convention Number of the CLAY-WORKER is the most valuable publication of the year. If you are not already a regular subscriber don't neglect to send in your order in time to get the February or Convention number.

1907 FEBRUARY 1907						
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Advertising Matter to Insure Insertion

Must be Received by the First of the Month.

The CLAY-WORKER is now in its 24th Year and is recognized the world over as the best clayworkers' magazine published in the English language. It has more readers at home and abroad than all its followers combined. Take the CLAY-WORKER and you get the best value for your money. \$2.00 a year. Every issue is worth that sum.

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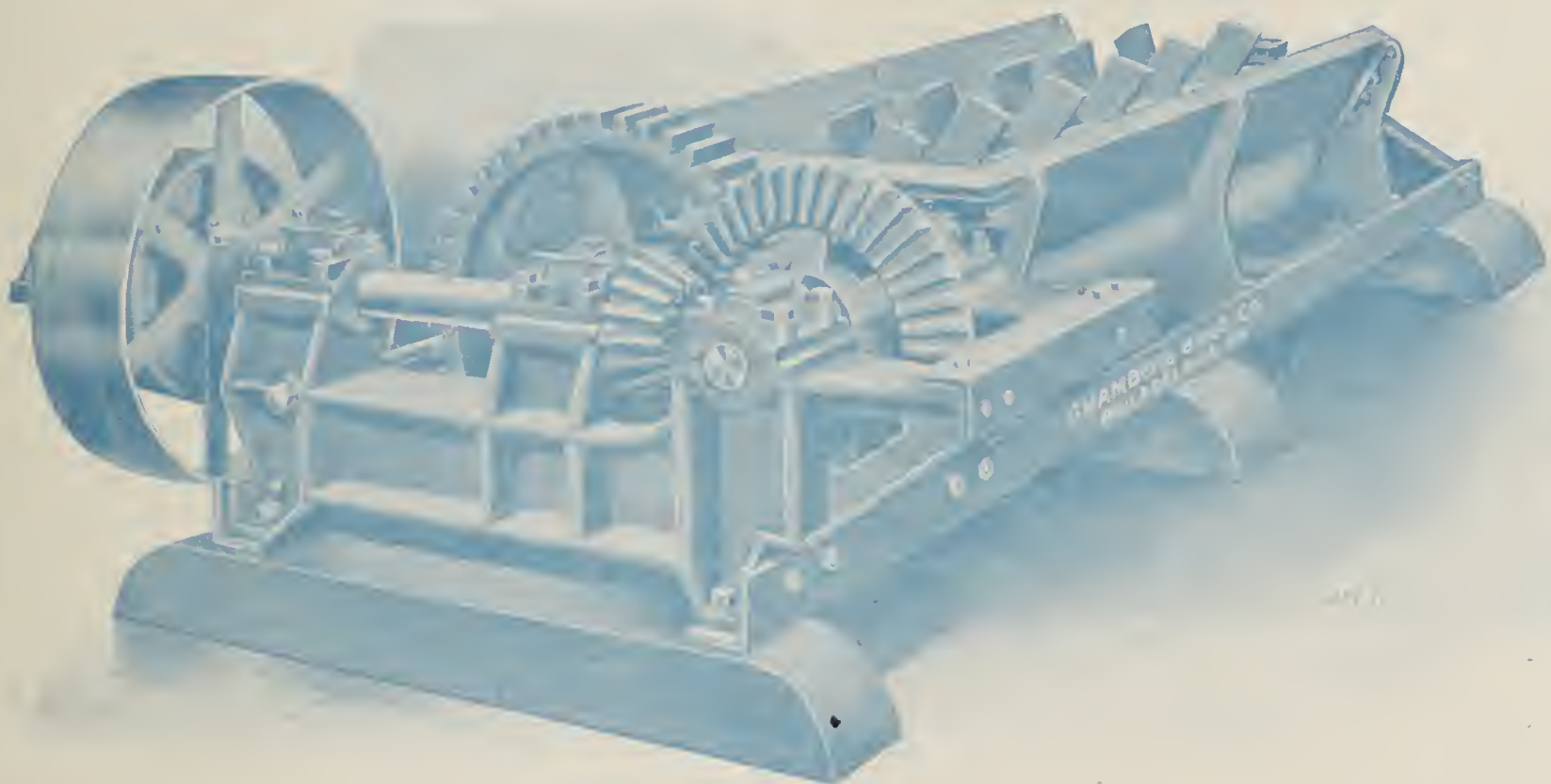
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One of our customers states to us that he has made 11,600,000 bricks in eight months this season on one of our Auger Brick Machines without a single break of any part, save cutting wires. Yet his clay contains stones to cause the breakage of 500 wires in a single day.

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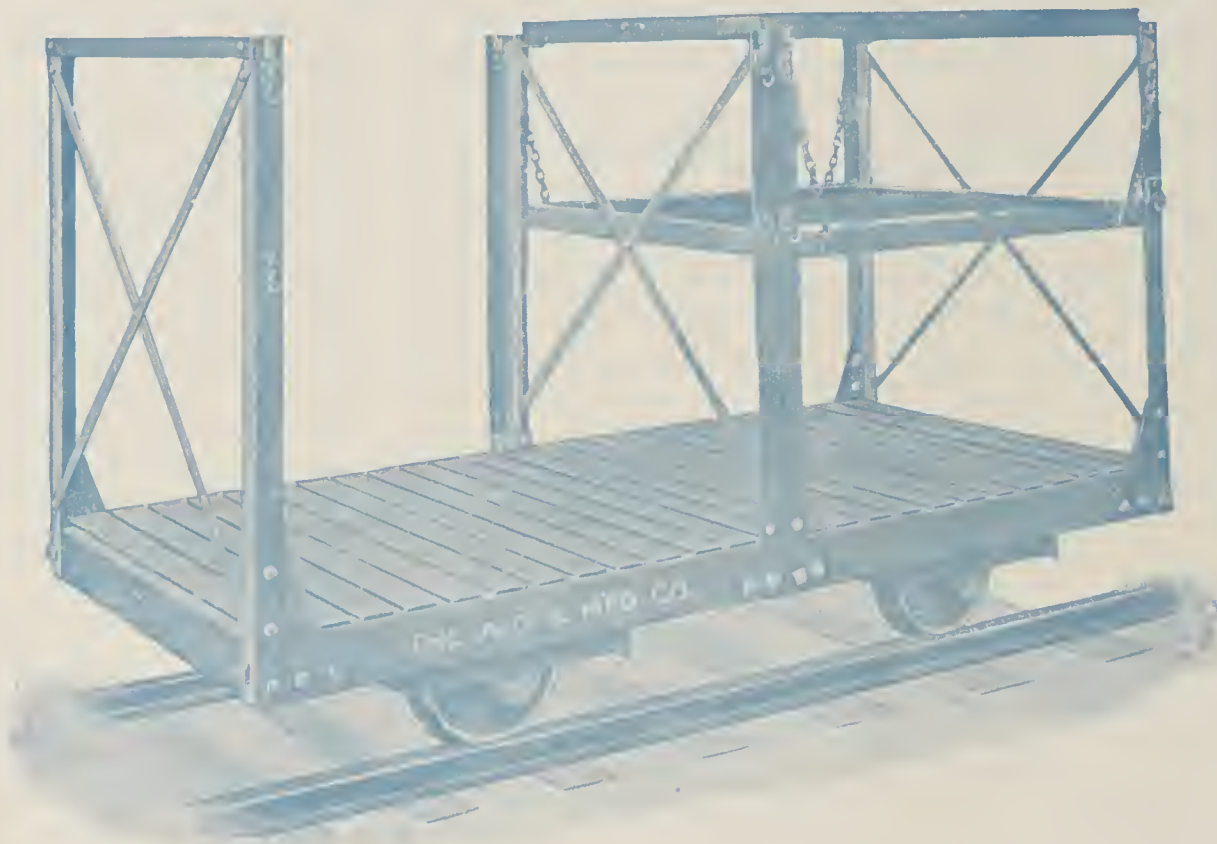
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(SEE ADS ON PAGES 181 to 184.)

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CLEVELAND, OHIO.

(See Ad on Page 171.)

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THE HARRINGTON AND KING PERFORATING CO.



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE

No. 114 Liberty St.

No. 231 North Union Street,

CHICAGO, ILL., U. S. A.



Want to Know

a "short cut" to WEALTH over the BRICK route? It's via the

RODGERS WASTE HEAT SYSTEM.

No use to take the long way around when you can reach your destination in less time, at less expense and in greater comfort by means of a "short cut."

L. E. RODGERS ENGINEERING CO.

Waste Heat Dryer Specialists.
Brick Works Engineers.

303-305 DEARBORN ST.

CHICAGO.



The Boyd Brick Press

PLAIN FACTS IN A FEW WORDS.

THE BOYD BRICK PRESS is not an imitation, nor an untried or experimental machine. It was introduced to the brickmakers of the United States and the World over eighteen years ago, and has been on the market every day since.

THE BOYD BRICK PRESS is built by the oldest and largest Brick Press Manufacturers in the World, who from long practical experience know what is required of Brick Presses, know how to build them, and have shops with modern equipment for the work.

THE BOYD BRICK PRESS was the standard at the start and is the standard now. It was alone at the start; it has led ever since, and it leads today. Steady progress, merit and improvements have kept it at the front.

THE BOYD BRICK PRESS is built for work; long work; hard work; constant work, and never fails to do its work. It does the best work, keeps at it for the longest time and produces the best brick.

THE BOYD BRICK PRESS is simply and strongly built, of the very best materials, and the workmanship is unsurpassed. It saves the most time, the most labor and gives the least trouble and the least expense,

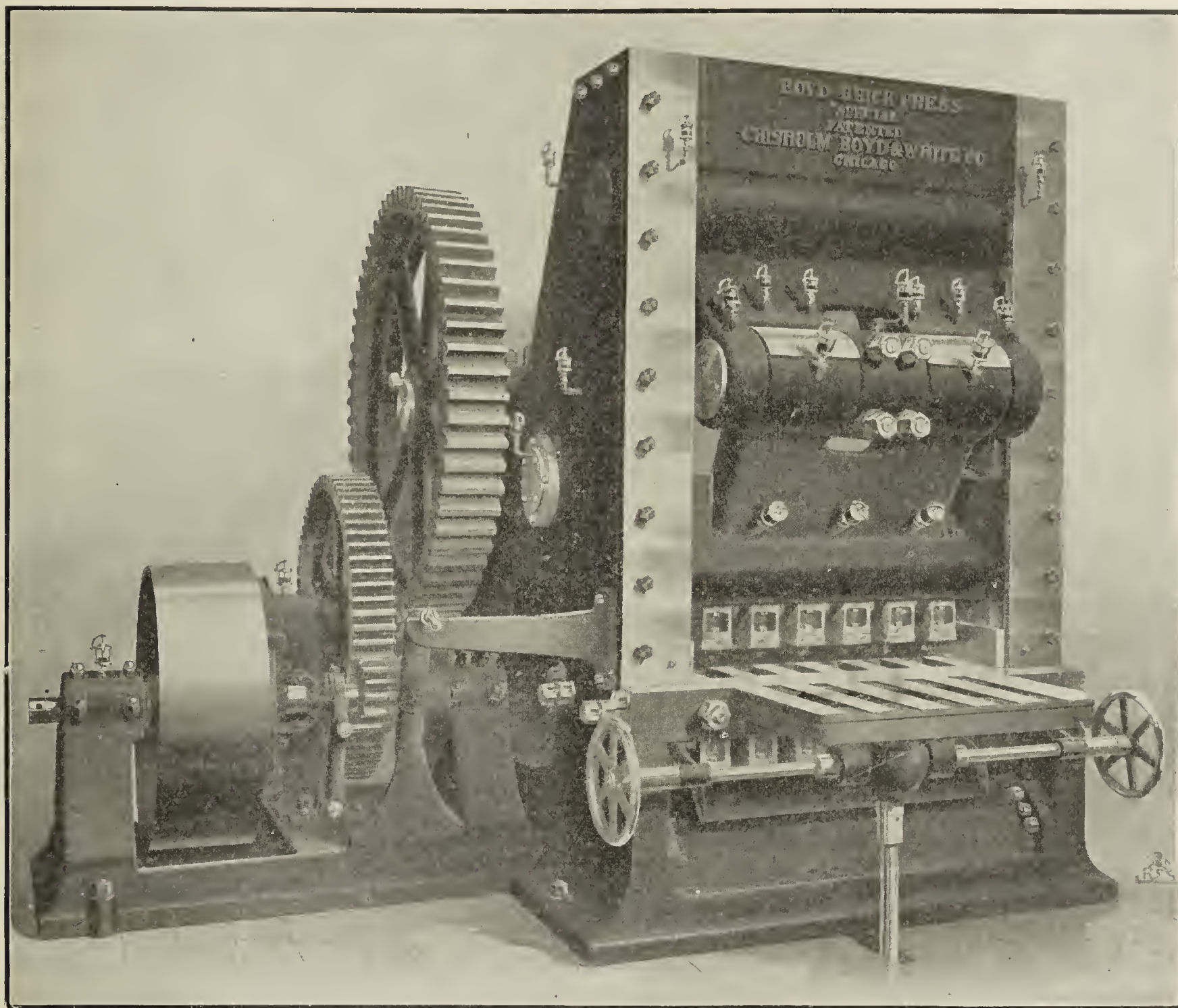
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Six-Mold "Special."



The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles to the art of brickmaking. Correspondence solicited.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

SAND=LIME BRICK MACHINERY.

BOYD QUALITY.

MODERN METHODS.

NO EXPERIMENTING.

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

Correspondence solicited.

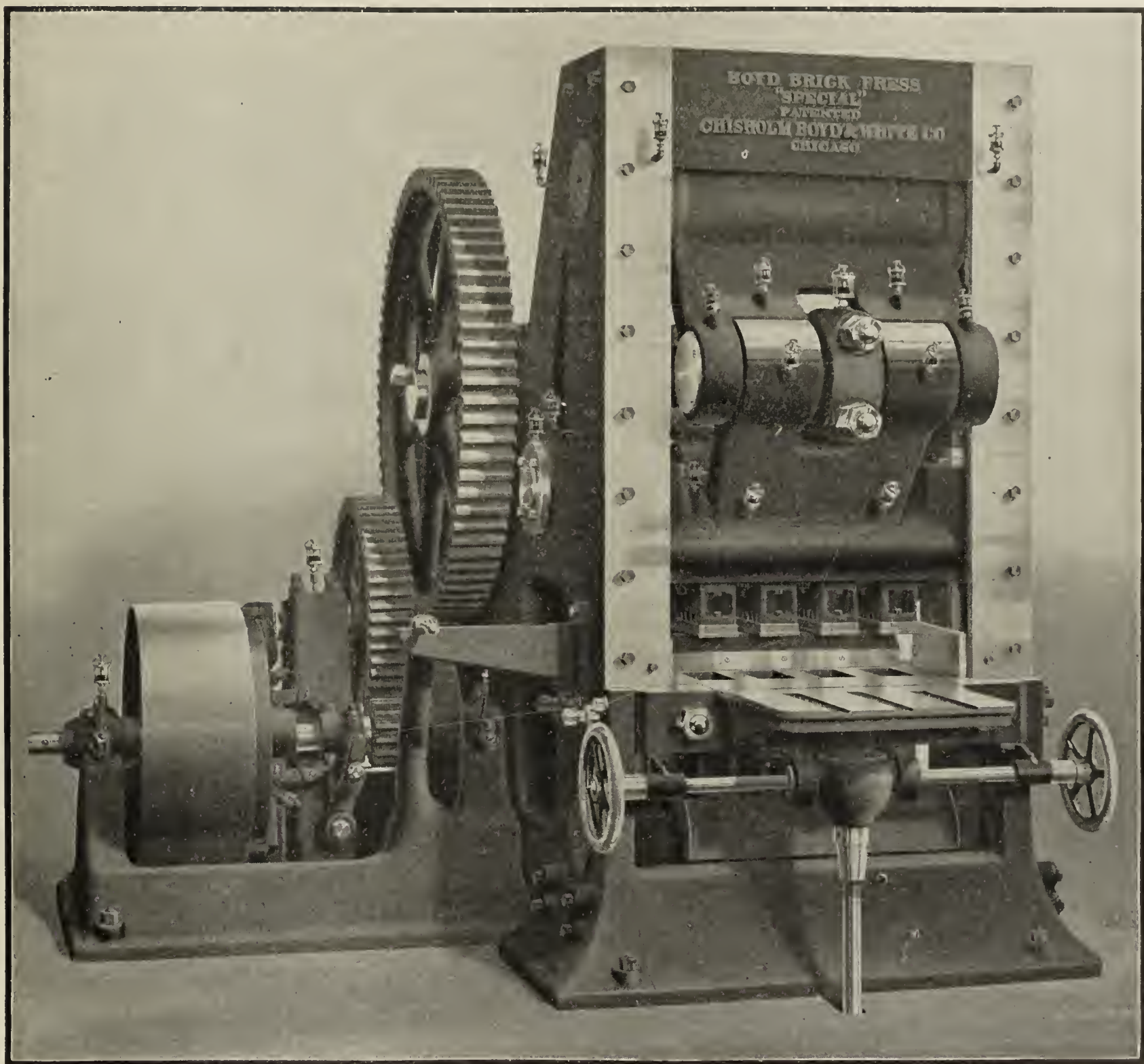
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Special."



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for General Catalogue No. 15.

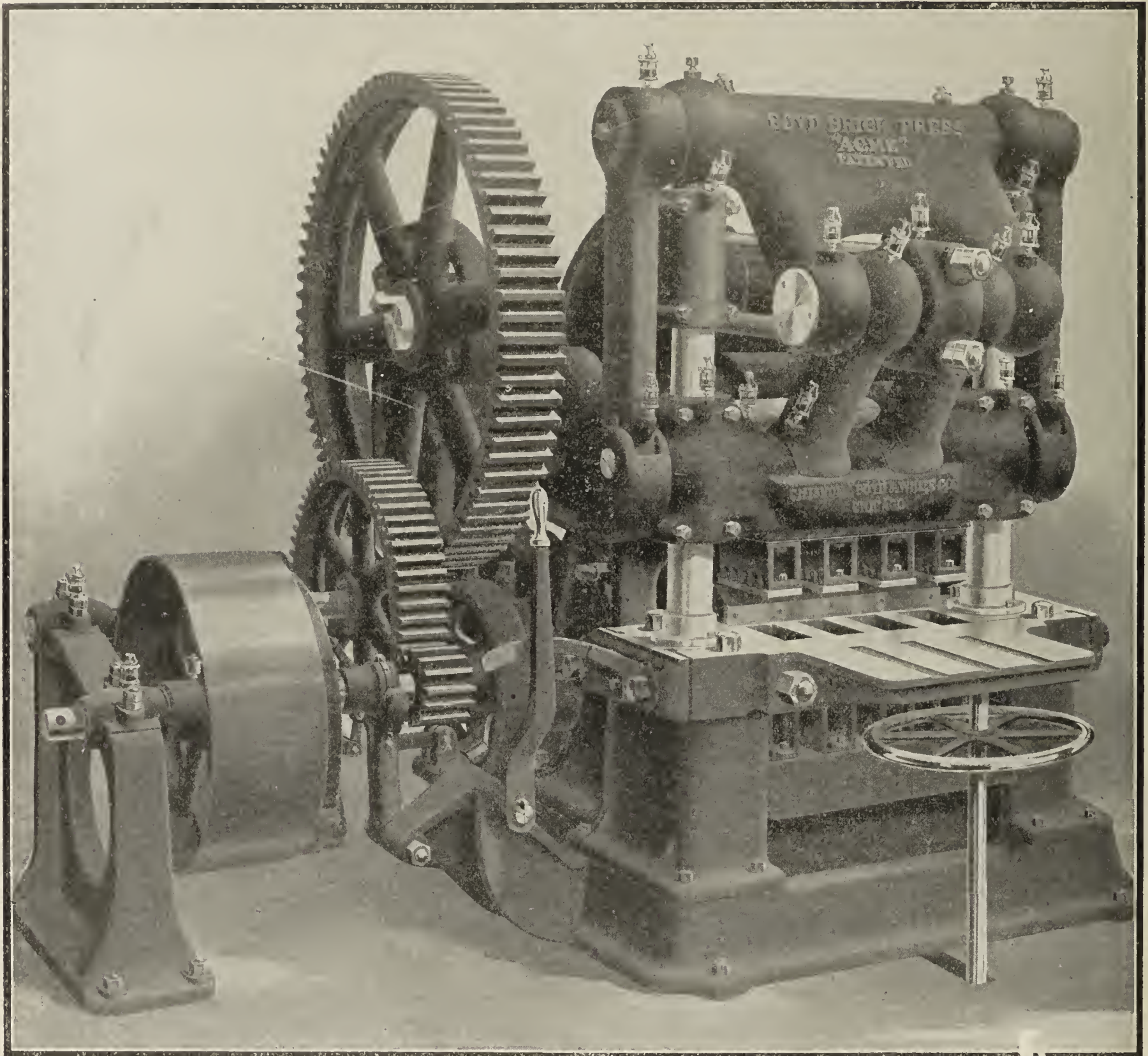
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Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Acme."



ITS NAME A GUARANTEE.

The Four-Mold Press above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

THE BOYD BRICK PRESS was the standard at the start, and is the standard now. Steady progress, merit and improvements have kept it at the front.

We will send to any responsible party a BOYD BRICK PRESS ON TRIAL under the broadest and safest guarantee. We take the machine back if not satisfactory.

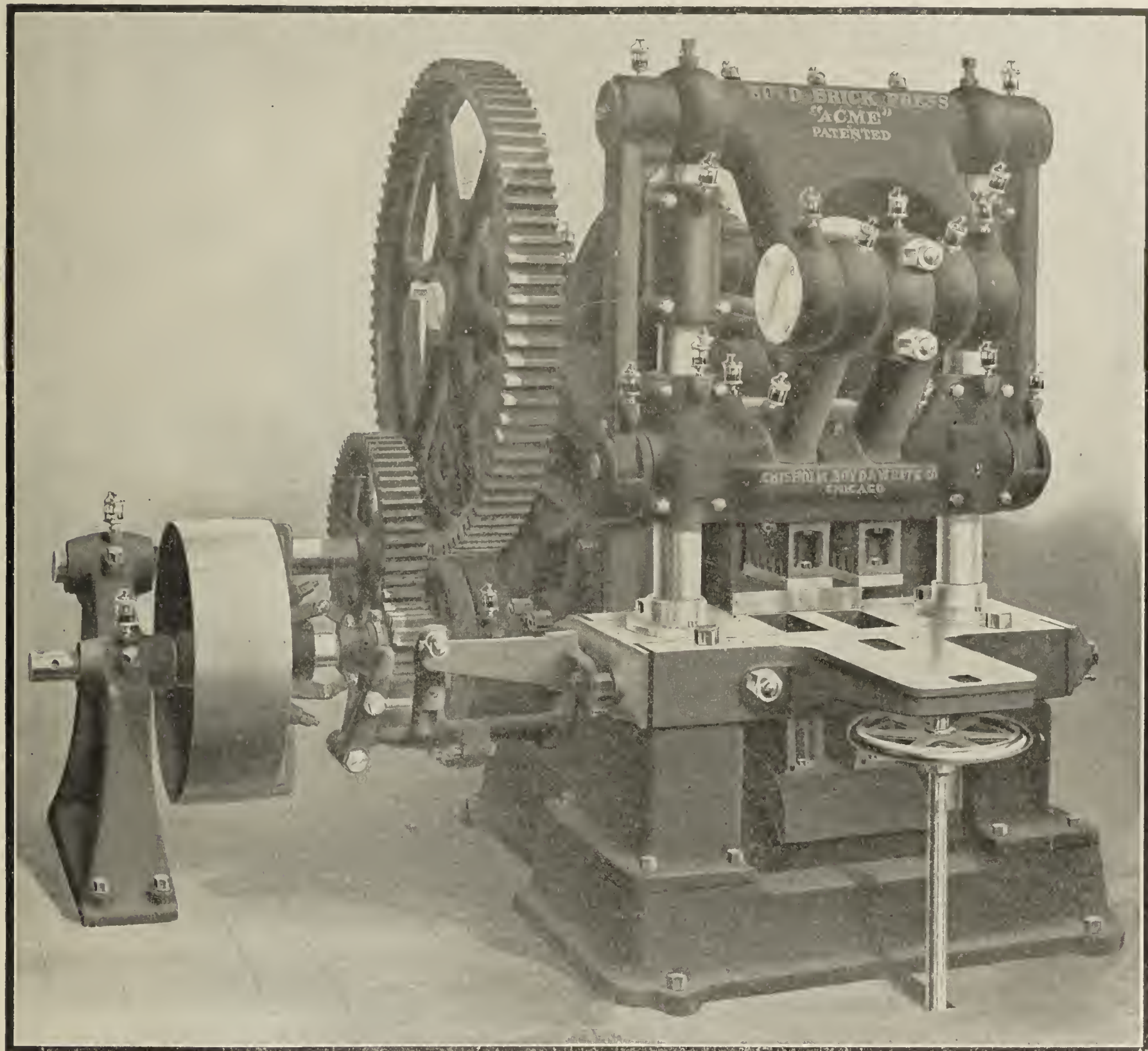
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Two-Mold "Acme."



THE TWO-MOLD PRESS, above illustrated, is especially adapted for Brick Plants of small capacity, and for making ornamental and shape bricks it has no superior.

BRICK PRESSES are too costly to experiment with. EIGHTEEN YEARS' practical experience back of each Boyd Press.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

CORRESPONDENCE SOLICITED.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

THE ONLY PERFECT BRICK PRESS

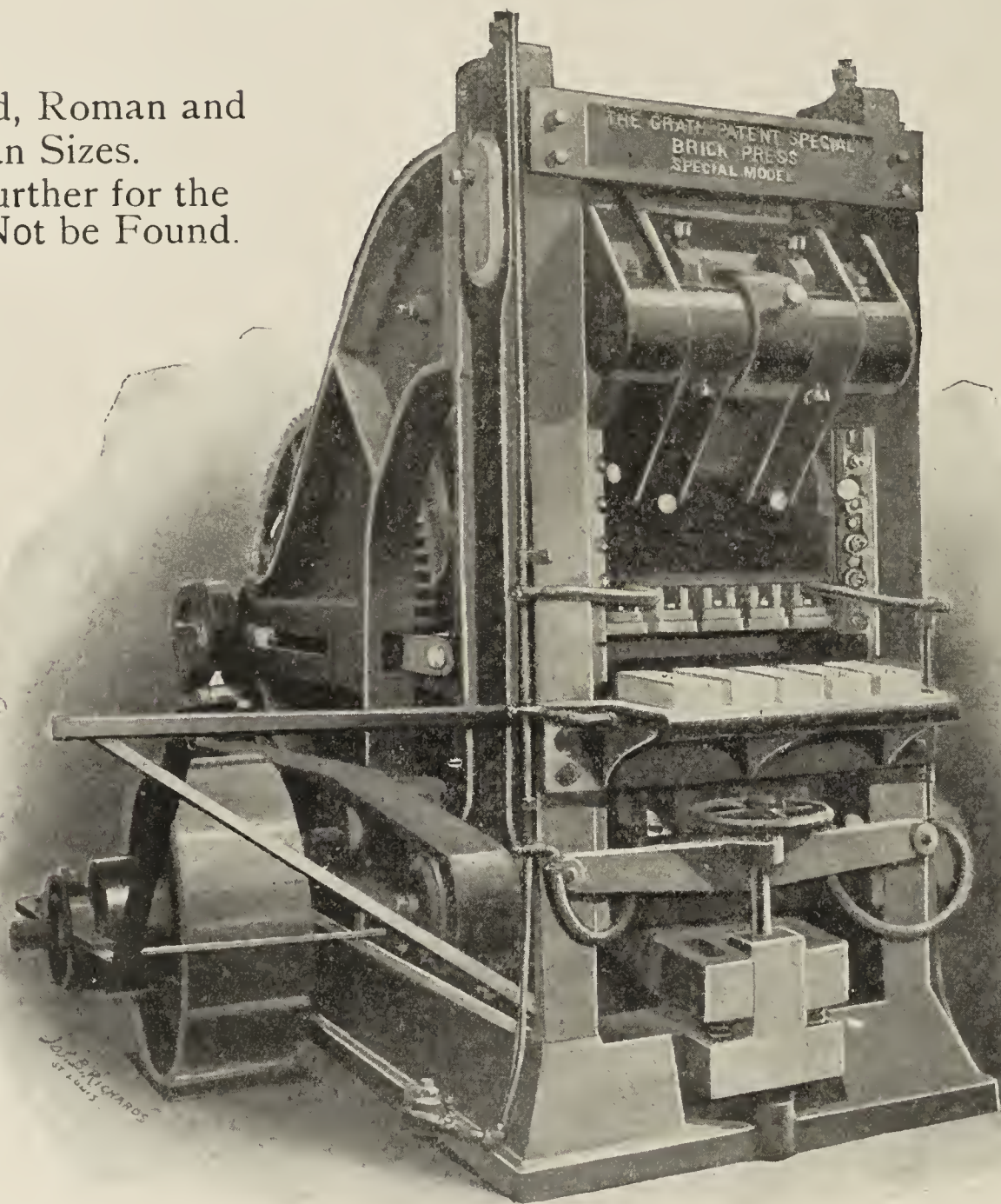
For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

Special Large Model Making Five Standard Size Brick.

For Standard, Roman and
Norman Sizes.

Seek No Further for the
Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufac-
turer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

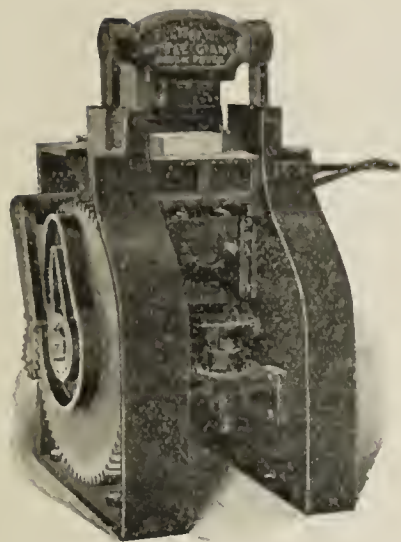
SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not top heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

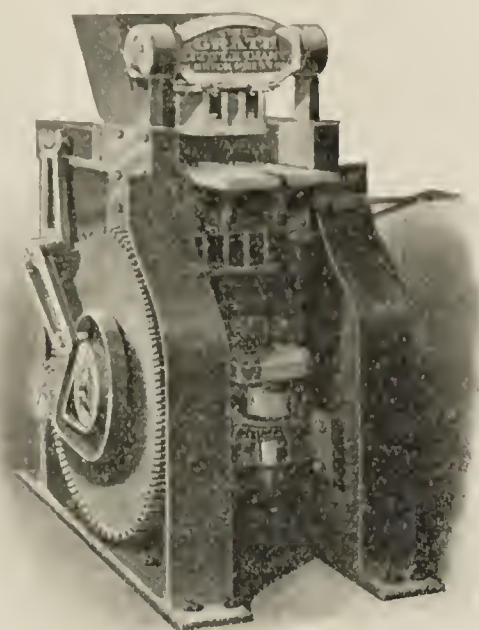
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

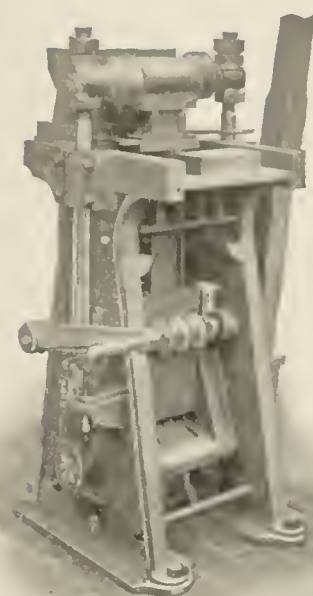
St. Louis, Mo., U. S. A.



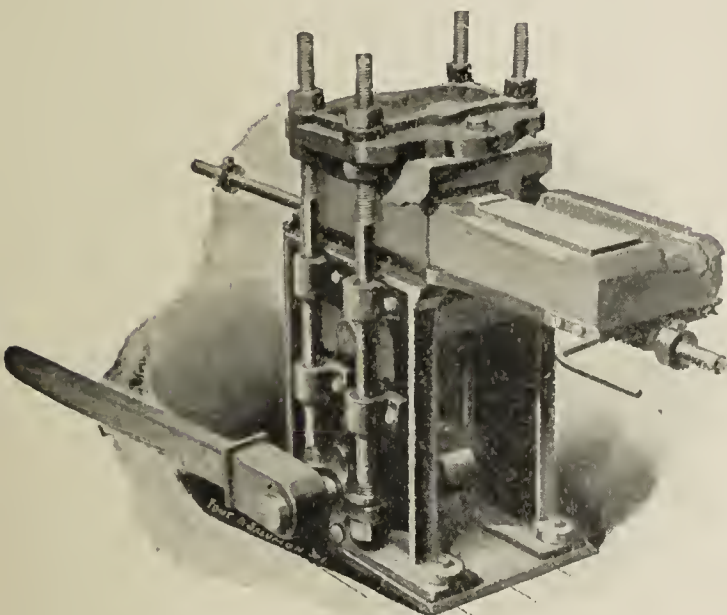
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



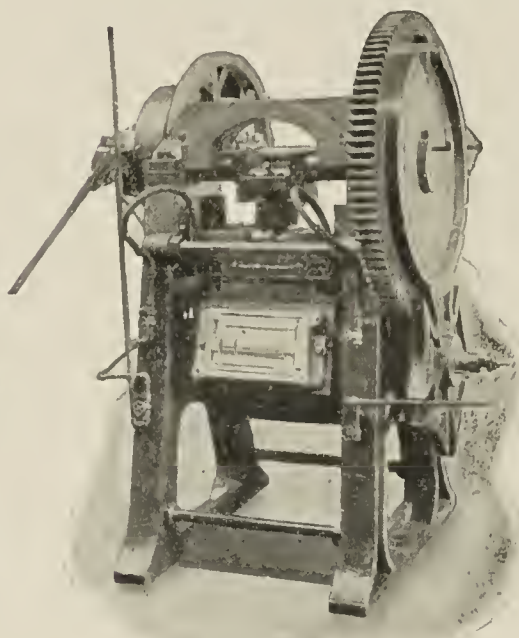
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



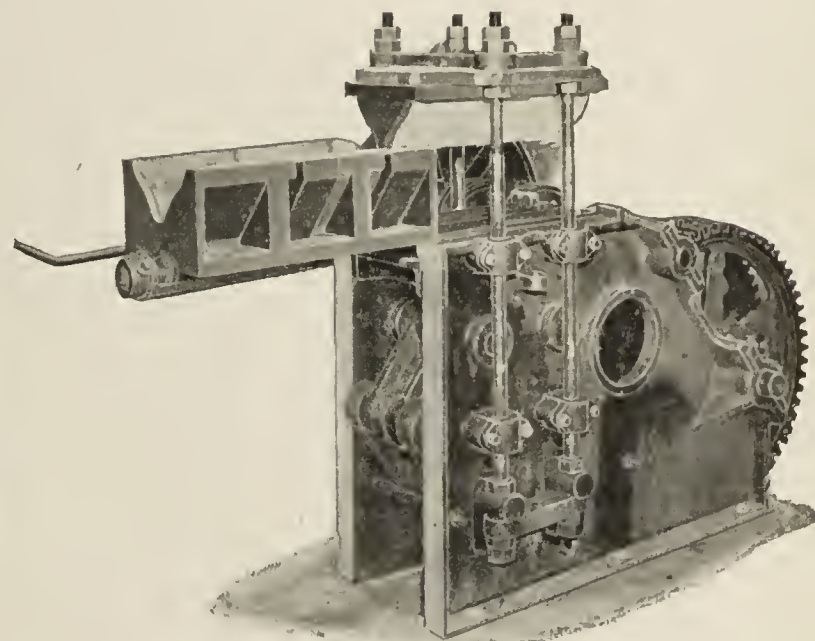
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

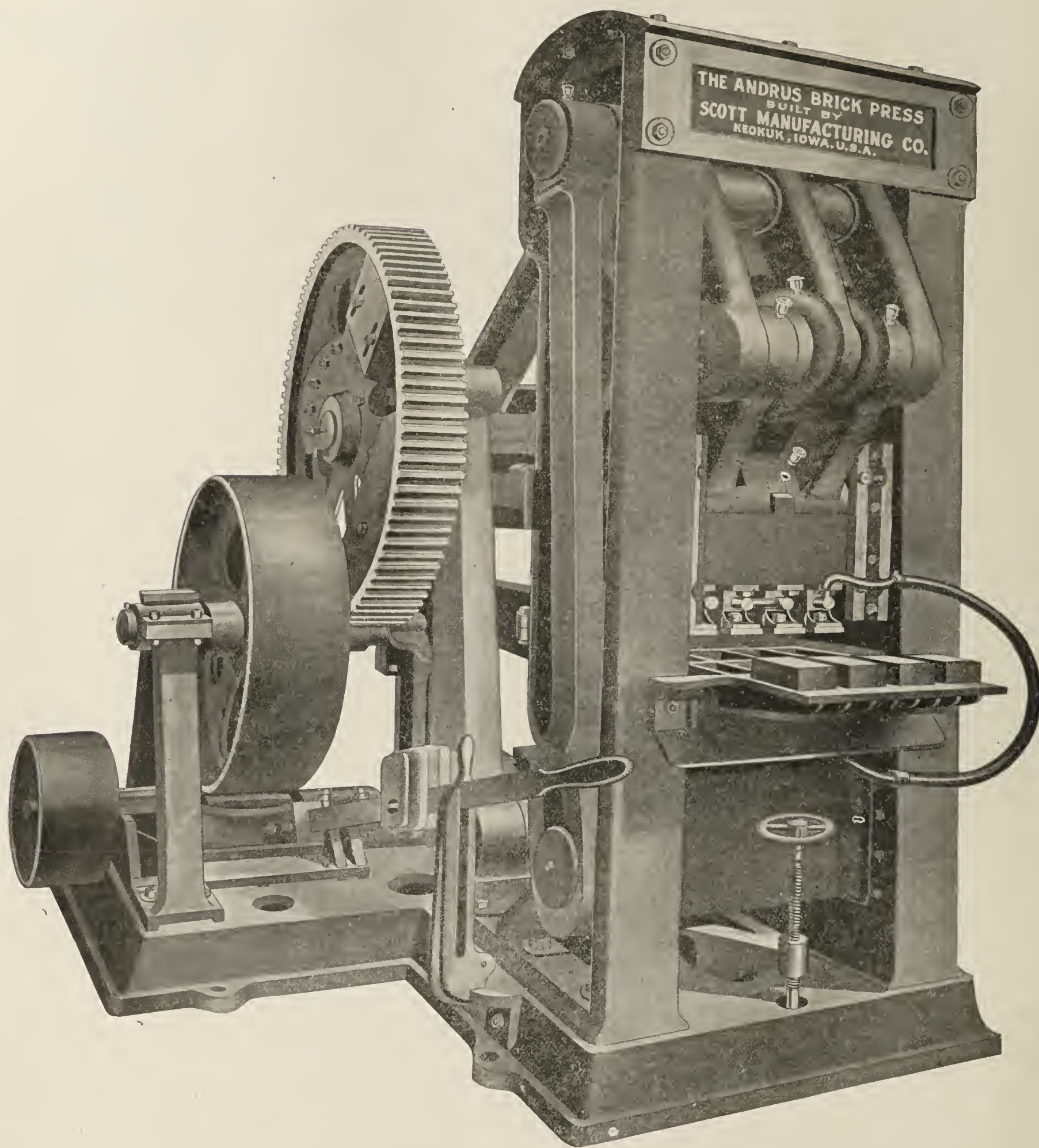
The New Grath Down=Draft Continuous Kiln.

Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the *ordinary single* down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get *advantage* of all *waste* heat from your burning chamber, which you *lose* and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in *same* manner as the direct, through the furnaces up the bag and down through the ware. *Simple* and *sure* in operation. GUARANTEED.

Lieber's Code.
Cable Address
GRATH, St. Louis.

Illinois Supply & Construction Co.,
HOLLAND BLDG., ST. LOUIS, MO.

Long Distance
Phone,
Bell, Main 235.

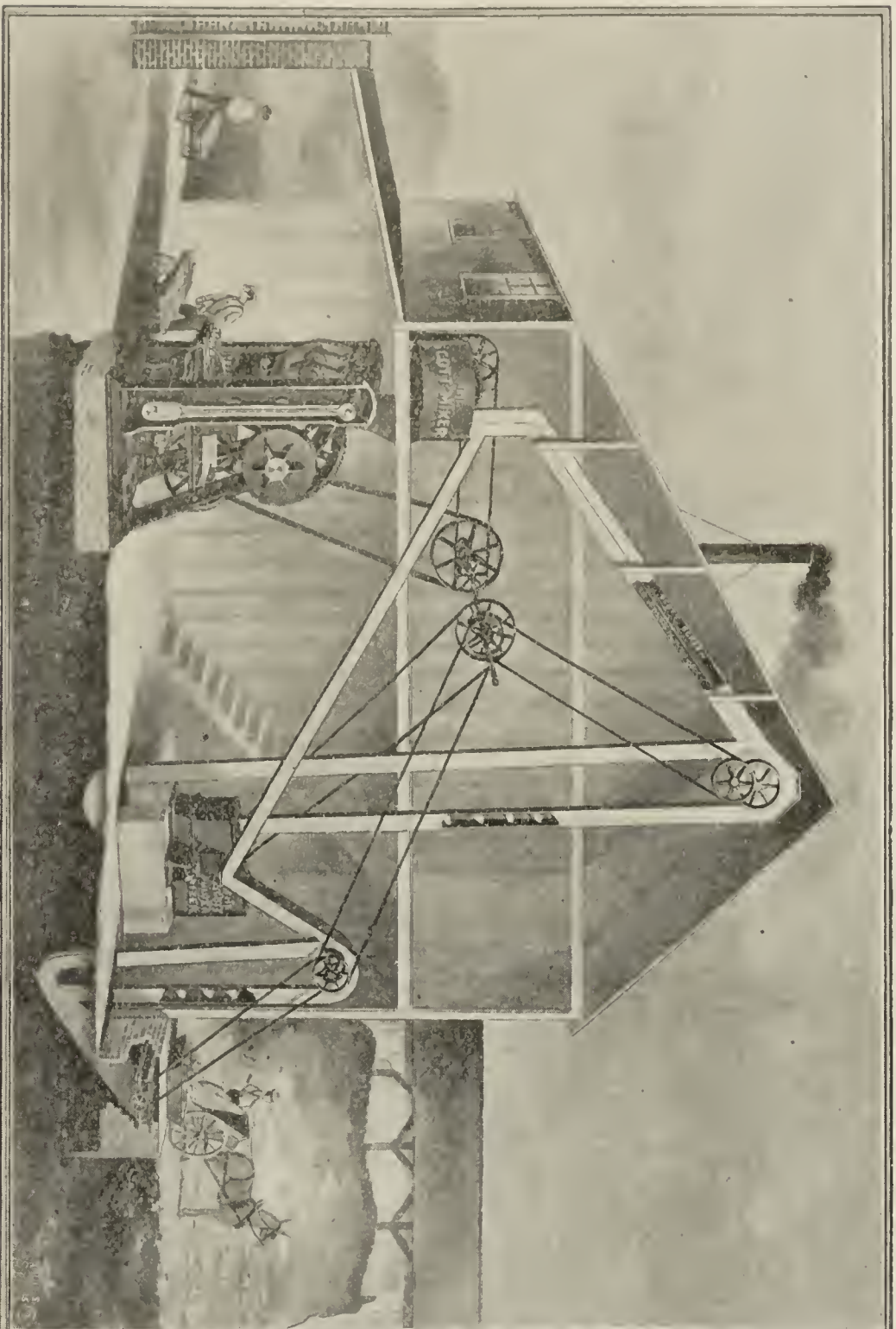


THIS IS THE "PRESS THAT SCOTT BUILDS."

SCOTT MANUFACTURING COMPANY
421 Olive Street
SAINT LOUIS

SEE OUR LATEST MODEL WHILE
AT CONVENTION

The Scott Noiseless Plant

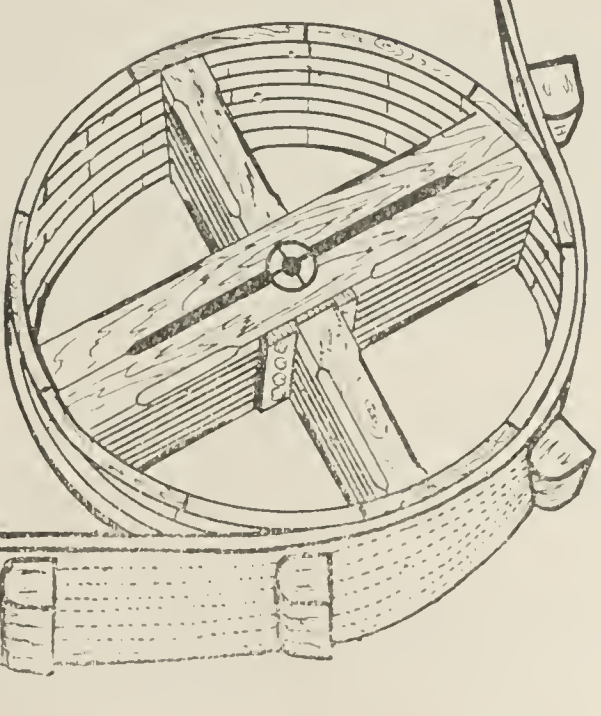


Scott Manufacturing Co.,

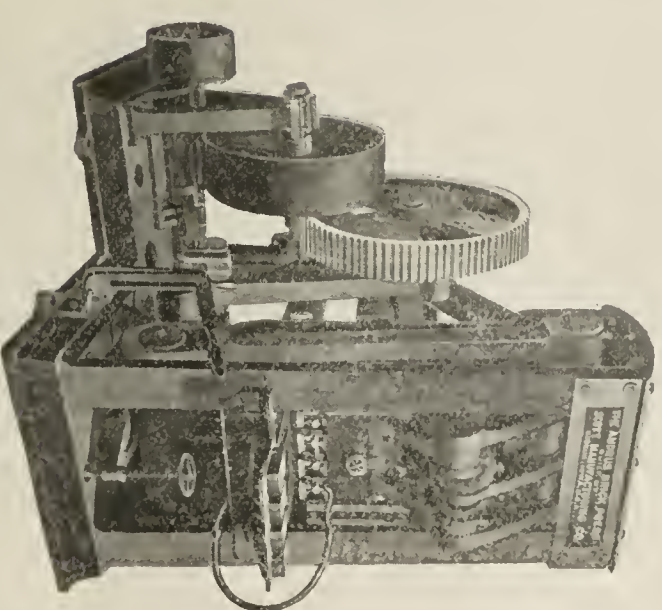
421 Olive Street,

St. Louis.

*Meet us at the
St. Louis Convention.*



And the Andrus Press



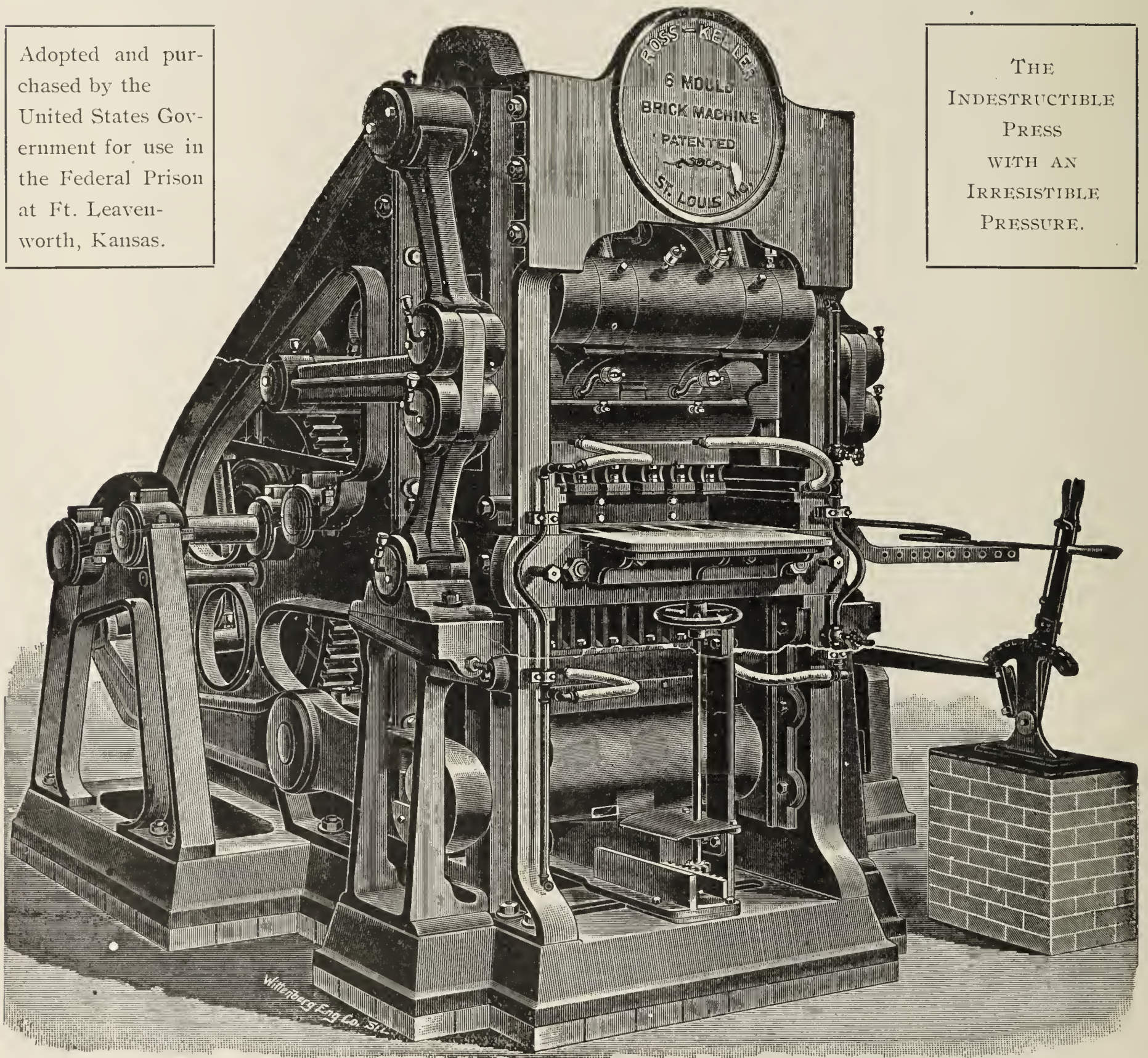
This is the Press that Scott Builds.

WELCOME BRICKMAKERS:

We cordially invite you to visit our office and factory during your stay in St. Louis. We want to tell you more about the celebrated ROSS-KELLER Press, the only Brick Machine that gives **Three** distinct pressures to the brick. Come to see us. You will be interested.

Adopted and purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

THE
INDESTRUCTIBLE
PRESS
WITH AN
IRRESISTIBLE
PRESSURE.



Ross-Keller Triple Pressure Brick Machine Co.,

Suite 203 Fullerton Building,

ST. LOUIS, MO., U. S. A.

DRY PRESS BRICK MACHINES

Reliance Dry Press
The Machine of the Future.

OLD STYLE TOGGLE MOVEMENTS SUPER-
SEDED BY NEW AND BETTER
PRINCIPLES.

THE ONLY MACHINE not using the Toggle Movement.

THE ONLY MACHINE applying Pressure from the Bottom.

THE ONLY MACHINE making a Uniformly Pressed Brick.

Only Machine Making Brick Without Granulated Centers.

Every Brick is a Face Brick. 4 Mold Press 20,000 per day. 6 Mold Press 30,000 per day. Adjustment permits any pressure desired (a feature peculiar to the **Reliance**). Cheapest because having fewest parts. (Also cheapest to keep in repair.)

S I M P L E
S T R O N G
E F F I C I E N T

We Design and Equip Dry Press Brick Plants Complete.

WRITE TODAY FOR PARTICULARS.

SEND MATERIAL FOR SAMPLE BRICK.

— ADDRESS —

The Reliance Machine and Tool Works,

34th and Franklin Ave., St. Louis, Mo.

What a Successful Brickmaker Thinks of the WILLIAMS PULVERIZER.

B.D. SPILMAN, PRESIDENT,
PARKERSBURG, W. VA.

M.G. TYLER, SECY. & GENL. MANAGER,
SPILMAN, W. VA.

O.A. ROUSH, TREASURER,
SPILMAN, W. VA.

Camden Clay Company.
MANUFACTURERS OF
Tile, Vitrified Paving and Building Brick.
Spilman, West Virginia.

December 7th, 1906.

The Humboldt Brick Mfg. Co.,
Humboldt, Kans.

Gentlemen:—

We are in receipt of your favor of the 2nd of Dec. and in reply beg to say that we have had in use for four or five years a Williams Patent Pulverizer, known as a shale pulverizer #328, of their semi-vulcanite type, which machine has given us entire satisfaction ever since it was installed.

Our shale is prepared at the bank, some of it going to the pulverizer about the size of a man's head, and comes out the consistency of coarse meal. This product being screened and tailings returned to be reground.

In regard to repairs we beg to state that the discs in this machine have three adjusting holes, if the hammers wear away they can be set up a notch at a time, and in this way lengthened. We use two sets of hammers during a season of eleven months, about once a month we lengthen the hammers. We keep two sets of hammers on hand, when one set becomes too short our blacksmith redresses them, and by changing alternately we get excellent service from the machine.

Aside from the cost of the two new sets of hammers our repairs do not amount to over \$15.00 per year, we consider this machine the cheapest that can be used for our purpose. We have long since discarded the dry pan. With this machine we are able to pulverize sufficient material in 10 hours for 22,000 brick weighing 12# when green. We are at present making paving brick exclusively. We can therefore wisely recommend this machine to any wishing a serviceable pulverizer for shale.

Yours very truly,

Camden Clay Co.



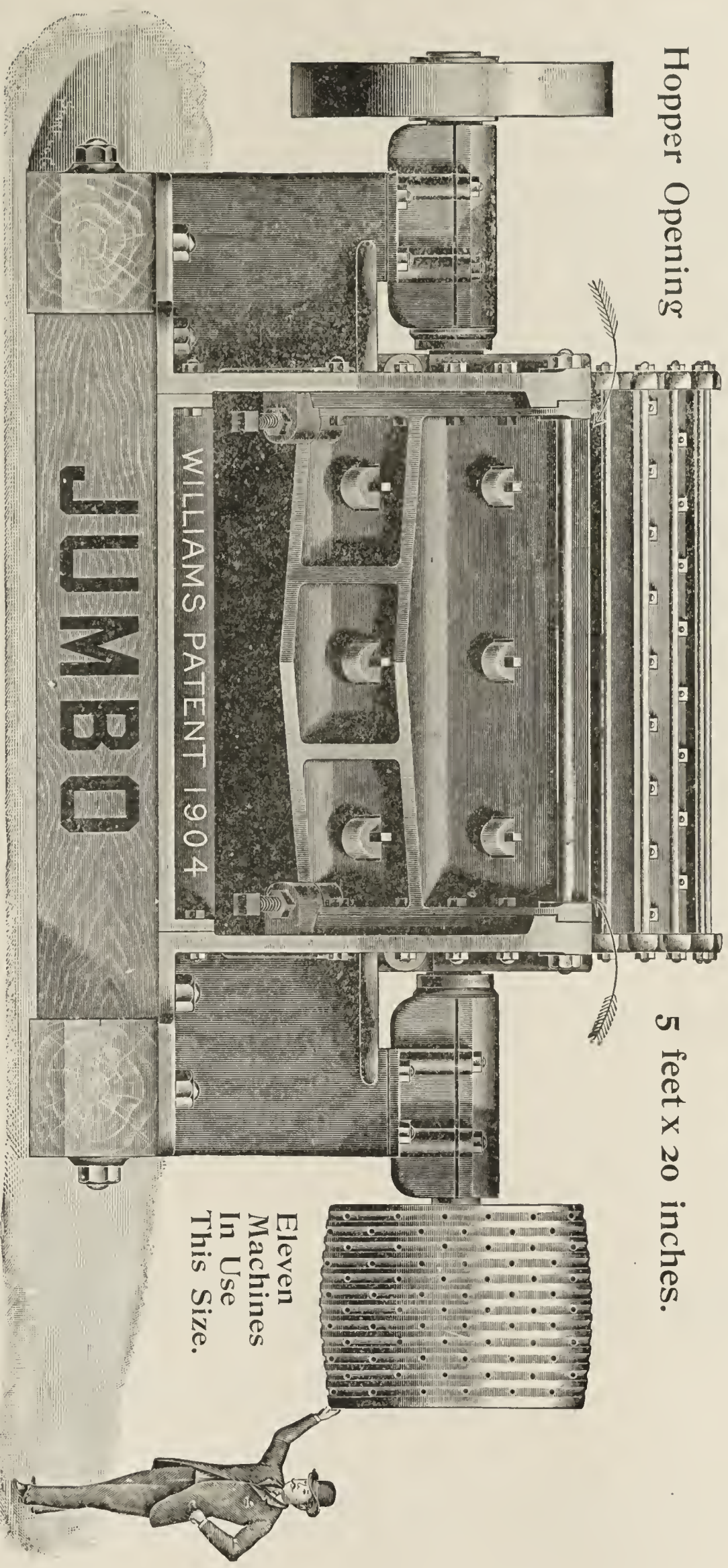
Sec. & Gen. Mgr.

Dic.

Our JUMBO SHALE CRUSHER and FINISHER To PUG MILL or DRY PRESS.

Hopper Opening

5 feet x 20 inches.



Eleven
Machines
In Use
This Size.

Weight, 13 Tons. Capacity, 100,000 Brick in 10 Hours.
Over 1,000 of Our Various Machines in Daily Operation.

**WILLIAMS PATENT CRUSHER AND PULVERIZER CO.,
ST. LOUIS, MO., U. S. A.**

Total Number of Machines Shipped to Date 1085.

St. Louis

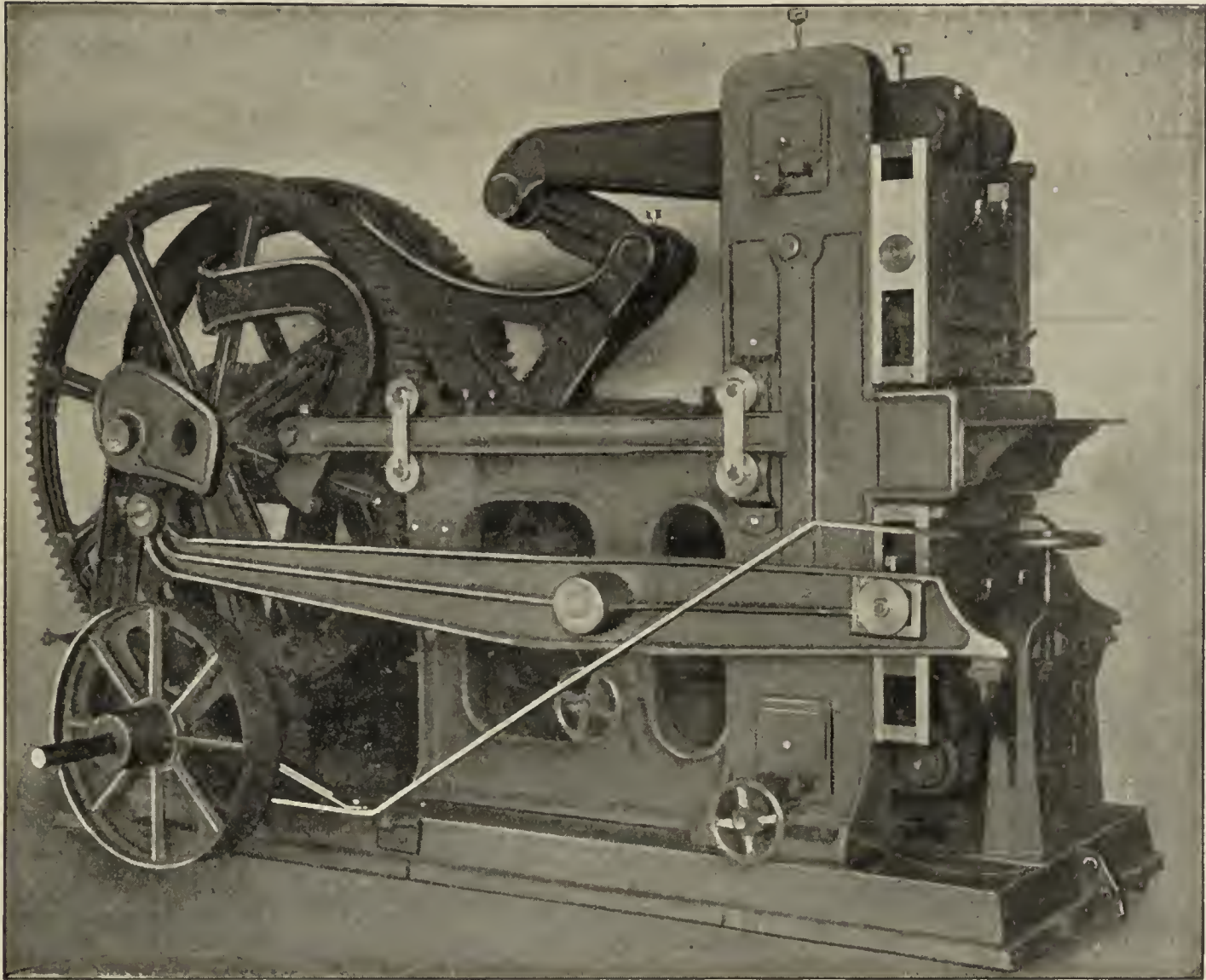
is the Home of
Dry Press Brick,

which were first successfully made in St. Louis. There are now 80,000,000 pressed brick made by that process in St. Louis every year. The success of the Dry Press Process was made possible by the perfection of dry press machinery, and the FERNHOLTZ BRICK PRESS is the result. Like the process, it is now an acknowledged success. Visiting Brickmakers are most cordially invited to visit our factory and inspect the Fernholtz Press in action, and our line of clay crushers, screens, conveyors, trucks and brickyard supplies, which, like the Fernholtz Press, are unsurpassed for efficiency and durability. Our factory is located at Boyle avenue and Old Manchester Road, take the Southampton (Chouteau) car at 4th and Pine Streets, opposite the Planters Hotel. Come and LET US SHOW YOU.

THE FERNHOLTZ BRICK MACHINERY CO.,
ST. LOUIS, MO.

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.



THE NEW FOUR-MOLD FERNHOLTZ.

Why is it the Best Dry Press Ever Built?

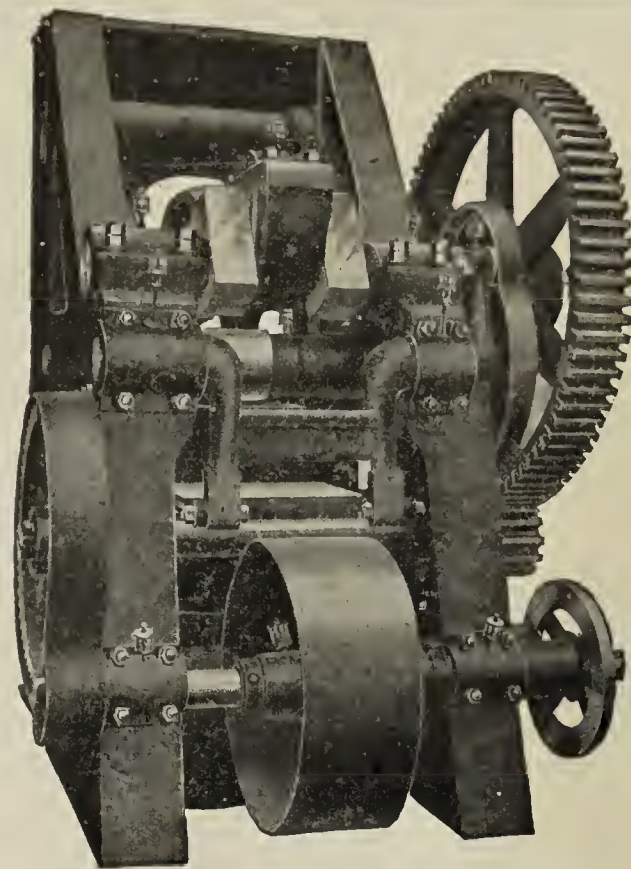
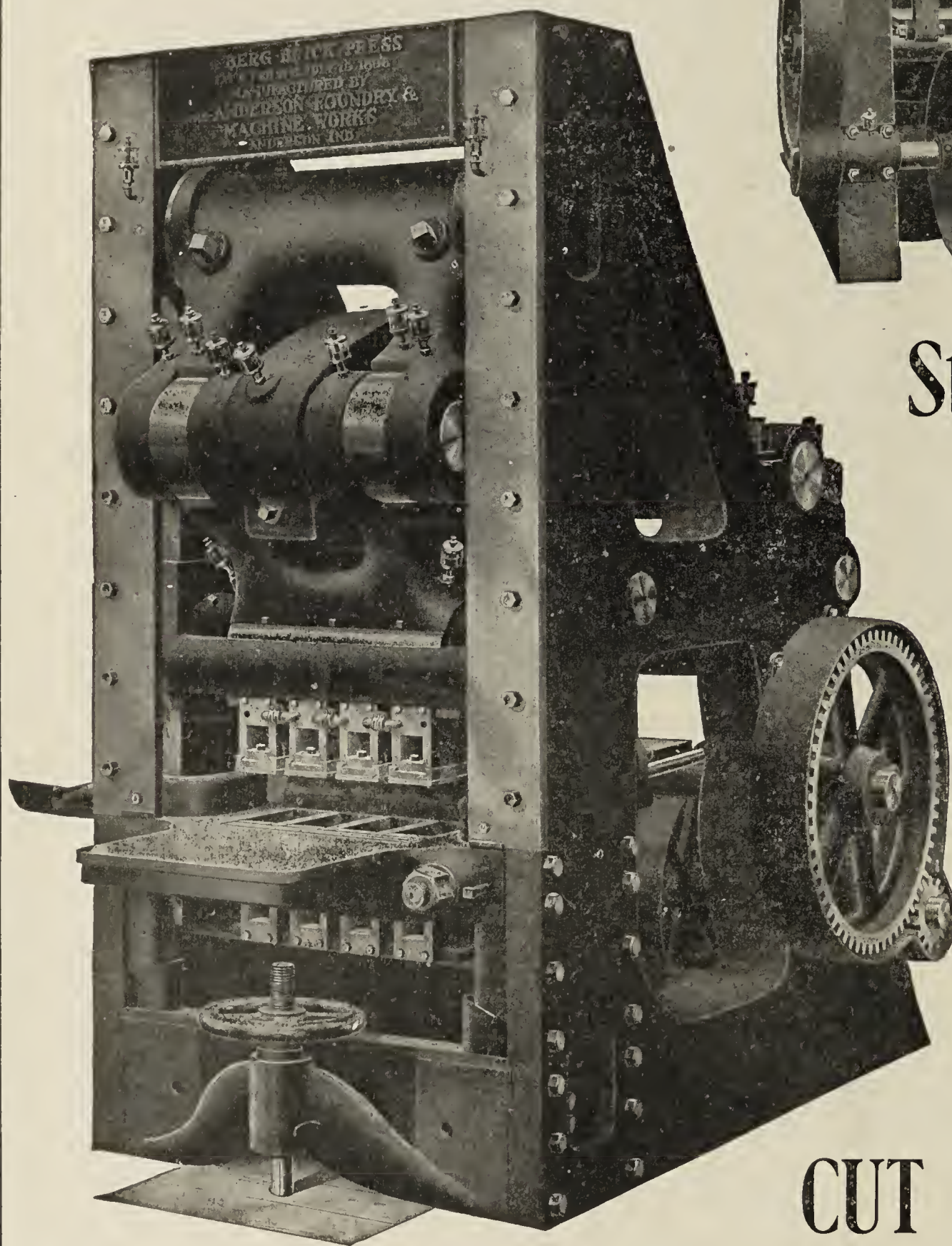
- | | |
|--|---|
| 1st. Because it exerts greater pressure and holds it on the material longer than any other Dry Press. | 4th. Because it costs less for repairs, and is so constructed that all parts are accessible. |
| 2nd. Because it takes less power to operate it—we use a six-inch belt. | 5th. Because it presses the material from both bottom and top, producing a uniform solid brick without granulated centers. |
| 3rd. Because it is fitted with the Fernholtz Patent Mold Box, the best made. | 6th. Because it is the only distinct cam movement press on the market. |

We manufacture Hand Presses, Pulverizers, Mixers and a complete line of brickyard supplies.

The Fernholtz Brick Machinery Company

Boyle Avenue and Old Manchester Road, St. Louis, Mo.

New Model Berg Brick Press



Back View.

Still in the
Lead
and
One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

CUT GEARING

of either iron or steel, if desired.

Sold by

CHICAGO BRICK MACHINERY CO.,

Great Northern Bldg. Chicago.
No. 77 Jackson Blvd.

Manufactured by

Anderson Foundry & Machine Works,
ANDERSON, IND.

WHAT'S IN A NAME?

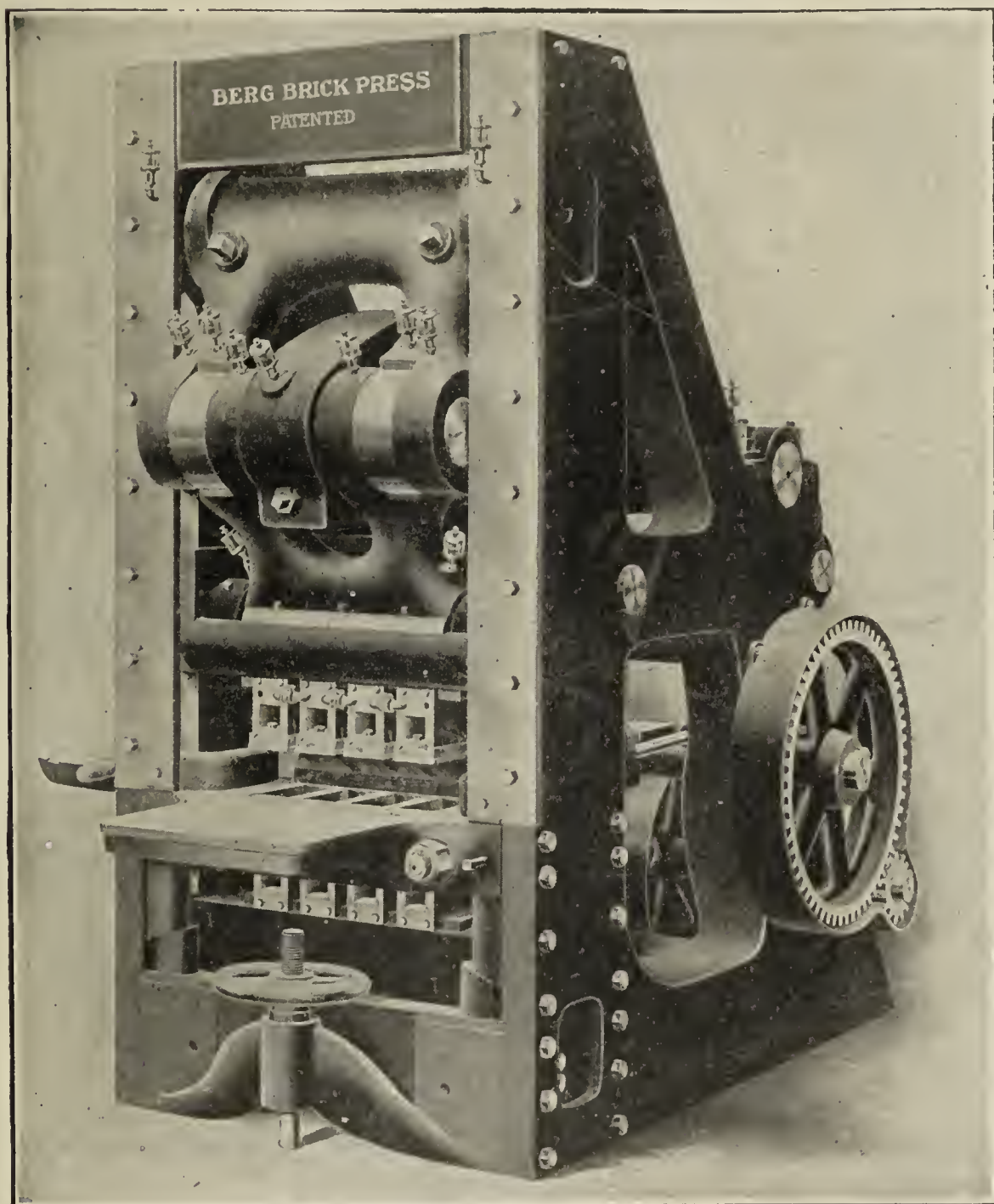
SIMPLICITY
STRENGTH
DURABILITY

ACCESS
TO ALL
PARTS

GREATEST
PRESSURE

BEST
PRODUCT

The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
Mold Box"—the DELIGHT of brick-
makers, and which many OTHERS
have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship*. *Fully Guaranteed* as to its *Success*.

Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make *Sand-Lime Brick*, *Sand-Cement Brick*, *Shale Brick*, *Clay Brick* and *Fire Brick*. Correspondence solicited.

A. BERG & SONS,

Mention The Clay-Worker.

Manning Chambers, TORONTO, ONT., CAN.

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Correspondence solicited.

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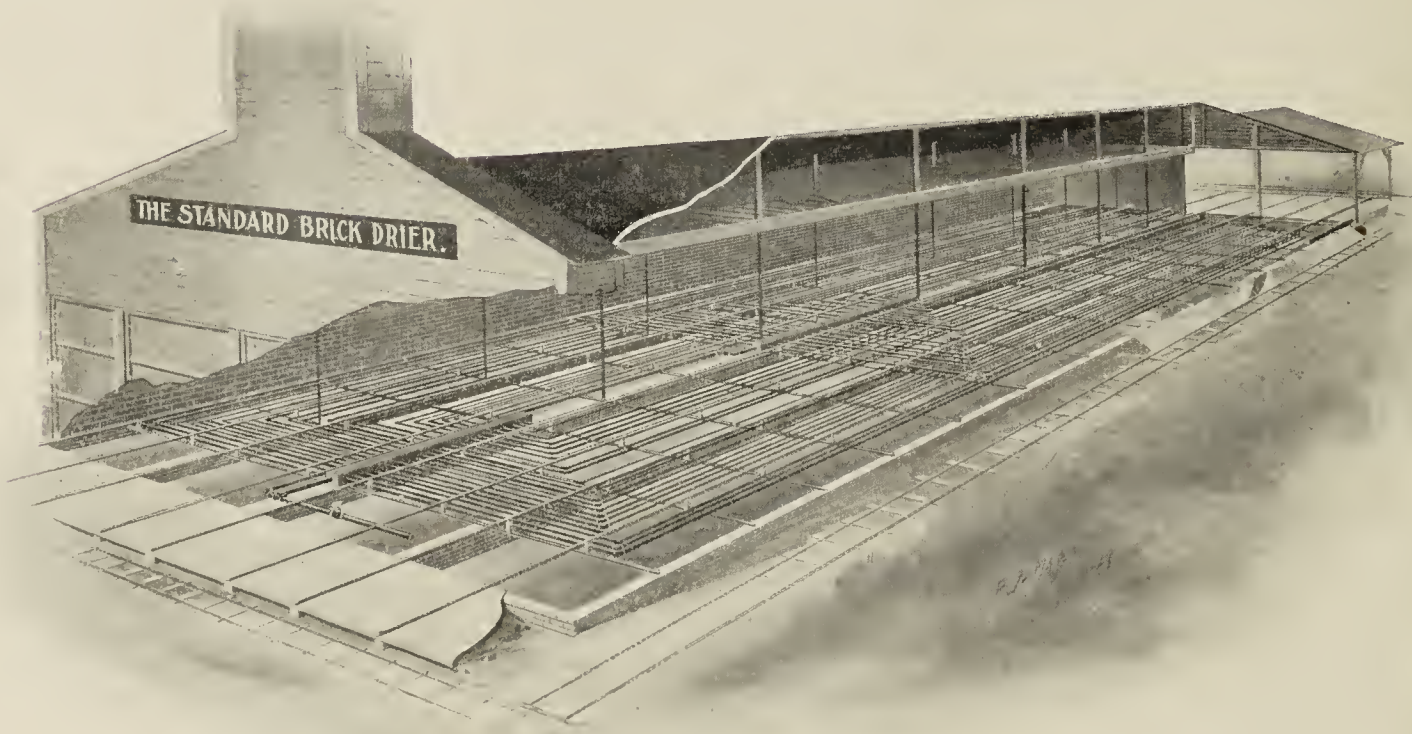
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is the title of a small booklet that throws considerable light on the dark spots of a subject close to every brickmaker's pocketbook. It is just off the press, and a good thing to read in an idle moment, or for that matter, on a busy day. A copy will be sent to any clayworking concern on request.



One of the things exploited in "Money-Saving Drying" is how to get the maximum benefit out of the utilization of your exhaust steam. Another. How to cut down the expense and trouble of installing a new drying equipment.

These economies are brought about by the novel arrangement of the new Heating System of The Standard Drier, illustrated above.

If you are interested in reducing the cost of production, get this booklet. Address:

THE STANDARD DRY KILN CO.,

647 S. Penn. St.,

INDIANAPOLIS, IND.

THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XLVII.

INDIANAPOLIS, IND., JANUARY, 1907.

No. 1.

ST. LOUIS OLD AND NEW.

THE N. B. M. A. CONVENTION CITY—ITS HISTORY AND
ATTRactions—THE GREAT CLAYWORKING
PLANTS WHOSE GATES WILL SWING
OPEN TO VISITORS FEBRUARY
4TH TO 9TH.

WHEN the members of the National Brick Manufacturers' Association, the American Ceramic Society, National Paving Brick Manufacturers' Association and the National Association of Manufacturers of Clayworking Appli-

and Territories commercially linked to it. It is growing steadily as a manufacturing city and is showing a most substantial increase as a jobbing point.

The history of St. Louis, as compiled by Ripley D. and William F. Saunders, for the Business Men's League, revolves itself into seven epochs, which are interestingly set forth as follows:

The foundation, settlement, and occupation of St. Louis by the French colonists under Laclède and Chouteau, extending from 1764 to 1803.

The Americanizing of St. Louis, dating from the Louisiana Purchase in 1803, and accomplished by the influx of Virginia,



A Great Brick and Terra Cotta Structure—The Present Home of the Hydraulic-Press Brick Company.

ances visit St. Louis, February 4 to 9, in attendance at their annual conventions, they will find in St. Louis a city that is not only beautiful to look upon, but a great commercial and financial center, having the reputation of being one of the soundest and most promising cities in the United States.

As a great money center of the Middle West, it is being strengthened each year by the wonderful growth of the States

Tennessee, Carolina and New England blood, and later by an additional incoming from Kentucky. This was the work of the generation from 1803 to 1836.

The development of the growing town of St. Louis into one of the most important Mississippi Valley commercial points of that day. This was due to the amazing growth of steamboat traffic on the Mississippi river and its tributaries, which

first secured and then maintained St. Louis' control of the trade of the Mississippi Valley, a period extending from 1836 to 1860.

The Civil War Period of St. Louis.

During this period St. Louis took her place in history as the American city that kept her State in the Union against the will of the majority of the State's people. This epoch extends from 1861 to 1865.

The reaction period following the close of the Civil War

ness as based upon results already attained. 1898 to 1906.

The story of St. Louis' 142 years of existence assumes a coherent completeness with these seven logical divisions of the history of St. Louis kept in mind.

Those who attend the coming National convention may wonder at the frequency of the names Laclede and Chouteau and other French words, which are hard to pronounce and harder still to spell. They are the names of conspicuous Frenchmen who played important parts in the early settle-



On the Levee at St. Louis—The Famous Eads Bridge Which Spans the

was the only era of apparent stagnation or retrogression in the history of St. Louis. This lasted from 1865 to 1878.

The renewal of St. Louis' progress along the lines of its true destiny, a period sometimes alluded to as "the birth of the new St. Louis." Within this period St. Louis made notable gains in trade and industry, in population and area, and

ment of the city. They were not only venturesome path finders, but shrewd traders, driving close bargains with the natives, and by thrift acquiring immense holdings of land which today are worth fabulous sums. They laid a sound foundation for St. Louis.

This foundation finds its bed rock in the fur trade, which



The Old Court House, Opposite the South Entrance to the Planters.

took her rightful place among the great cities of the Union, 1878 to 1898.

The World's Fair Period in St. Louis.

This epoch has a tremendous significance as bearing upon its future. The vast extent of its municipal improvements, the consequent prestige gained in the world's eye, render this period singularly vital with meaning of St. Louis' future great-



The New City Hall, which Occupies an Entire Block.

may be said to be the original American "skin" game, so profitable was it. It was the western fur trade of the early days that furnished the commercial basis upon which St. Louis has builded so substantially. Under the stimulus of this trade, the settlement grew in numbers and influence at an astonishing rate for those times.

With the purchase of the Louisiana Territory from the French by the United States in 1803 began the Americaniza-

tion of St. Louis. By degrees the Anglo-Saxon element grew stronger until it became the dominant force. This was fittingly celebrated by the great World's Fair, which carried the name and fame of the city to the farthestmost corners of the world.

The parks of St. Louis are beautiful, spacious and well maintained. The largest, Forest Park, contains 1,371 acres and furnished a large part of the World's Fair site. Tower Grove Park, comprising 266 acres, is renowned for its beauty.

of the most beautiful residence sections in the world. It is constructing a boulevard, driveway and viaduct system that will be without an equal in the world. It leads the world in the manufacture of boots and shoes. Its banks and other financial institutions are renowned for stability and are the most solid in the Union. It is financially independent of New York, the money center of the country. It has the largest legitimate trade territory of any city in the world and is increasing this territory. Its credit is unsurpassed by that of



Mississippi River and Connects St. Louis with the East by Rails of Steel.

It adjoins the Missouri Botanical Gardens, the most famous of their kind in this country.

St. Louis is now the fourth city in population in the United States, having a population of over 700,000. It covers 62½ square miles. It has 20 miles of river frontage, over

any other city in the world. Its citizens pay the lowest tax rate of any city in the Union. It is one of the healthiest cities on this continent, its annual death rate being among the lowest of all the great American cities. Its water supply, drawn from the Mississippi river, is pure and healthful. Its sewerage



The Wainwright Building.

Compton Heights Water Tower.

Odd Fellows Building.

8,000 factories testifying to its importance as an industrial center. It takes rank as the fourth manufacturing city in the world. It has two bridges, the Eads and the Merchants, spanning the Mississippi river. It is the terminal point of 24 railway lines. It has the largest railway union station in the world. Within 500 miles of St. Louis there is a population of 37,000,000, and there are 80,000 miles of railroads. It has one

system is acknowledged by experts to be among the finest in the world. Its street railway rapid transit service is unequalled in this country or Europe. As a great railroad center it has no American superior. In the matter of hotel accommodations, it stands comparison with any other city in the world, and it is claimed that it has the most beautiful suburbs and surrounding country of any American city.

Vast Clay Properties of St. Louis.

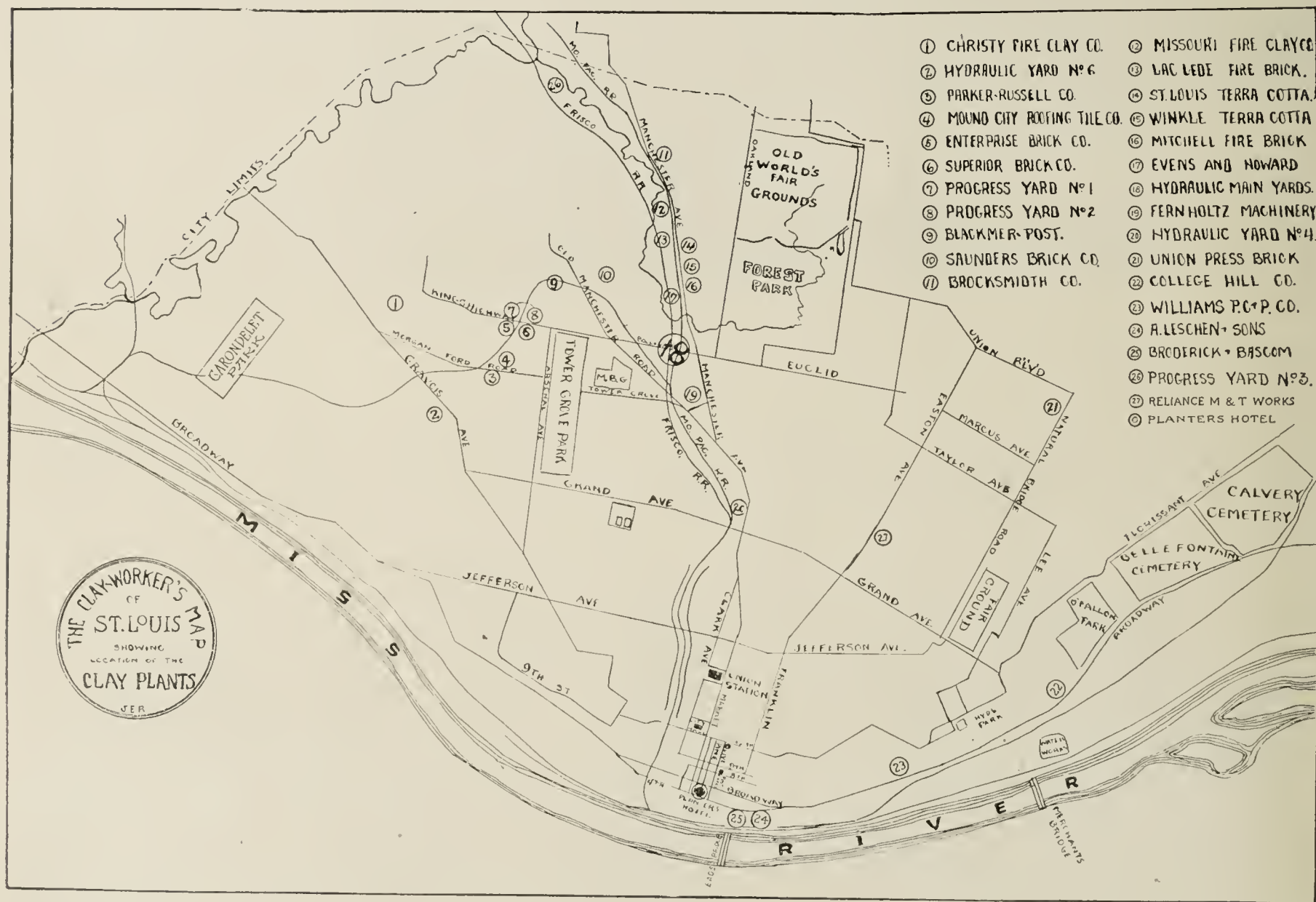
The Executive Committee of the National Association acted wisely in selecting St. Louis for the next annual convention, for it is one of the most important clay centers on this continent. There are in and about the city some forty odd clay plants, embracing a number of the largest manufacturing of clay products in the world. There are numerous building brick plants, paving brick and fire brick establishments, sewer pipe, terra cotta and hollow block manufacturing of all kinds and descriptions, in which will be found every up-to-date process known to the clayworker's art. These plants, all of them, will be thrown open to visitors convention week.

There are enormous beds of clay and shale in the St. Louis district which have been worked for many years past and will continue to furnish an abundance of raw material for ages to come. This, coupled with the fact that St. Louis

equipment so they may inspect such as are of special interest to them. They are located within easy reach by trolley car and present almost every phase and process of manufacture, though the dry press process is most common. Naturally the first thing considered in clay work is the raw material, so we will begin our trip through the plants by first visiting the Christy Fire Clay Company's factory, that company being one of the largest producers of washed and prepared clays in the United States.

The Plant of the Christy Fire Clay Company.

This immense plant is located at the southwestern end of the clay belt, and covers many acres. It is a veritable beehive, with its hundreds of busy workmen. A glance at the immense buildings and piles of weathering clay, with here and there a puffing locomotive, pulling the trains of cars on the narrow gauge tracks to various parts of the plant, gives



has exceptional transportation facilities, both by rail and by water, insures its supremacy in the years to come as an industrial center of peculiar interest to clayworkers.

An extensive and very rich clay belt underlies the western section of the city, extending out into the country to the northwest. Beneath the surface clay, which is of excellent quality, there is a rich vein of fire clay, from which refractory products of all descriptions are manufactured in vast quantities by the Laclede Fire Brick Company, Evans and Howard Fire Brick Company, the Russell-Parker Company, the Christy Fire Clay Company, the Mitchell Clay Manufacturing Company, Blackmer & Post, and others.

In the building brick line, the Hydraulic-Press Brick Company dominates, the aggregate output of their various plants being enormous. Delegates to the convention will want to visit some of these plants, so we will tell our readers of their

but a small conception of the enormous amount of work being carried on within the walls of this great factory.

This plant was established in 1847, and incorporation papers were taken out in 1881. The land owned by this firm is nearly 1 per cent. of the total area of St. Louis. Nearly all of this land is rich in clay deposits, some places the clay beds running over 20 feet in depth. The field is not only rich in fire clay, but possesses hundreds of acres of fine clay for face brick and other clay products. The mines are thoroughly surveyed, being worked from the extremes of the property, the clay removed by cross section undermining and the pillars afterwards being drawn out. The clay is brought to the plant in dump cars on narrow gauge tracks, but is first allowed to weather near the mines.

The plant is run by means of electricity, the direct current system being used. A magnificent power plant with three



The Factory Office.



A Train of Clay Cars.



A Portion of the Clay Bank Now Being Worked by the Christy Fire Clay Co.



Sorting Fire Clay.



A Section of the Drying Room.

large generators and a huge switchboard is one of the unusual features of this factory. This is excellently kept up, the greatest care being exercised to keep it in the best possible order. They have their own telephone exchange, which aids materially in the systematic management of the plant.

A large beautiful office building stands upon a hill overlooking the plant proper. It is made entirely of clay products, except for the inside decorations and places where wood must naturally be used. Large office and drafting rooms are on the first floor, while on the second are located the record rooms, kitchen and dining room, where lunch is served daily to the officers, clerical force, superintendents of factory departments and visitors. It was the writer's pleasure to par-



At the Entrance to the Clay Mine.



A Rich Vein of Fire Clay.

take of their noonday fare and to enjoy the social chat, which is a feature of this meal.

It is impossible to give a detailed description of the plant in this writeup, but a glance through the factory will give one some idea of the work being carried on. The organization is very complete, all the buildings are well constructed of brick and concrete from plans made in their engineering department. The buildings are well arranged, enabling the different classes of work to be carried on independently. The basements are used for tempering clay which is stored in large concrete bins. The sorting, grinding and preparing rooms are large and well lighted. The clays are purified by precipitation, filtration and screening, thus being made a clean, homogeneous product. The company at the present

time is installing another tunnel dryer, which is entirely fire-proof and thoroughly well protected.

A four-story structure for the manufacture of refractory ware of every description covers, seemingly, acres of ground. The floors are all underlaid with a steam drying and heating system. So rapidly is the business of this factory growing that a new four-story building is now under construction.

They manufacture a multiplicity of shapes, making nearly every conceivable product in the fire clay line, from standard fire brick to the most difficult shapes used in refractory work. The storage facilities have been greatly enlarged during the past year, depressed tracks being used to enable easier and quicker loading of cars from the storage sheds.

Besides many round down draft, iron cased kilns, they employ large continuous kilns, fired with producer gas and an upright calcining kiln, fed in the same manner as a lime kiln. One of the features of the plant is a system of narrow gauge railroad tracks equipped with rotary dump cars and steam locomotives. This plant sells high grade washed clays, furnace, crude and flint clays, quartzite, fire brick, milled clays, boiler settings, cupola linings, rotary cement kiln liners, kiln tile, gas bench settings, water gas linings, silica brick, locomotive tile, linings for heating furnaces and special shapes required in a wide range of metallurgical and industrial op-



A Glimpse of the Parker-Russell Fire Brick Plant.

erations. Visiting manufacturers are always welcome, as the management believes in the interchange of ideas.

The Parker-Russell Mining and Manufacturing Company.

This plant is located at Morganford Road and Parker avenue, a short distance from the Christy plant, and is the next large fire clay manufacturing plant we come to as we follow the clay belt to the northwest. As we approach the plant we are impressed by the long rows of large gas retorts which have been placed out upon the yard ready for shipment. The plant covers quite an extensive tract of land, manufacturing gas retorts and settings, fire brick and block, blast furnace linings, Bessemer tuyeres and nozzles, fireproofing and partition blocks for buildings, glass house pot clay, silica brick and magnesite brick.

The main mine shaft is directly to the rear of the plant and runs down 125 feet. The company operates several other smaller mines on their 200 acres of land, but this is the principal source of their fine grade of fire clay. The clay is found in a five to seven-and-a-half-foot vein and is of two varieties, the pure and the stained fire clays. It is brought to the surface and dumped near the factory, where it is allowed to weather as long as possible. They have an enormous amount of weathered clay on hand, some of it having weathered from five to six years. From the weathered piles the clay is wheeled to four large nine foot dry pans and two six foot wet pans of the company's own make. From the dry pans the clay is elevated to the top of the building and emptied on to

shaking screens, from which it drops into large bins. The clay is then dropped into the wet mixers, from which the mixed clay is forced and cut by a revolving knife. It is then dropped directly into an auger machine and comes out in two streams of fine clay, which are cut by hand and taken to the represses in different parts of the plant. They operate eight hand presses, all made in the company's own shops. A great deal of fireproofing is made on the same machine, different dies being used. There are two stories of immense drying floors, each having a capacity of nearly 50,000 brick. The large ware, such as railroad tiles, gas settings, and retorts, are made on the first floor. The retort room is one of the features of the plant. This is located at the end of the building. Four large hoists are used, and cases made of iron with wooden backs. They make on an average twelve 9 to 10 foot retorts daily. The retort room is heated by steam pipes running along the side of the walls and under the floor, the other rooms having a veritable network of steam pipe along the ceiling, the total length of pipe being over 10,000 feet.

The smaller ware, such as the fire brick and partition blocks and lighter shapes of fireproofing, are manufactured on the second floor. The whole plant is well lighted with electricity, furnished from a motor run by a 150 horsepower engine, with three O'Brien boilers, which also run the machinery



The Progress Brick Company's Yard.

in the building. The electric light feature of the plant was installed eleven years ago and has proven a great success. A 30 horsepower slide valve engines supplies the power to run the hoist for the clay mine. The machinery in the second building, which stands to the east of the large main structure, is run by a 60 horsepower engine, the steam being supplied by the boilers in the larger building. The machinery in this part of the plant is made for the most part by the company and consists of one dry pan, one wet pan, a mixer, auger machine, screens and elevators. There is also a two-story structure, having about 50 tons capacity. The work shops are located in this part of the plant and employ all the necessary machines for their repair work and the making of their molds, patterns and machinery.

The Use of Producer Gas.

The same process of manufacture is used here. All the buildings are frame, with the exception of the machine shop. The ware is burned in 26 kilns, five stacks being employed for draft. All kilns are down draft, 20 being rectangular, the balance round, each having a capacity of about 22,000. The most striking feature of this plant is the employment of producer gas. Four kilns are fired with producer gas, being operated on the continuous kiln system. The waste heat from the burning kilns is utilized for water smoking the green ware in the kiln ahead. The kiln is heated up to a certain point before lighting, the hot air in the cooling kiln behind the one

burning being used as the air of combustion in the kiln under fire. In others the gas producers are built directly against the kiln, having six sealed hoppers and twelve doors. These kilns are used as a direct fired kiln and are very flexible as to oxidizing and reducing conditions, as a large quantity of air may be admitted in the kiln at the point where the gas enters, or it may be checked down to a very small amount. These kilns are built so that they can receive pre-heated air from a cooling kiln next to it. When burned with cold air the saving is very small, but when hot air is employed, the saving is nearly one-half of the fuel.

Mr. Lemon Parker, who is well known to all the members of the National Association, first began to experiment with



Trucking Gas Retort from Dry Room to Kiln.



In the Retort Room, Missouri Fire Brick Co.

producer gas in his plant in 1892, then making the gas in old-fashioned round iron tank producers and leading the gas 90 feet through an underground brick flue to the kiln, where it rose through a chamber whose walls were the inside walls of the recuperators, which were composed of a series of air ducts exposed to the heat given off by the products, thus raising the temperature of the air before it reached the flame. Due to the location of the gas passage between the two recuperators, the gas absorbed some of the heat, but as the kiln was cold and damp at the start from the freshly set material, and as all of the heat that came over with the gas from the producer was taken from it during its passage through the long flue, great difficulty was always experienced in lighting the gas at the start. The kiln had to be cooled off every ten

days and started up again, necessitating very troublesome and annoying labor to get the gas relighted. In 1902, as an experiment, he built a four chamber gas producer kiln, with a gas lead of 40 feet instead of 90, and found that they saved a much larger per cent. of fuel by this arrangement. The present system of using the gas producer directly against the kiln has proven the most satisfactory because the fuel is fed through a sealed hopper and the gas is hot.

Mr. Parker speaks enthusiastically of the great benefits derived from producer gas and declares that there is no rea-



Some of the Missouri Fire Brick Company's Kilns.

son why a properly designed gas producer continuous kiln should not save one-half the fuel.

The plant has been running since 1865, being incorporated in 1871, with Mr. George W. Parker as president; Mr. T. G. Russell, treasurer, and Mr. C. S. Russell, secretary. Mr. C. S. Russell is the only one of the original firm now living and is at present the president of the company. Mr. D. R. Russell is vice-president; Lemon Parker, secretary and superintendent, and Mr. S. Bert Russell, consulting engineer. A visit to the plant will interest every clayworker, and it is easily reached by taking the Tower Grove car and getting off at Morganford Road.

Directly across the road from the Parker-Russell plant is the well managed

Mound City Roofing Tile Plant.

The office building is made entirely of clay products, the red roofing tile covers the beautiful fireproof structure, while the interior of the drafting room and office is finished off with white tile. Not only the office, but all the buildings of the plant are made of clay, the company utilizing their own product, making the buildings all uniform and pleasing to the eye. As we go into the yard, our attention is drawn to the scattered pieces of terra cotta stored on the roofs of the sheds for lack of space on the ground.

They get their clay from the Creve Cœur Lake, where they have leased several acres of clay and shale. The raw material is brought in on the Creve Cœur branch of the Missouri Pacific railroad, averaging one car a day. The clay and shale is put in a storage shed near the nine foot Frost dry pan. One-third clay to two-thirds shale is the proportions used. This is ground in the dry pan, elevated to the second floor and screened on a Dunlap screen. Barytes is used with the clay to prevent scum.

From the screen the material is dropped into a chute and carried to a Fate pug mill. Here it is dampened and run out on to a belt, cut as the tube of clay comes from the mill and thrown off into one of four bins, two on either side. Each of

these bins has a capacity sufficient for two days' run. The clay is left here for a week and then taken by belt conveyor to a Fate double knived pug mill, which they claim is the best in the market for the tile business. The clay runs out in slabs 2½ inches in thickness on to an automatic cutting table. The pieces are thrown on to a Crawford & McCrimmon five mold press, which has a capacity of six thousand tile daily. The company makes many different shaped tiles. From the press they are placed on leather belts, on which they are trimmed by girls, one punches, one trims one side, another trims the other side and a fourth girl puts the tile on pallets on a car in front of her. One girl at the machine slicks the tile, while a man places them on the pallets, which in turn are placed on the leather belts. They also operate a shingle machine, put in by the Illinois Supply and Construction Company. There is a small cutting table for this machine. Sixteen thousand shingle tile can be made in a day on this small press. They use two presses for making hip rolls, crestings,



Skidding Tile from Dry Room to Kiln at Blackmer & Post's.

ornamental starters and many different trimmings for tiles. These were made by W. P. Grath, of the Illinois Supply and Construction Company. They can make from 500 to 800 feet of tile on either of these presses daily, depending on the style of the ware. The same firm also constructed the dryer at this plant. This is one of seven tunnels, eleven cars each, utilizing exhaust steam. To the left of the dryer is a plaster room for making molds, etc., and two modeling rooms where large, massive piece-work is made. Here they have dryer racks for their terra cotta work. Adjoining the plaster room is a large carpenter shop and store room for molds. Beyond the modeling rooms is the engine and fan rooms. Garden City fans are used, a small one to suck the heat out of the dryer and a large one for draft in kilns.

An Atlas 20 horsepower engine furnishes the power for the fans, while an 80 horsepower Corliss engine operates the machinery. Illinois coal is used as fuel. They do not use a stack, but depend on the fan for the proper draft. Two continuous kilns are employed, being constructed close together with an underground cross tunnel at the further end, thus making one large continuous kiln. These two kilns were built by Grath. There are eight chambers in each kiln, each having a capacity of 11,000. They burn in 30 hours and do not watersmoke at all. The tile are under fire 42 hours and then allowed to cool four days. Fire clay plates are used in furnaces instead of grate bars. Five tons of coal are generally used to a chamber. The company has recently been experimenting with glazes, making some green and brown glazed tile.

At present they are shipping to Mexico and to many distant points in the United States. Their present capacity is not adequate to demands, so that they are now building an addition near the storage sheds. The plant was built four years ago. The officers are: President, Mr. James Master-son; vice-president, Mr. Joseph P. Kelley; treasurer, Mr. Frank Hawkins; secretary, W. W. Stewart, and Mr. E. E. Johnston, manager and superintendent.

By walking down the railroad track to the northwest, we soon come in view of the

Enterprise Brick Plant.

This is a common red brickyard, using yellow surface clay from a 15-acre field. The capacity of this plant is 30,000 daily, operating nearly the whole year through. The plant was erected in 1894 and has been doing a very successful business since its establishment. The clay is first plowed and then gathered by a clay-loading machine, which carries the clay to dump wagons. Four wagons are used, carrying to the plant clay enough in a day to make 90,000 to 100,000 brick. They employ a Ross-Keller pulverizer and a six-mold brick machine. The clay is taken into the pulverizer by an unique method. A chain conveyor with small metallic squares being used to carry a given amount of clay into the pulverizer at a time. From the pulverizer the clay is taken to inclined screens and then conveyed to the brick machine. The brick are taken from the machine and placed on trucks, each holding 50 brick, and are then taken to the kilns. They have four clamp kilns,



Hoisting Frame for Loading Large Sewer Pipe Into Cars.

each one having 250,000 capacity. The watersmoking is done with wood, taking about six days, then the burning proper takes four and one-half days with coal. They have their own blacksmith and wagon shop and do all their own repairing.

Near the office is a large storage shed, having a capacity of nearly 4,000,000 brick. The business is confined entirely to local trade, fourteen teams being used for hauling.

The president and general manager is Mr. Otto C. Oehler; Mr. Louis Kohlby is secretary and treasurer, and Mr. S. T. Harris, superintendent. This firm also owns the Continental brick plant, which is located on the Missouri Pacific railroad, four miles from St. Louis.

Located on King's Highway, a few paces from the Enterprise plant, are the two yards of the

Progress Press Brick and Machine Company.

The yard at the office is known as the No. 2 yard. The No. 1 yard is directly to the left of this yard, on the other side of the Missouri Pacific tracks, while still a third yard is located on the 'Frisco railroad, at Arthur avenue. These three yards make one of the interesting groups of press brick plants

in St. Louis and place on the St. Louis market an excellent grade of press brick of almost every color and shade. They turn out many millions of brick annually and at the present time are busily engaged in filling many large orders. All of these yards are excellently kept up and will prove interesting to all visiting clayworkers. Mr. J. Stocke is president and Mr. H. C. Beckman, secretary and treasurer. Both are practical brickmakers and extend a cordial invitation to all convention delegates to inspect their yards.

The clay for the plants is mined in the immediate vicinity from a large clay field, consisting of rich deposits of red burning clay and fire clay. The clay is allowed to weather, being stored in an immense clay shed. Four down draft kilns are employed at the No. 2 yard, having a capacity of about 150,000 each. This yard makes face brick of an excellent quality, including all ornamental shapes. They make beautiful grays, gray granite, russet red granite, buff and buff mottle, old gold, chocolate, but best of all is their famous St. Louis reds. They use a great deal of manganese in both the powdered and granulated form. They have a more thorough mixing machine than is generally used, for the purpose of getting more uniformity of color. Two Schellhorn-Albrecht & Co. mills for grinding are in use. A grinding and mixing machine screen is employed only for taking out pebbles. A double mixer and grinder gives the material its proper preparation, before it goes to the press. A large grinding table is used for smoothing and trimming and shaping the burnt ware when necessary. A pulverizer and two dry press brick machines of the Progress own make are run by a 135 horsepower Ramming engine. They have a large electric light plant on this yard, which supplies light for both the plants and large barns, which are located just across the street. A small 35 horsepower Ramming engine regulates the motor and fans. Most of the watersmoking is accomplished with waste heat. Two American Blower Company's 30-inch fans are used; wood is used in the last stages of the watersmoking, and then the rest of the burn is made with coal.

A complete equipment is employed for saving and using



A Portion of Blackmer & Post's Stock Yard.

exhaust steam. They do all of their own repairing and make all of their own machinery, having a large machine shop with automatic grinders, surface machines for molds and every convenience for their work. An Atlas engine furnishes the power for the machine shop. They have good shipping facilities, as the Missouri Pacific tracks run between the two yards.

The No. 1 yard manufactures common brick, employing five clamp kilns, with a total capacity of 1,500,000. There is a 35 acre clay field to the rear of this yard, in which the clay

runs from 6 to 15 feet deep. The clay is gathered by means of a clay loader and taken to the storage sheds, which have a capacity of over 6,000,000 brick. The clay is taken from here as needed to a pulverizer, which has a grate covering to catch large lumps and undesirable material. The pulverizer is heated by means of a sectional heater, which enables them to easily replace worn out parts. From the pulverizer the clay is taken to the top of the building and dumped on to an inclined screen. It is then conveyed to the presses, which are four in number, two of the Progress own make and the third a Lion press, while the fourth is an old-fashioned trip hammer press of four mold construction. The daily output of these presses is 70,000. They have a fine power plant building of brick, floors all cemented and the walls whitewashed. Two immense boilers and a 200 horsepower Corliss engine, made by the Fulton Iron Works, of St. Louis, furnish the power. A complete heat saving plant is also employed. All of the exhaust steam is used over again.

Four large storage sheds for face and ornamental brick are seen on the other side of the road. These are partly filled with the many different colored brick of beautiful shades. One shed is entirely filled with ornamental shapes. They make all told over 300 different designs. To the south of the stock sheds is a large, well ventilated and surprisingly clean barn, easily accommodating seventy head of mules and horses. The barn is so arranged that a wagon can be driven in and feed thrown to right and left above the stalls. The stalls are



Hydraulic-Press Brick Company's Yards Nos. 2 and 11.

made so that they can be turned into pens. There is a complete line of openings on either side for ventilation and light. The stock is all watered with running spring water in a 100-foot trough. Mr. Beckman has a large yard for an enormous flock of fine chickens and ducks to the south of the barn, from which he gets much pleasure, not including the financial side, and takes much pains with having a thoroughly ideal chicken department.

The No. 3 yard, which is located on Arthur avenue, has a capacity of 40,000 bricks, having an 8-acre clay field. Only common brick are made, a six mold dry press of the Progress make, and a Wallace brick machine being employed. A 100 horsepower Atlas engine furnishes the power. The clay is taken from the field by means of a Quincy gatherer and a clay loader. From the press the brick are taken into a dryer using exhaust steam by day and live steam by night. The brick are then set in three clamp kilns of 300,000 capacity each. The company has a small stable on this plant, using eight teams. All of the business of this firm is confined to the local market, having quite a demand for their product.

Across the road to the north of the Progress yards No. 1 and No. 2 is the

Superior Press Brick Plant.

This company takes its clay from a 40-acre field, using yellow surface clay entirely. The clay is plowed up and gathered with a clay loader and taken to the immense clay sheds,

which are perhaps the largest in St. Louis. These hold raw material sufficient for the manufacture of over 10,000,000 brick. The clay is allowed to weather for a while and then taken to the roll crusher, made by the St. Louis Iron Works. The crushed clay is elevated by cup elevators to the screens and from there drops into the hopper below. The clay is then run into the mixer below the hopper and from thence to the presses. The presses used are one Frenholtz two-mold press and two five-mold St. Louis Iron Machine Works "Lion" presses. These make a total of 60,000 daily. The power is furnished by two slide valve engines, one 25 horsepower and the other 65 horsepower. The brick are burned in six clamp kilns, each of 300,000 capacity, and two square down draft kilns of 160,000 each. The watersmoking requires six days, while the rest of the burn requires four days. The company owns its own stables, keeping 24 horses. Two clay gatherers, four excavators and one road grader are employed in the clay field. Under every post in the storage shed they have built concrete piers, so that there is nothing under the ground that can rot and make the shed less strong. The main manufacturing buildings are of brick, while the engine rooms are of frame. They have an oil house, stock shed, tool house and a well furnished office, which is elegantly finished off on the inside with tile floors and walls and a steel ceiling.

Mr. John G. Grove is president; Mr. F. F. Frommeyer, vice-



Hydraulic-Press Brick Company's Yard No. 5.

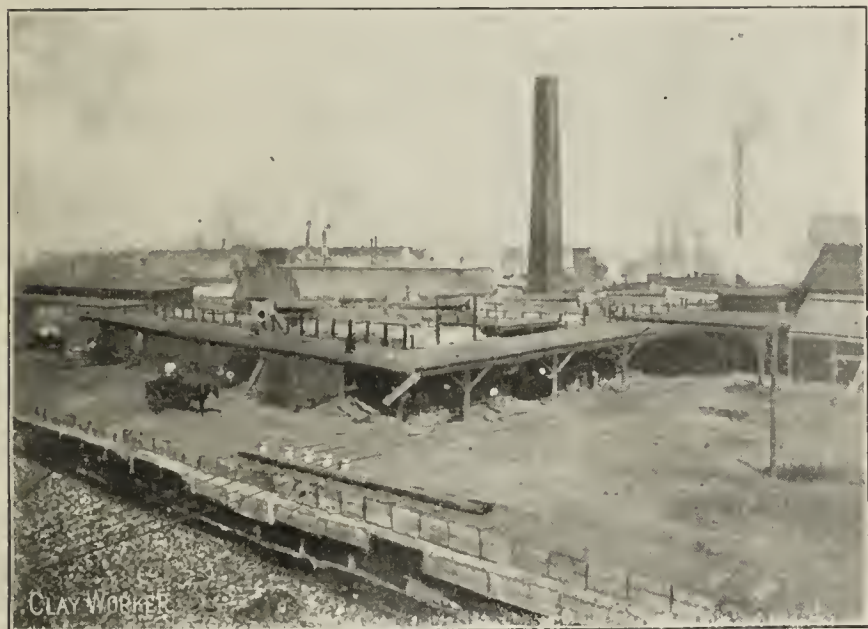
president and manager, and M. J. H. August Meyer is secretary and treasurer. This plant has been operating sixteen years.

Blackmer-Post Sewer Pipe Plant.

A short distance to the north of the Progress yards, following King's Highway, we come to a plant surrounded by acres of piles on piles of sewer pipe, from the small 4-inch to the largest made. The enormous plant is one of the finest and most extensive sewer pipe plants in the United States today. It ships to all parts of the country and has quite an extensive trade in Cuba and Mexico. It turns out a fine grade of ware and is well known in the clayworking world, having been identified with the sewer pipe business for over twenty years, being established in 1881. From a small plant with only six kilns and a small press, it has grown into a mammoth factory, using thirty large kilns, and manufacturing its product in three immense buildings connected by means of bridges at the second story. This is a remarkable factory, shipping from twelve to fifteen carloads of pipe daily. The plant was first located on Ewing avenue, but the railroad facilities and the distance from the clay field proved a disadvantage, so in 1887, after six years of life, it moved to its present site, where they have very fine railroad facilities and get their clay from

a 50-acre field, three-quarters of a mile from the plant. Here they mine their clay from several scattered mines, getting the clay at a 75 foot level. It is carted to the factory and stored in six large sheds holding 12,000 tons. Before being brought to the factory it is allowed to weather for some time. The clay is of two varieties, a pure fire clay and a pipe clay or stained fire clay, being in the same belt as the fire clay plants. One-third of each of these two clays is mixed with one-third loam and thrown into three dry pans and four wet pans. The pans are located in the main building, which is a three-story brick structure, covering nearly 20,000 square feet of ground. On the second floor is operated a large 24-inch pipe press. The large size pipe are turned from the press by power, while the small pipe are simply removed from the press by a hand turning arrangement, which places the pipe on a framework on wheels and then pushes it to its place on the drying floor. The large pipe need more care in the turning, as they are more easily warped and damaged. The pipe carriage works easily and quickly removes the pipe from the stand below the press, after it has been cut and a wooden frame fitting the interior of the pipe is put in and both are lifted and turned over automatically on to a pallet resting on a large truck, on which it is carted to the drying floor.

Each floor has extensive drying space, being heated by steam pipes. The larger sewer pipe are made on the lower



Hydraulic-Press Brick Company's Yard No. 1.

floors, as they are more difficult to handle and the machinery must necessarily be heavier. On the third floor we can see how the clay is fed from a wooden chute into the press, operated on the second floor. A certain amount of clay is allowed to come from the chute at a time, dropping on a conveying belt, which carries the raw material on to a feeding belt. This throws the clay directly into the press. The press consists of a large steam cylinder with a piston operating in a smaller cylinder, known as the round drum, into which the clay is introduced and forced through the die at the lower end, a well shaped sewer pipe.

The clay is taken from the wet pans to top by cup elevators and then sent down the chute to the conveying belts on the second floor. From the dry pans the clay goes to screens on the top floor and is dropped into storage bins below, ready to go to the wet pans. On the third floor of the large four-story building, which is the farthest to the north of the three structures, they operate a No. 2 press, which makes from 3 to 15 inch pipe. This building covers nearly 23,000 square feet of ground and is filled with drying ware of all sizes and shapes. The power for the plant is furnished by two large engines, one located in the main building, the other in the

third or largest structure. These engines are 160 and 250 horsepower, the former a Smith & Beggs engine, while the larger is a Corliss. Each engine has three 100 horsepower O'Brien boilers. A small 15 horsepower engine is employed in operating the elevators. They have a large machine shop and do their own repairing. They own their own stables, using 38 horses and 25 wagons and carts. They employ 270 men.

They manufacture all sizes of sewer pipe from 3 to 36 inches, making a fine line of vitrified pipe. Also flue linings and vitrified wall coping. The green dry pipe are skidded down into the kilns from the second floor, the large pipe being set in the kilns by means of an air hoist. Thirty kilns are used, eleven 22 feet, twelve 25 feet, three 31 feet and the remaining four 34 feet. All of them are round down draft.

The officers of the company are Mr. L. R. Blackmer, president; Mr. L. W. Post, vice-president; Mr. E. Argo, secretary; Mr. C. A. Doolittle, treasurer; Mr. J. T. Wallace, general agent; Mr. J. E. Weston, superintendent; Mr. E. D. Colbrum, assistant superintendent.

Taking a car going north on King's Highway and getting off at Manchester Road, we are at one of the yard offices of the largest clayworking establishments in the United States, known as the

Hydraulic-Press Brick Company.

This firm alone, with its nine local plants, furnishes 75



Rear View of Hydraulic-Press Brick Company's Yard No. 1.

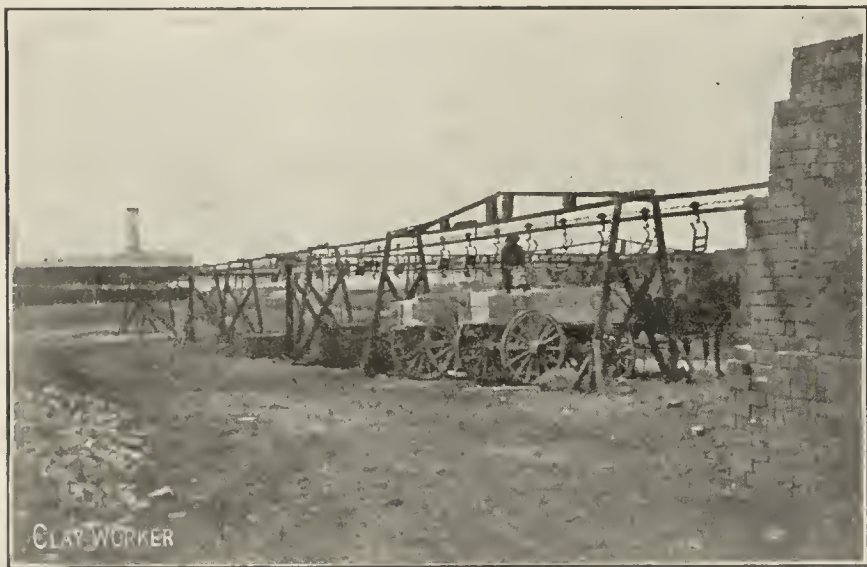
per cent. of all the brick sold in St. Louis today. It is one of the most wonderful companies in the clayworking business, owning and operating plants in all sections of the United States, making the finest grades of building brick, including a line of beautiful enameled brick.

The main group of plants which are located here at Manchester Road, on either side of King's Highway, make not only press brick, common building brick and enameled brick, but a high grade of paving brick. In fact, they have the only paving brick plant in St. Louis. Seven separate and distinct factories are kept running busily at this location, some of them being run night and day at times to enable them to meet the demand for their products.

Two large machine shops, a large stable and many large store sheds, make up a part of this mammoth group of factories. At the rear of the office are located the two machine shops, each two stories high. It is here that they do all their own repairing and make their own dies. A large carpenter shop, where they carry on quite a business repairing their wagons, etc., is to the right of the machine shops. Also, in connection with this is a blacksmith shop with three forges. All the shoeing of their 360 mules is done here. Over 2,000 men are employed by this firm in their nine plants in the city.

The combined output of all being about one-half million brick per day.

Plants Nos. 5, 10 and 1 make a group of yards on the eastern side of King's Highway, a square from the office. The clay for these three yards is brought in on the Missouri Pacific railroad, from their two large clay pits, one located at Malcolm, 14 miles to the west of the city, while the other is about the same distance to the northwest of this group of plants. These are very rich and extensive clay deposits and will not be exhausted for many years to come. These two clay fields consist of 160 acres; the one at Malcolm has 15 feet of yellow surface clay, below which is a vein of gravel. Underneath this gravel is a 45 foot vein of red shale and a large vein of blue shale, still further down overlying a bed of coal. At this pit they use two large Marion steam shovels and have an immense dryer for drying the yellow clay. The clay at the other pit is mostly a red clay used for red stone brick. They have here 70 acres of rich clay. The land around the plant has all been mostly undermined and its rich fire clay utilized in making their fine grades of buff and fire-flashed brick. Recently a shaft was sunk at No. 5, which runs down about 90 feet. Here they mine the fire clay and allow it to weather near the mine. The company has recently purchased 17 acres of rich clay land to the south of No. 1, which they are stripping of its surface clay and expect to undermine this land in the near



The Hydraulic Paving Brick Plant, Barney Conveyor in Operation.

future. At No. 5 yard the clay from the two large pits is stored under large clay sheds covering 2,000 square feet of ground.

The three yards are close together, yet each in itself is a separate and distinct yard. A ten-mold hydraulic press is used at No. 5 yard; No. 10 has a two-mold pony press, where molded brick are made of many special shapes and sizes. A miniature hydraulic two-mold press is also used. Near this part of the plant is a building containing six large grinding tables, where brick for arches are ground down. White sand is used on the grinding tables, each employing four boys. There are also several emery wheels employed here. Yard No. 1 has a ten-mold hydraulic press, making on the average of 44,000 daily. The total kiln capacity of these three yards is about 4,200,000 brick. They have sixteen regulation down draft kilns of 80,000 each, eight oblong down draft of 125,000 each, a large Jumbo kiln, up draft, holding 450,000, three up draft kilns of 225,000 each and three up draft of 265,000 each. Waste heat by forced draft is utilized, four Sturtevant fans being employed, two of them blower or distributing fans and two suction.

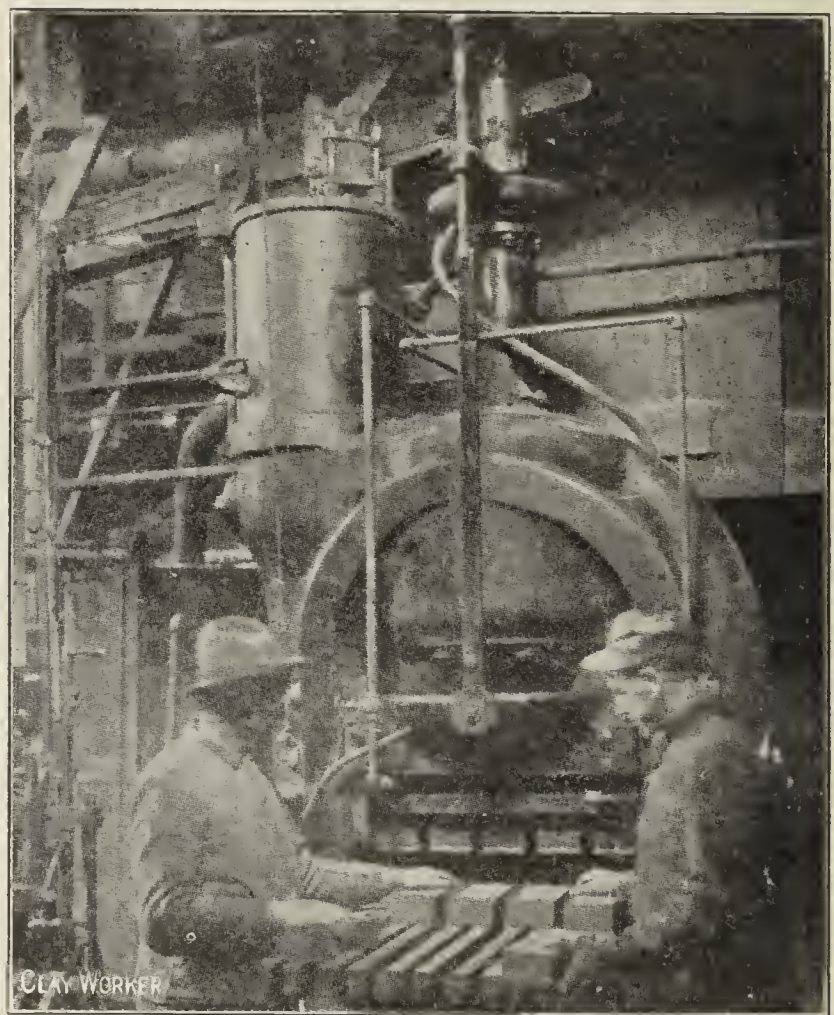
The power for No. 5 is furnished by a 65 horsepower engine of the company's own make. No. 10 by a 60 horsepower engine, and No. 1 has a 150 horsepower St. Louis Corliss engine, which also supplies the power for the fans. On yard No.

5 they have six large stock sheds, with the Missouri Pacific railroad tracks running past their very doors. Two large stock sheds are located to the east of No. 1 yard, while across the viaduct, which separates this group from the enameling plant, are three more stock sheds for No. 5.

To the north of No. 1 plant and east of the new clay field are two large, well ventilated stables, kept remarkably clean, with a large yard lying between them enclosed by a high board fence. In the center of the yard between these two large stables is a long trough where the stock is watered. Large lofts for feed are well filled. White and colored labor is employed. The offbearing and hardest work is done by the negro laborer, while the more skilful labor, such as setting and sorting, is done by the white.

Scientific Burning.

On all the hydraulic yards the draft gauge and pyrometers and cones are used extensively, curves being plotted and the records filed away for future reference. The No. 5 yard has the oldest press on the plant operated by an old walking



Hydraulic Brick Press in Operation.

beam engine. All the brick cars are of the hydraulic design, being flat bottomed. They were made at the St. Louis foundry.

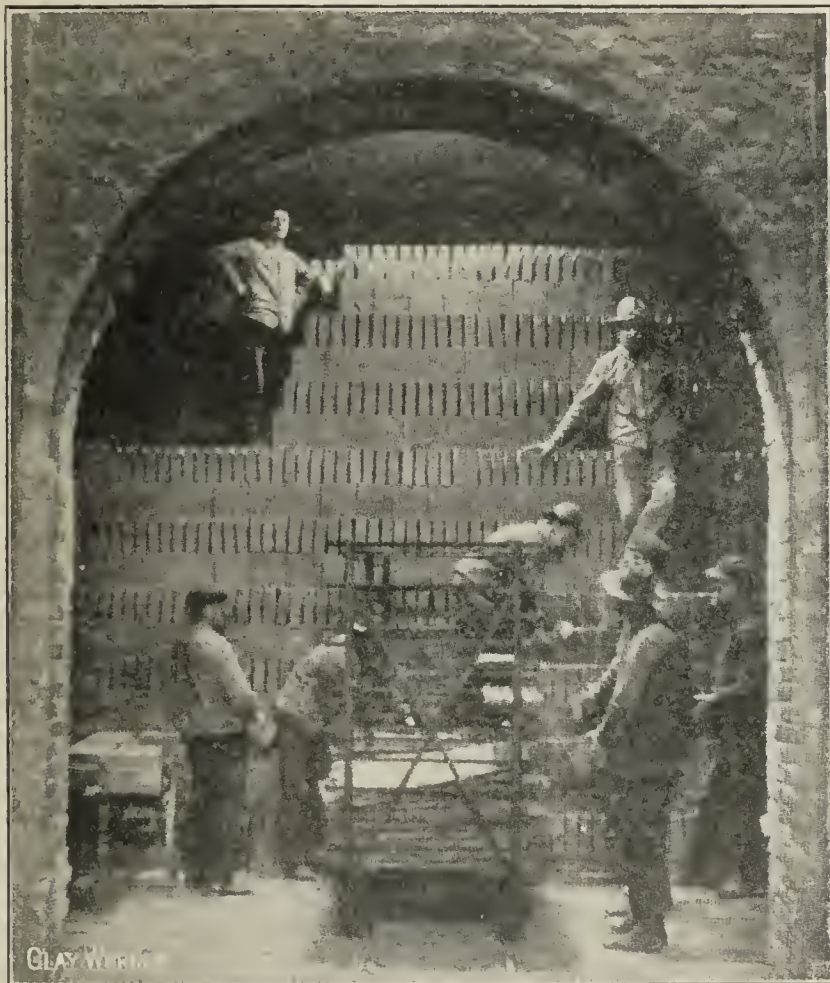
The Enameling plant is located to the southwest of No. 5. A spur runs into the yard for the enamel brick shipment. This yard has eleven down draft and one large muffle kiln. They make a muffle burn in the eleven kilns by boxing in with fire brick, making temporary flues. The muffle kiln is of 75,000 capacity, while the others are simply round down draft kilns, two of 45,000 capacity, one of 20,000, two of 18,000, three of 14,000 and three 10,000, making a total kiln capacity of 293,000. They have quite an extensive enameling department, with large grinding, mixing and dipping rooms. The mixing room is crowded with glaze bins and barrels of materials. They operate two small and two large mixers and a ball mill. A small test furnace is used for experimental enameling. They make some excellent enamel brick, having quite a heavy demand for this ware. The large kiln is fired for four days, while the smaller ones take only two days. There is a large

stock shed to the south of the plant for the enameled ware.

The No. 2 yard adjoins the enameling plant. This yard manufactures common brick on a ten-mold hydraulic press, run by a 60 horsepower engine. There is also a 12 horsepower engine here, which supplies the power for the enameling plant.

The Hydraulic Paving Brick Plant.

The No. 11 yard, which is the only paving brick plant in St. Louis, is located between the railroad tracks and Manchester Road, to the west of the office. This is a large plant, making 37,000,000 brick annually. The red shale from Malcolm is used, being brought in on the Missouri Pacific railroad. The shale goes through a crusher and four 4 foot dry pans. The ground material is then conveyed to two Chambers Bros. pug mills and thence to a Chambers Bros. brick machine and automatic end cut cutting table and a Bonnot Admiral Dewey brick machine and their automatic side cutting table. The Chambers Bros. outfit is used exclusively for the blocks. Three American Clay Machinery Company's re-



Placing Hydraulic Brick in Kiln.

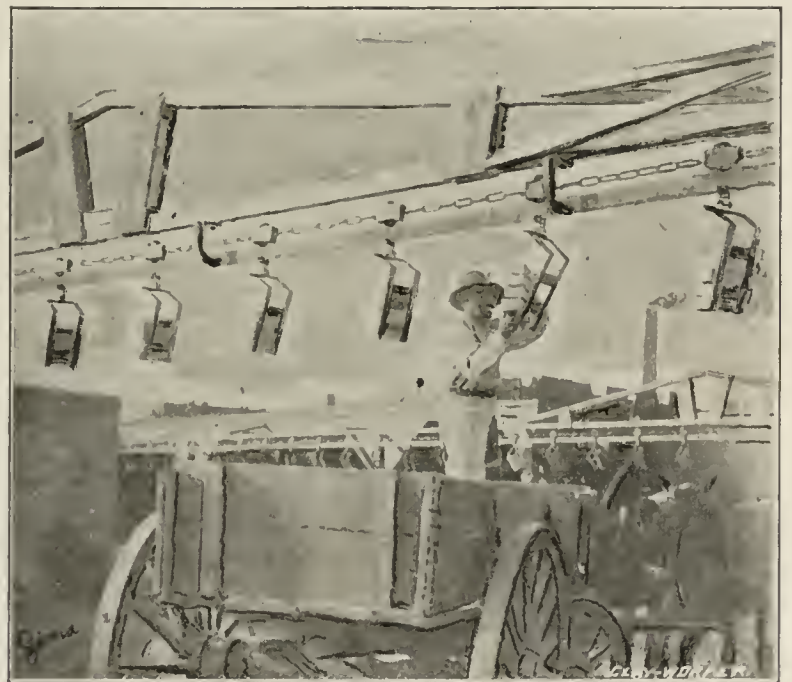
presses are employed. The power is supplied by a Murray Iron Works 350 horsepower engine. This is one of the finest and largest engines the company owns. Instead of a belt, a long drive wire rope cable is used; has been in use four years and has given much satisfaction. Automatic stokers are used on the six boilers. A 26-tunnel dryer, utilizing waste heat, dries the ware before it is placed in the kiln. A Fulton Iron Works engine furnishes the power for the two Sturtevant fans used in connection with the dryer.

Sixteen kilns of 95,000 capacity each, and burning a total of 5,000 tons of coal a day, are used. The novel feature of this large plant is the employment of many hundreds of feet of the Barney conveyor system of overhead tracks, which run in and out of the kilns to the stock piles or cars, carrying the finished product, which has been loaded inside the kilns, on to the carriers, which run about three feet apart. This is a great labor saving device, easily managed and repaired, and unloads the kilns in the shortest possible time. The Jeffrey Manufacturing Company installed this system.

Yard No. 3 is located to the south of Manchester Road, manufacturing gray stock brick and biscuit ware for the enameling plant. This has about the same outfit as yard No. 5, using a ten-mold press. There are eight kilns. The clay is taken from a large clay shed to two Williams crushers, which grind the clay, which is then elevated to Dunlap screens.

Yard No. 6 is located at Chippewa and Gravois streets. This yard makes only common brick, getting the yellow surface clay from a 120-acre field adjoining the plant. This clay runs from 6 to 12 feet in depth. It is gathered in clay loaders and revolving excavators, the clay first being plowed. It is then stored in large clay sheds, where it is watered. These clay sheds have a capacity of clay for 10,000,000 brick. A ten-mold hydraulic press is used, run by a 60 horsepower engine. The thirteen kilns used are up draft of 300,000 capacity.

Yard No. 4 is located on Grand avenue. The red clay from the pit at Aldemay is used here, eight carloads being brought in each day. The cars are left under the large clay shed until they have been unloaded by clay buggies. The tracks in the clay sheds hold sixteen cars. The raw material is dumped into roller crushers and elevated by cup elevators to the third floor, where it is screened and then drops down to the hopper, thence to the two hydraulic presses, one ten-mold and the other five. The brick are put on pallets and placed on Amer-



Taking Brick from Kiln to Wagon by Barney Conveyor.

ican Clay Machinery cars, which are shoved into a 9-tunnel, 18-track dryer. Waste heat from the cooling kilns is employed, using American Blower Company fans. The brick are taken from the dryer to the kilns. There are fourteen kilns in all, eight down draft and six up draft. A good stock brick and ordinary building brick are made, burning in six days. There is a large stock shed of a capacity of nearly two million brick. This plant is lighted by electricity, the power being furnished by two 75 horsepower Corliss engines. From 150 to 175 men are employed here. Several times recently they have run night and day. The company owns land covering three squares near this plant.

Union Press Brick Works.

One of the busiest and best arranged of the hydraulic plants is the Union Press Brick Works. This yard is run exclusively on common building brick and red press brick. It has an annual capacity of 40,000,000 common brick and about 2,000,000 red pressed brick.

They get their raw material, which is a uniform yellow surface clay, from an adjoining 125 acre field. The bed of clay averages about 15 feet in depth, underlying two feet of soil. After removing the soil, the clay is plowed and then

gathered by a clay loading machine and taken to the large storage shed, which has a capacity sufficient for the manufacture of twenty-five millions of brick. Here the clay is allowed to stand until needed. From the clay shed the material is conveyed to the roll crusher of the Hydraulic Company's own make. The clay then goes through the usual method of screening, Dunlap screens being used, and is finally fed into hydraulic presses. Five presses are employed, one large 10-mold hydraulic press for common brick, one 5-mold hydraulic press for the press brick, and three Sword machines used in the stiff mud process. They make 10,000,000 brick annually on these Sword presses, and 30,000,000 on the two others.

The stiff mud brick are dried in the open air, no racks nor pallets are used, the brick being simply placed on the ground. This is the only yard in St. Louis using this method. The brick are burned in 18 up draft "Toledo type" kilns, wood and coal being used as fuel in the burning. They employ on this yard alone 425 men and use 125 horses and mules, which are housed in large well ventilated stables. The brick from this yard are all used in the city.

It has for many years been in charge of J. M. Williams, who in times gone by was a conspicuous figure in many of

head center of pressed brick information in America. Here THE CLAY-WORKER scribe has always found a cordial welcome, and so it will be convention week, or any other time, with visitors who are identified with the brick industry. The offices are located in the Missouri Trust Building, a view of which is shown on our first reading page, and is itself a remarkable example of modern brick and terra cotta work.

Crossing a small stream to the west of the Hydraulic Paving Brick Plant, we look upon enormous piles of sewer pipe and fire brick, which cover the land around the large buildings and kilns of the

Evens and Howard Fire Brick Company's Plant.

This is one of the oldest, most prominent and largest manufacturers of fire clay products in St. Louis. They have been operating for over fifty years and are doing an enormous business, shipping to all parts of America. They make high grade fire brick and a fine line of sewer pipe, wall coping, drain tile and fireproofing.

The present site covers 12 acres of level land. The clay in the mines at their plant is not being used. They are shipping the raw material in from Glencoe, some thirty miles out of St. Louis, which is better adapted for their work. They



General View of Factory of Evens & Howard, St. Louis.

the National conventions; that is, in the lobby talks. Like many another successful brickmaker, he could never be got into the "lime light" on the convention floor, but he was always ready to swap experiences in a quiet corner between sessions. The present officers of this company are H. W. Eliot, president; F. G. Middlekauff, vice-president, and Ralph Simpkins, secretary and treasurer. The latter is an indefatigable worker, and the local association has very wisely made him Chairman of the Finance Committee. He and his associates, F. H. Chapin and C. M. Fitzhugh, who are the active representatives of the Hydraulic Company in arranging for the entertainment of visitors convention week, will prove themselves adepts in the art of extending the glad hand.

The Hydraulic-Press Brick Company's Main Office.

The officers of the parent company, H. W. Eliot, president; F. G. Middlekauff, vice-president and general manager, and George F. Baker, secretary and treasurer, are deeply interested in the success of the national convention, but are leaving the detail work in that connection to their younger associates. The general offices of this great company, which now has a total capitalization of ten million dollars, are the

are now erecting a plant at Glencoe which will be a much larger one than the present. It is not the company's idea to abandon the old site.

The firm markets a large percentage of its ware outside of St. Louis, so that the new plant will not be at a disadvantage by being outside of the city, as the railroad facilities will be just as good at their new site. The saving in the freightage of their clay into the city will be a big item, and the yearly output will be much increased. All the clay is mined and allowed to weather at least six months. A large force of men are employed at the mine and every convenience as regards to machinery and shipping facilities are in use. The clay is taken to the plant and stored in large bins, from which it is hauled to the pans. The plant consists of two large factories. The one in which the office is located is a mammoth affair of three large buildings, the second story of each being connected with bridges. These buildings have a combined frontage of over five hundred feet and all are four stories high. It is at this factory that the sewer pipe is manufactured. Every nook and corner on the large drying floors are generally filled as fast as the pipe are removed.

Pipes of all sizes and shapes are seen here drying, waiting their turn in the kiln.

The clay from the storage bins is dumped into two 9-foot dry pans and elevated to the fourth floor, where it is screened by Dunlap screens, which have a screening capacity of 150 tons daily. The screened clay drops down a chute, which delivers the ground and screened clay to four large wet pans, from which the clay is taken by means of belt elevators to the pipe presses, which are located on the second, third and fourth floors. The large pipes are made on the second floor, due to their excessive weight and the difficulty in handling. The smallest pipe are made on the top floor. Sewer pipe of every description, from 3 to 36-inch size, wall coping, drain tile and fireproofing are made on these presses. Nearly 150 tons of clay are used each day in the manufacture of these wares alone. The fourth floor is utilized mostly for the manufacture of

skidded easily into the kilns from the second floor. There are twenty-three large pipe kilns, ranging from 25 to 40 feet in diameter, all of these being used constantly.

The company employs a large Corliss engine of 250 horsepower to run the heavy machinery, while a small engine is employed to run the many machines in the machine shop, which is at the rear of the office. To the rear of the twenty-three large pipe kilns is to be seen factory No. 2, where high grade fire brick are manufactured. The main building of this factory is over 200 feet long and 150 feet wide, being four stories high. Here they employ four 9-foot wet pans, grinding fire clay obtained at the Glencoe mine, and stand under large sheds near the plant. From the four dry pans the clay is elevated to the fourth floor, screened on Dunlap screens and dropped to the third floor into large bins, from which it is taken when needed. The wet pans are used for grinding ma-



Glimpse of Factory of Mitchell Clay Mfg. Co.



Clay in Storage Shed of the Mitchell Clay Mfg. Co.



One of the Mitchell Kilns.



Hand Gang Molding Fire Brick.

special shapes and as a finishing department. Hundreds of feet of steam pipe are used on the different drying floors and a number of elevators are employed for taking the pipe to the second floor, from which they are skidded into the kilns. A large power pipe turner is used for the larger pipes, similar to that previously mentioned.

After the large pipe are finished off, they are set in the kilns by means of a derrick inside the kiln, operated by a Westinghouse compressed air pump, this being used both for setting and drawing. The kilns are in a line parallel to these mammoth buildings and in close proximity, so that the tile can be

terial to be used for making fireproofing. The clay for the stiff mud fire brick goes from the bin filled with clay from the dry pans into a chute, emptying into a mixer, dampened and then run into a large capacity brick machine on the first floor. At this plant there is a large dryer where exhaust steam is utilized, the brick being dried in about forty hours. A large crusher is used for crushing up burned brick for grog.

The engine at this plant is of the same construction as at factory No. 1, only larger. Six boilers are used. The pug mill, pulverizer, mixer and brick machine and cutting table are all of the American Clay Machine Company make. Frey-

Sheckler pans are used, while the fans for waste heat suction are the Sturtevant.

The ware is burned in fourteen down draft kilns. Several small hand presses are used for special fire clay ware.

The Evens & Howard Fire Brick Company was organized in 1857 by J. C. Evens and R. J. Howard. The present officers are Mr. Cecil D. Gregg, president; Mr. Andrew Sproule, vice-president; Mr. George W. Jones, secretary; Mr. Allen P. Green, general manager. The down-town offices of this company are elegantly furnished, having recently been remodeled and finely fitted with stained oak finishings and mahogany furniture.

A short distance from the Evens & Howard plant, on the opposite side of Manchester Road, are three busy clay plants known as the Mitchell Clay Manufacturing Company, the

ened, pugged and dropped into another horizontal pug mill. The clay is then stored in bins on the first floor. They sell a great deal of this clay to different firms. The clay is taken from the storage bins and distributed to different parts of the plant. On the second floor locomotive tiles are made by hand modeling. From 600 to 800 tiles are made a day, according to size. Here, also, is a small brick machine near the pug mill. This has no belt conveyor, the clay being put in by hand. This machine cuts three brick at a time, making 12,000 daily. On the first floor fire brick are made by hand, one-mold dies being used. They have large dry floors, heated with steam pipes. The power is furnished by a 150 horsepower St. Louis Corliss engine and two O'Brien boilers. The ware is burnt in five round down draft kilns. The company do their own repairing in a good machine shop at the plant. The Mitchell



Scenes In and About the Factory of the Winkle Terra Cotta Co., St. Louis.

Winkle Terra Cotta Company, and the St. Louis Terra Cotta Company. We will visit them in the order of their location.

Mitchell Clay Manufacturing Company.

This plant makes fire brick and quite a number of strictly fireproof products. The clay at this yard has been exhausted and they are now getting their fire clay and flint clay a mile and a half west of the plant. Here they go into a drift, 30 feet of clay, about 40 feet from the surface, having in all about five acres. They own 30 acres of clay land a quarter of a mile away, to which they are going to build an incline and bring their clay in by gravity. They have a large storage shed, from which the clay is taken to an American Clay Machinery Company dry pan and then elevated to the third floor to the two revolving screens, which screen on the average of 120 tons of clay daily. The clay falls to the bins below and is carried by belt conveyors to the pug mill, where it is damp-

ened, pugged and dropped into another horizontal pug mill. The clay is then stored in bins on the first floor. They sell a great deal of this clay to different firms. The clay is taken from the storage bins and distributed to different parts of the plant. On the second floor locomotive tiles are made by hand modeling. From 600 to 800 tiles are made a day, according to size. Here, also, is a small brick machine near the pug mill. This has no belt conveyor, the clay being put in by hand. This machine cuts three brick at a time, making 12,000 daily. On the first floor fire brick are made by hand, one-mold dies being used. They have large dry floors, heated with steam pipes. The power is furnished by a 150 horsepower St. Louis Corliss engine and two O'Brien boilers. The ware is burnt in five round down draft kilns. The company do their own repairing in a good machine shop at the plant. The Mitchell

The Winkle Terra Cotta Company.

This plant has long been identified with the clayworking world and has gained an enviable reputation for its excellent products and the part it has played in the building up of the reputation of terra cotta in this section of the country. It is one of the pioneer plants of St. Louis, having been established in 1882 by Joseph Winkle, who has been its president through all these twenty-four years of its existence. He is the founder of this plant, coming over from the old country in 1859, where he had received a thorough practical and technical training as a potter. His eldest son, Mr. Andrew Winkle, is vice-presi-

dent, while John G. Hewitt is secretary and treasurer. Their down-town office is located in the Century Building.

The company suffered quite a loss by fire in June, 1905, at their factory, the origin of which was never known. A large force of men was immediately set to work on the reconstruction of the plant. The orders on hand were filled by means of an improvised plant, sheds and tents being used for protection from the weather. The fire occurring as it did in June enabled them to work without much difficulty, so that by the winter months they were able to move into much larger buildings than the old ones. The company quickly recovered from the loss and the increase of capacity and betterment of facilities greatly aided them in their work during 1906.

The main building of the factory is 247x71 feet, being a four-story brick structure. It is in this part of the plant that the raw material is prepared for its employment in the pressing shops. A second four-story building, in which the machine and boiler rooms are located, covers about 4,000 square



Missouri Trust Building—Terra Cotta by the Winkle Co.

feet of ground. Two three-story structures are built next to these buildings, being used as the pressing and drying stock departments. In a two-story brick structure, 42x61 feet, are located the clay rooms and work shop, while a second two-story building contains the office, drafting and accounting rooms.

They manufacture various lines of ware, including wall coping, chimney tops, flue lining, kiln and cupola lining, boiler tile, etc. Their principal product is, of course, the architectural terra cotta, which they make in all colors. The buildings are all connected, so that any special manufacture can be carried on at all points in the molding or pressing rooms.

A large 150 horsepower Corliss engine, with four large boilers, supply the power for heavy grinding and clayworking machinery, while a small 50 horsepower Brownell engine runs the dynamo and motor, which furnishes the power for lighting

the plant and the re-pugging of the clay. The machinery in the fitting and mixing rooms and the hoisting elevator is all operated by electricity. The motor is a 20 horsepower, made by the Union Electric Company. Several very small engines are used for air pumps in the spraying department, small pug mill, 6-foot dry pan and lathe in engine room.

The bulk of the clay is mined at Glencoe, 20 miles from St. Louis. This clay is used for the principal body for light colors in terra cotta. They have a 60x60 foot clay shed to the rear of the main building, where the clay is unloaded as it is brought in from the mine. Besides a large section for the storage of this clay, they have twelve bins for other clays, such as Tennessee ball clay, Cheltenham shale clays and English china clays. They buy a great deal of clay from the St. Louis Vitri-fied Brick Company. The various clays are ground separately. From the dry pan they are elevated to the top of the building to 16-mesh screens of their own make and then dropped into hoppers. From the hoppers the clay runs into bins and thence into an 11-foot mixer through chutes. From the mixer the material goes through a vertical pug mill of St. Louis make, and then into an American Clay Machinery Company horizontal pug mill. Here the clay is cut out, put on cars and shipped to the clay cellars. It is then re-pugged and taken on elevators and distributed to the different parts of the shops. The second floor of the buildings are used mostly for pressing rooms. Special drying rooms are on each of the four floors, exhaust steam by day and live steam at night, being used. On the fourth floor they have a modeling shop, where large work is done. Here also is located a large plaster room, where molds and special plaster work is done. A large drafting room is on the third floor, where eight to ten draftsmen are constantly at work. A large spraying room is in the center of the second floor.

Seventeen round triple draft muffle kilns, ranging from 14 to 19 feet in diameter, are employed; the setting of the kilns is done by slipping the dried ware down an incline from the second floor. The company employs in the neighborhood of 300 men.

An interesting part of this plant is the mixing room, where the glazes are prepared. Here they grind their various glaze materials and mixtures in a set of small ball mills and burr mills. Mixing tanks and storage tanks are in evidence. A complete chemical and physical testing outfit is in use in the laboratory where all the material which comes into the plant is first tested before being used. A great deal of experimental work is carried on here.

The company has a number of storage sheds and a large stable, using about 20 teams. They own five acres of land at the factory and about 160 acres of clay outside the city. A visit to this plant will be much enjoyed by the visiting clay-workers.

The St. Louis Terra Cotta Company.

This plant is a next door neighbor to the Winkle plant and makes almost the same line of wares, turning out some excellent products. Their down-town office is at 523 Security Building. The factory was built in 1894 and covers almost an acre of ground. The officers of the company are: Mr. D. N. Burruss, president; Mr. R. F. Grady, first vice-president; Mr. R. J. MacDonald, second vice-president; Mr. E. E. Wall, secretary, and Mr. H. D. Grady, treasurer.

They buy their clays and store them in clay sheds near the plant. The raw material is ground in a Bonnot dry pan and elevated to the third floor, where it is screened by inclined screens and carried to bins by wooden chutes. The clays are, of course, ground separately, batched and carried to the third floor to a horizontal Bonnot pug mill, where it is wet and run through a vertical pug mill, also made by Bonnot. The clay is then taken and distributed to various parts of the

plant, which consists of four large buildings. Three of the buildings are three stories in height, while the other one varies in height in different parts, from one to four stories. The enameling department is in this last building, as is also the clay grinding, plaster and modeling rooms. A large drafting room adjoins the office, while the molds are made in a building to the east. All the pressing is done on the third floors of these buildings, which are built together. The manufacture of columns and molded ware is confined to the second floor, while most of the large architectural and ornamental terra cotta is made on the first, where they also have their fitting rooms. There are large dry pans on all the floors, heated with live and exhaust steam, by means of enormous lines of pipes.

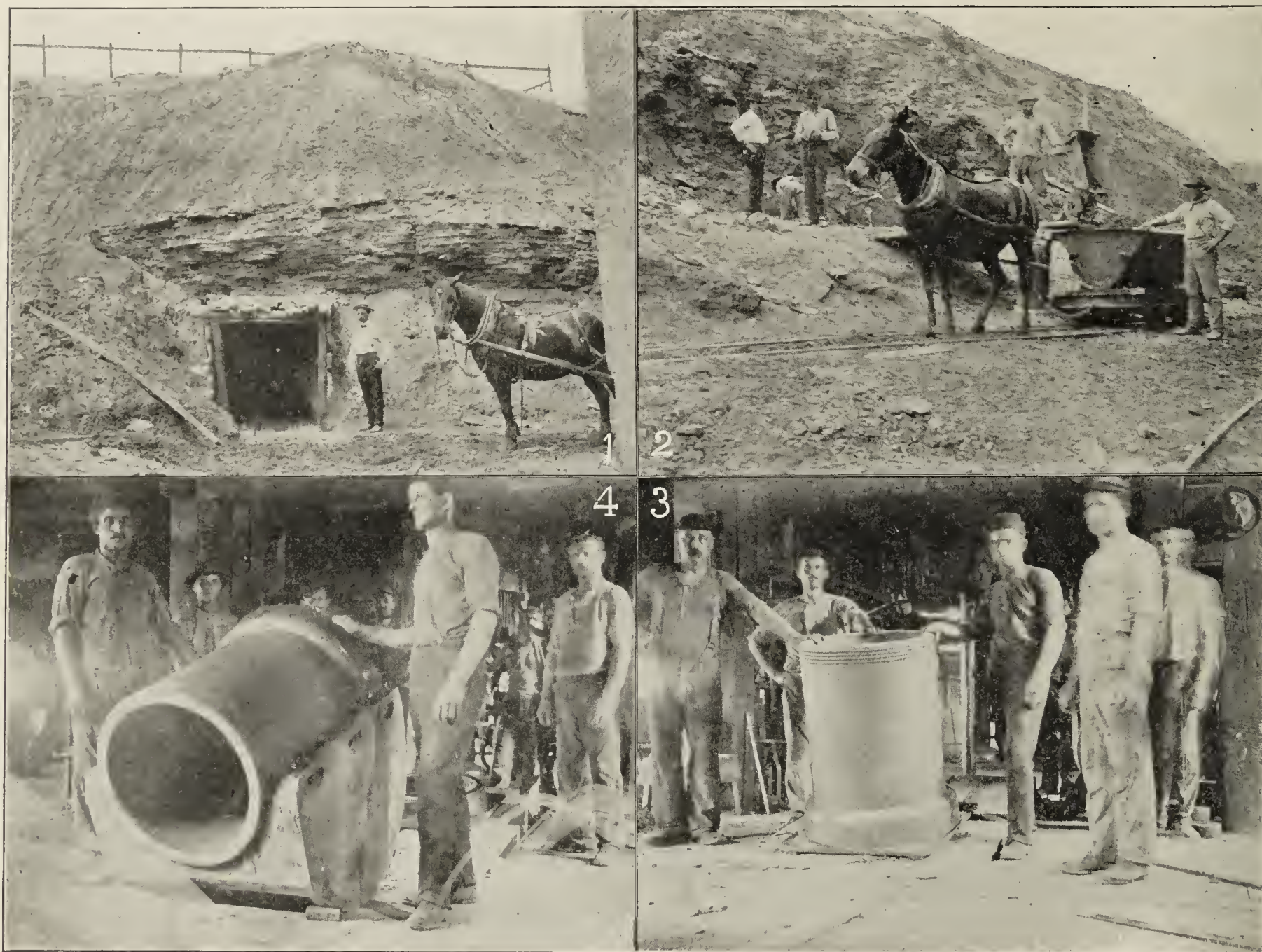
made by the Standard Foundry Company is used for crushing up old pipe and terra cotta for grog.

Only a short distance from these three interesting plants, on the other side of Manchester Road, is the extensive factory of the

Laclede Fire Brick Company.

One has but to look at their imposing office building to become interested in this plant, which is the oldest clayworking concern in St. Louis. Established as it was in 1844, and incorporated in 1869, always manufacturing a high grade of ware, it has grown into one of the foremost fire clay manufacturers in the country today.

In its early days it made only fire brick and tile by hand. It was then located outside of the city limits in a section



At the Plant of the Laclede Fire Brick Co.—1. At the Entrance to Clay Mine. 2. Face of Surface Clay Bank. 3 and 4, Method of Handling Sewer Pipe.

The dried ware is burned in five 18-foot kilns. There are also a small kiln for the testing of colors and two sample kilns. From the kilns the ware is taken to the fitting room and there either shipped or stored in a large stock shed. They manufacture many different architectural and ornamental groups of terra cotta, terminal or building cornices, and in fact everything in the terra cotta line. The glazes consist of many beautiful colors, the creams, blue, buff and mottled grays being the favored ones. Their semi-glaze ware is harder than stone. Their imitations of rough scratched stone is of an excellent quality. At present they are busily engaged on a large order for the Cincinnati water works building and an Illinois job which includes a fine line of red terra cotta balustrade. The slips are all ground in a drag mill. A jaw crusher

known as Cheltenham. So rapidly did St. Louis grow that, though the site of the plant has never been changed, only for increased capacity and change due to modern methods and improvements, it is now located in the very heart of a large factory district. The company owns over 120 acres of rich land, on which their three large plants are running to their utmost capacity. Over 500 employees earn their daily bread in these large factories, making over 80,000 tons of fire brick, sewer pipe, fireproofing, gas retorts, paving brick, etc., annually.

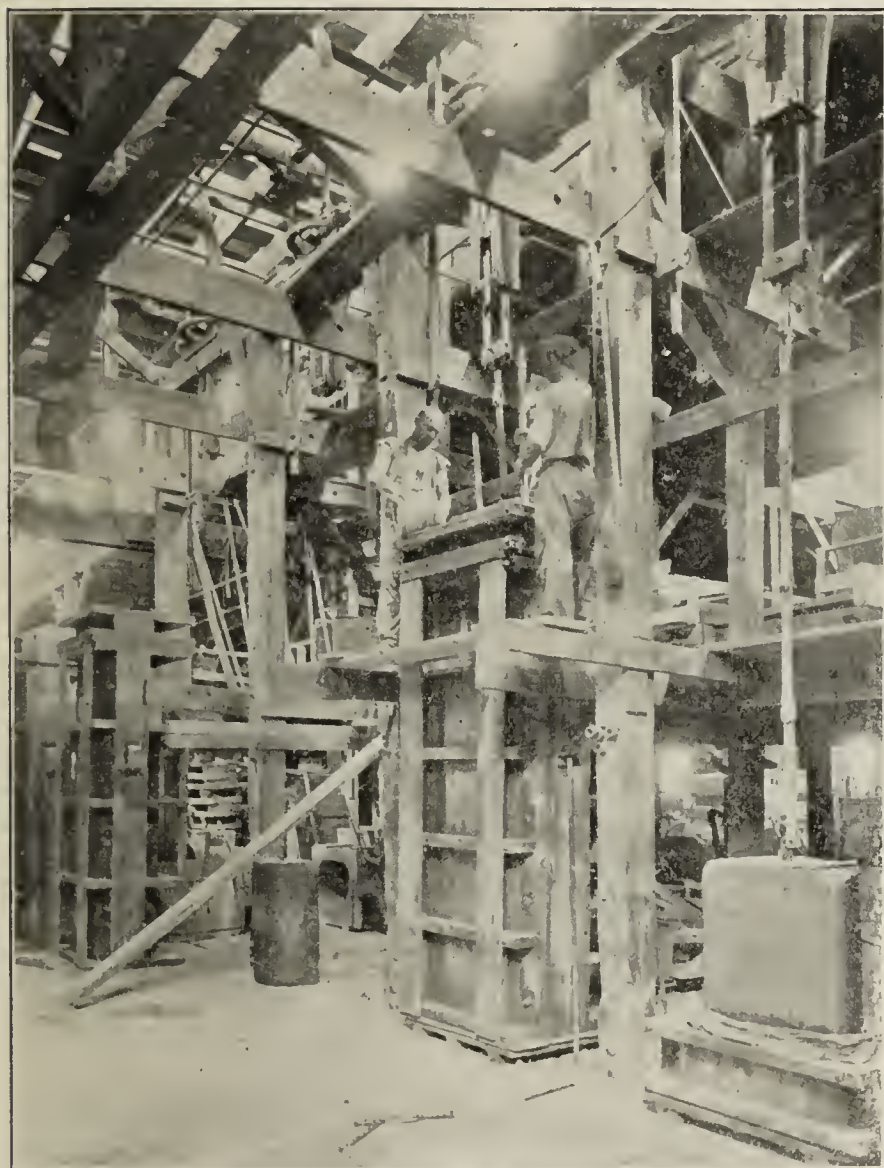
The office building is one of the most pretentious to be seen at any clayworking plant in the world. It is made entirely of beautiful clay products, being three stories, with an inviting veranda standing prominently out in a well-kept grassy lawn.

The office apartments are well lighted and ventilated. On the first floor are the private offices of the different executives and large accounting rooms, kitchens and dining rooms are found, while on the second floor are the drafting, engineering, directors and store rooms and a fine laboratory. In this laboratory Mr. Aubrey, a graduate of Prof. Orton's School of Ceramics, has done a great deal of experimental work and has greatly aided the company by his untiring efforts and technical knowledge in the field of ceramics. A good wholesome lunch is served to the office force at the noon hour in a cozy dining room. We know, for we partook thereof.

The officers of the company are: Mr. James Green, president; Mr. J. L. Green, vice-president and secretary; Mr. Chas. J. Parrott, treasurer; Mr. Chas. H. Leffingwell, sales manager; Mr. Fred Talbot, superintendent, and Mr. A. J. Aubrey, chemist.

The plant consists of three large factories, each doing its

10 to 15 feet of loam. Three feet of a ferruginous clay lies below this, overlaying a one foot vein of bastard fire clay. Below this is a 15-foot vein of shale, resting on a 2-foot vein of sand rock. Then appears the 6½-foot vein of fire clay. Here they mine in the open, running tracks to the different levels and hauling the clay across a small stream to the plant on a trestle which runs to the top of the building of factory No. 2. A dummy mine engine is employed to get the cars to the factory, the main line of tracks running back to the large clay mine, at the entrance of which enormous piles of weathering clay are to be seen. At the present time over 100,000 tons of clay are weathering near this mine, the taxes on which are surprisingly great. This mine is worked with a single entry system. The clay is brought to factory No. 1 in dump cars of the Atlas Car Co. make and is dumped down a chute to the



Molding a Gas Retort at the Laclede Plant.

important work on a large scale and employing all modern and up-to-date methods of manufacture.

Factory No. 1 manufactures tile, fire brick, retorts, fire-proofing, linings and refractory materials of all kinds. This is the largest and most important plant of the three. This is confined to a large three-story building, with immense drying floors, having a capacity of nearly 1,000,000 brick, with steam pipes running under the floors and through the rooms. Here they operate two 4-mold Boyd presses of 45,000 capacity each. The clay for this plant, as is the case of the other two, is mined on the premises to the rear of the plant proper. The only exception to this is the flint clay used for basic furnaces and bauxite for rotary kiln block, which is shipped in. All the straight fire clays are taken from the four large mines. They go down 100 feet, where they find a rich 6½-foot vein of fire clay. Their clay field to the rear of factory No. 2 is rich with different grades of raw material, having on the surface



Weathering Clay at the Laclede Plant.



Gas Retorts in the Dry Room, A. J. Aubrey and Fred Talbot in the Foreground.

storage piles in front of the pans. One wet pan grinding clay for the retorts, one wet pan for grinding the bauxite, one dry pan for clay and tile, and one for the raw material for brick, are used. From the dry pans the clay goes to inclined screens on the fourth floor and then down to the two Boyd dry presses or storage bins, ready for the wet pans and pug mills. The dry press brick are stacked nine high on the dry floor, the total capacity being nearly 800,000 brick. It takes nearly a week to dry the brick on this dry floor, which is constructed of paving brick and sewer pipe, underlaid with steam pipes. Refractory goods of all shapes and sizes, some weighing many hundred pounds, are made at this factory by hand on molds made at their large carpenter shop, which is located in this part of the plant. To the north of the carpenter shop is a large mold storage room, where thousands of dollars worth of wooden molds are kept.

The retort room is one of the features of this factory. This is located on the first floor and occupies considerable space. These retorts are nine to ten feet high and very difficult to handle, as they weigh over 2,500 pounds each. They make on an average of sixteen a day, making them in huge wooden molds, the clay being rammed in with heavy metallic rammers operated by machinery. The clay for this ware must be of a high grade refractory flint clay. It is calcined in a calcining kiln and then ground, screened and mixed with the mined clay at the plant and then taken to the pug mill, from which it is conveyed to the drying rooms, where it is left for a few days and then taken to the wet pans, and finally to the disintegrators. When the retort has been allowed to dry for several weeks, it is then taken to the kiln and burned for twelve days.

The company has recently been manufacturing bauxite rotary blocks, getting the bauxite from Arkansas. They are at present filling a \$1,700 order for a firm in Duluth. The flue lining, chimney pipe, drain tile, sewer pipe and fireproofing is made on the upper floors. An American Clay Machinery outfit is used for making hollow building block and stiff mud fire

sulphuric acid plants and a high grade of hand made fire brick and special salt glazed products.

On the first floor they manufacture the fire brick and tile. Here, also, the clay is stored, being brought in from the open worked mine, and the huge weathered fire clay piles. Dump cars take the raw material to the pans, three dry and three wet. The clay which is more difficult to grind goes through a Blake crusher and thence into the dry pans. It is then screened and stored in the bins and taken, when desired, to the wet pans and pug mills. A novel arrangement in the shape of a huge wooden shovel, fastened near the pan, is used for removing the clay from the pan at regular intervals. The sewer pipe and drain tile are made on the third floor, the same system being used as at No. 1, the drying floors being underlaid with steam pipes. The pipe press is the largest ever made, having a 6-foot steam cylinder, a 7-foot stroke and a mud cylinder 28 inches in diameter. On the second floor the chemical rings and various fireproofing materials are made and dried. Fifty chemical rings are made at a time on the press, a group of dies being used, the clay issuing from the press in a stream, each being cut into five rings. These



Plant of the Parker-Russell Mining and Manufacturing Company, St. Louis—Page 32.

brick, also several other fireproofing products. These are dried in a large 12-track dryer of about 120,000 capacity. Waste heat is employed here, the fans being operated by electric power from a smaller motor with a special engine and generator. The products made in factory No. 1 are burned in eighteen large kilns. During the writer's recent visit they were erecting a large 140-foot 12-tunnel dryer, which will be used exclusively for drying brick. When completed it will have a capacity of 130,000. The foundation for their dryer is made of concrete. One of the illustrations to this article shows the men at work on the foundation. This picture was taken in October. They have a large machine and blacksmith shop at this factory, in which they do all of their own repairing. They make all of their own dies, having two lathe planes and all necessary machinery. They make iron bands for their kilns and trim the rollers for the pans. It was here that their largest pans were made. The power for this mammoth factory is furnished by a large 500 horsepower Corliss engine. A small engine furnishes power for the machine shop, blacksmith shop and dynamo. The lighting for all three plants is furnished by an Edison Electric Light Company dynamo, run by a 500 horsepower engine.

Factory No. 2.—Here they manufacture sewer pipe, wall coping, drain tile, vitrified chemical rings, tile and brick for

chemical rings are not large, being 3x4 inches, and fluted on the inside. The dried products are burned in fifteen kilns, ranging from 26 to 30 feet. Three of these kilns have but recently been constructed. Coal is the only fuel used. The salt glazing is done the last day of the firing, three or four days being allowed to kiln for cooling off.

Factory No. 3.—This is the smallest factory of the three, being built in 1902. It is the most effectively laid out, having a well planned system for the handling of the clay from raw material to the finished products. The clay used at this factory is taken from the same mines as No. 2, and brought to the plant by the small locomotive. Here they employ two dry pans of their own make. The clay is ground, elevated to the fourth floor, screened and stored in bins on the third floor. On the second floor are two American Clay Machinery Company pug mills and on the second three Eagle represses, made by the same company, and two of their cutting tables, a Giant auger brick machine and a 4-mold Boyd dry press. From the brick machine and presses, the brick are taken on cars into a 30-track tunnel dryer, which is 90 feet long and has a capacity of 225,000 brick. New York Blower Company fans are used in the waste heat system employed on this dryer. The

fans are run by a 100 horsepower slide valve engine, the heat from the cooling kilns being drawn out from below through underground tunnels connected with the dryer. The dried ware is taken from the kilns on tracks and sent to the kilns on cars by the employment of turntables and tracks. The ware is burned in seven square down draft kilns. The power of the plant is furnished by a 250 horsepower Corliss engine. Illinois coal is used as fuel. The company owns its own stables, using some 50 odd teams for hauling. In the near future they expect to enlarge the plant by building another factory. Each factory has its foreman, who is under the instruction of the genial superintendent, Mr. Fred Talbot, who has been identified with the clay business for many years. The mascot of the Laclede Fire Brick Company is a comical looking, aged billy goat, who is seen about the plant, inspecting the different scrap piles. Bill has been retired from active service and is now enjoying the life of a pensioner.

The last plant we will visit on the fire clay belt in the city of St. Louis is known as the

Missouri Fire Brick Company.

This plant is located a short distance from the Laclede plant, on Knox and New Manchester avenues, between the Missouri Pacific and 'Frisco tracks. It was established in 1882, was destroyed by fire in 1889, but was immediately rebuilt. The buildings on the plant are made of brick, three stories high, excepting a large frame two-story structure, where the molding rooms are located, and several storage sheds, which are also frame, and have a capacity of 10,000 tons of clay. The raw material is brought from a mine con-



The Laclede Company's New Dryer in Course of Construction

sisting of 20 acres of rich clay land, one-quarter of a mile away from the plant. They tunneled into the hill to the 8-foot vein of rich fire clay. The clay is brought to the plant and allowed to weather in the sheds near the pans. The clay is then easily thrown into the two dry pans, made by the Eagle Iron Works. The clay is prepared in the usual manner, being ground, screened and sent to a Berg 4-mold dry press, or to the wet pans before being distributed to the different hand molding and retort departments, or to Raymond pug mill and No. 2 mud machine, automatic cutting table and 2-mold represses. The screening is done by three screens, one revolving, one shaking and one piano wire screen. The clay bin for ground clay has a capacity of 75 tons. Thirty tons of tile are made a day, 42,000 brick and eight retorts, keeping them constantly on the jump. The ware is burned in seven round and two square down draft kilns, holding from 60,000 to 120,000 brick. These are fired with lump coal. They have a 3-tunnel dryer, using direct heat, drying 22,000 brick daily. The retort room, which is the feature of this plant, is at the northeastern end of the plant, and has a floor capacity of 300 retorts, the floors being underlaid with heating flues. The

average yearly output of retorts is close to 24,000. Fire clay ware of all descriptions is made, the high grade of fire brick being made by hand. The gas retort is their important manufacture. They make furnace linings, locomotive tiles, water gas cupola linings, and many high grade refractory goods. They ship to all parts of the United States and Canada and the location of the plant gives it fine shipping facilities.

Mr. John Dell is president and general manager; Mr. Geo. R. Blackford, secretary and treasurer, and Mr. G. E. Thomas, superintendent.

Nearby is the soft mud plant of the Brocksmidt yard. This yard makes common brick, using three scove kilns.

College Hill Pressed Brick Works.

This plant is located in the northern part of St. Louis, easily reached by the Broadway car. It has been operating eighteen years, manufacturing common red brick and a few ornamental shapes. The clay is taken from the clay field, located near the plant, being yellow surface clay, easily worked. The raw material is almost exhausted here, but when this is all used up, a 250x250 foot field, a couple of blocks away, will be drawn on for raw material. It runs six feet of strong clay,



A Small Section of the Stock Pile of Sewer Pipe.

overlaying a 6-foot bed of sandy clay and ten feet of red clay. They mix all of the clay, making a good product. The clay is carted into the clay house and elevated in cup elevators to a conveying belt, which takes the raw material to a crusher. It is then taken up an elevator to a hopper and then down into a Triumph brick machine and three 5-mold Kulage presses. The crushers are the Cyclone and Steadman. The brick are burned in six scove kilns, three 10-arch, two 12-arch and one 15-arch. The brick are set forty courses high. The average daily output is 40,000 brick. The storage sheds are large enough to hold clay sufficient to fill forty kilns. The president is Mr. F. J. Remmers; secretary and treasurer, Herman Bromschwig, and manager and superintendent, Mr. J. J. Nieters.

The Mississippi Glass Company's Factory

Is perhaps the most attractive establishment to members of the American Ceramic Society in the St. Louis district. The company has two immense plants, the glass works, located at Port Allegheny, Pa., and the clay works at Douglas street and Wabash railroad, St. Louis. The principal product at the latter is tank house blocks and glass house pots. They also have a brick plant at Vandalia, Mo., where fire brick are made by the stiff plastic process. The main offices of the company are at Main and Angelica streets, St. Louis, where the general secretary, Robert A. B. Walsh, and the manager of the fire clay department, Charles W. Parker, are usually to be found, and either one will be pleased to extend the

"glad hand" to members of the N. M. B. A. or the A. C. S. at all times.

OUT-OF-TOWN PLANTS.

There are a number of large and interesting brick plants in the vicinity of the convention city which may be classed as St. Louis enterprises, and which are well worth visiting. For instance, there is the St. Louis Clay Burning Company's plant at Clayburn, some twenty miles out, on the St. L. & K. C. railroad, a well-equipped paving brick plant, and but a short distance from that is a similar factory, that of the St. Louis Vitriifying and Fire Brick Company.

Then there are the extensive plants on the east side of the river, at East St. Louis, Belleville, Edwardsville, Newbern and Alton. At the latter point is the paving brick fac-

machine house in dump cars by cable, and up an incline. The shale is passed through two 9-foot dry pans, the clay for the pressed brick is passed through a rotary dryer and is then ground in a Fernholtz pulverizer, thence into a 6-mold Fernholtz dry press. The paving brick are made on a special Giant machine from the factory of the American Clay Machinery Company, Bucyrus, Ohio. The dry press brick go direct to the kiln, the pavers go to a direct heat dryer, being handled on cars in the usual way. Two years ago they erected a gas fired-continuous kiln of the Youngren patent, which is here illustrated. Like all new things, they had some trouble with it the first season, but during the past year it has been operated continuously with gratifying results, the saving in labor as well as in coal bills being no small item.

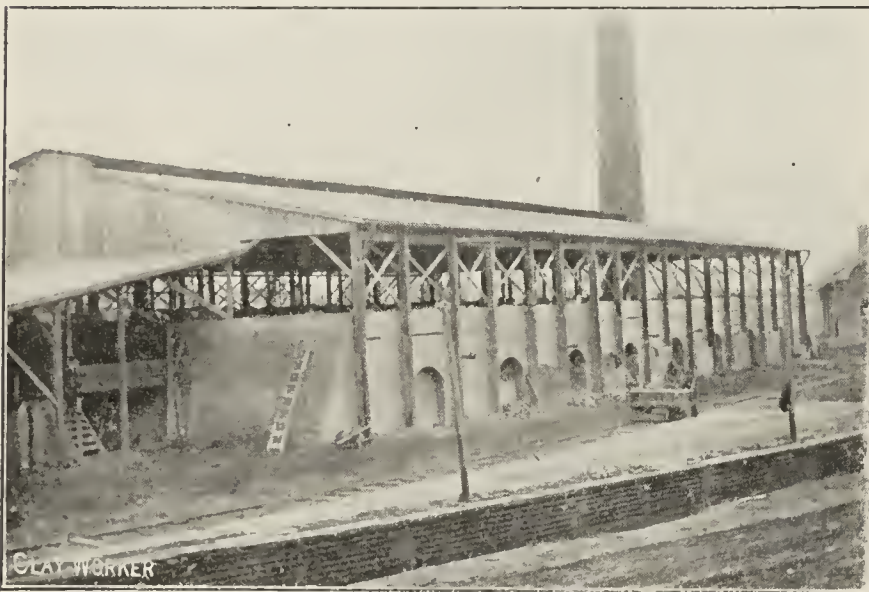
The press brick are burned in Eudaly kilns, to which have been attached Grath coking furnaces. The brick are



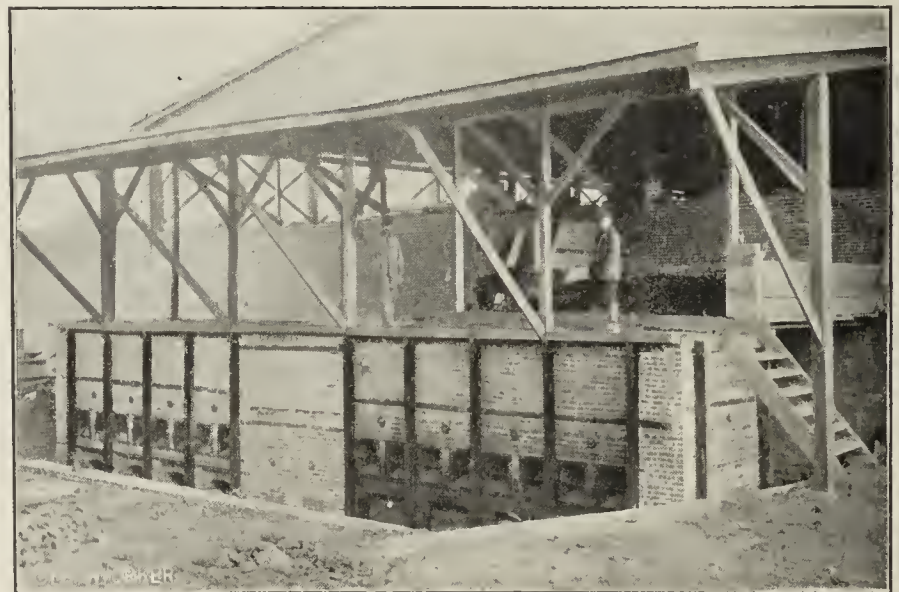
Edward and Eben Rodgers in Their Factory Office.



Clay Bank of the Alton Building, Paving and Fire Brick Co.



The Youngren Continuous Gas-Fired Kiln.



Gas Producer at the End of the Youngren Kiln.

tory of the Alton Building, Paving and Fire Brick Company, owned and operated by Messrs. Rodgers, father and son. This plant will appeal to a large number of the delegates, for it is here that will be found the Youngren Continuous Gas-Fired Kiln, erected some two years ago, and operated almost continuously ever since. The works may be reached easily by taking a train on the Alton railroad from the Union Station, St. Louis.

The Alton Building, Paving and Fire Brick Company's Plant.

The plant was established in 1892, and at present time has an annual capacity of 20,000,000 paving brick. The company owns 120 acres of land rich in clays, which range in depth from 30 to 80 feet. Two steam shovels are used at the bank, a Thew shovel for handling the surface clays and a Marion shovel in the shale bank. The clay is taken to the

water-smoked slowly, about four days being required, the burn being finished in another ten days, as a rule, mine run coal being used, which they get at about \$1.50 per ton. The entire output of the plant is marketed by rail. Mr. Eben Rodgers has had the management of the plant for some years past. As he is one of the faithful attendants at all N. B. M. A. conventions, the members will need no introduction, and will be welcome at all times, either singly or in bunches.

Plant of the McNeil Pressed Brick Company.

This is strictly a pressed brick factory and is located at Newbern, 35 miles northeast of St. Louis, on the Chicago, St. Louis & Peoria railroad, in a section rich in clays, adapted to the making of high-grade red pressed brick. The present owners, Messrs. Gordon C. and Robert P. McNeil, came into possession of the property six years ago, since which time



The Ittner Brick Co.'s No. 1 Plant.

they have enlarged and improved it each season as the growth of the business demanded. They now have five large Grath down draft kilns, with a total yearly capacity of 12,000,000 face brick. The coming year they expect to build more kilns and increase their capacity to 15,000,000. They are now installing two new 4-mold Berg presses, a Jeffries pulverizer, screens, mixers, etc. During the past year, Messrs. McNeil have not only marketed the product of their own plant, but have also sold large quantities of Chicago common brick to St. Louis builders, and recently entered into a contract with the National Brick Company, of the Windy City, for a goodly portion of that company's next season's output. By using common Chicago brick for backing purposes and their own bricks for fronts, they are able to handle large contracts, and consequently are important factors in the local market. They have recently opened new offices on the fifth floor of the Victoria building, where visiting brickmakers will always be most cordially received. They will also extend the glad hand to any and all who care to visit their plant, in connection with which they operate a machine shop for repair work, etc. The plant will probably be in operation convention week, as it is usually run the year round.

Last, but perhaps first, in the minds of many of the members of the National Association who have known the proprietor, Anthony Ittner, for many years past, he being a charter member of the N. B. M. A., is the extensive building brick plant of the

Ittner Brick Company.

The Anthony Ittner Brick Company is one of the oldest of St. Louis' brick manufacturing firms, its president, Mr. Anthony Ittner, after having been engaged in the manufacture of mud brick for a number of years, being the second to adopt the dry press process of making brick in this locality. During his fifty years connection with the brick industry, Mr. Ittner has gained a world-wide reputation as a brick manufacturer. He is one of the most enthusiastic members of the N. B. M. A., is one of its ex-presidents and aside from this has done a great and good work in the upbuilding of the brick industry in and about St. Louis. He now has associated with



Ittner's No. 2 Building Brick Plant.

him as members of the company three of his sons, Ben F. Ittner, who is vice-president; George W. Ittner, secretary, and Warren W. Ittner, superintendent of plants. Their offices are at 503 Odd Fellows building, where they will be at home to the visiting brothers during convention week.

The two large plants owned and operated by the company are located about two miles northwest of Belleville, Ill., on the main line of the Louisville & Nashville railway, each plant being connected with this road by switches. The plants are included in the Belleville railroad yard limits, which insures prompt movement of cars, and the Belleville Belt railway, connecting three trunk lines, with the excellent railway connections afforded in both St. Louis and East St. Louis, affords the company excellent shipping facilities. The plants have a combined capacity of 135,000 brick per day, or over 30,000,000 per year. The clay is the yellow surface clay of the St. Louis district, the bank averaging 25 feet in depth. As the company owns some 75 to 80 acres of this land, most of which has the usual 8-foot vein of Illinois coal beneath it, it will be readily seen that they have both clay and coal for many years to come if they should desire to mine the latter.

Both of the plants are located adjacent to the clay field and each has clay storage capacity commensurate with the capacity of the machines and kilns, the yard A sheds storing seven and one-half million and the yard B, six million. The clay fields are first stripped of eight inches or so of black soil, after which they are plowed to a depth of two inches, and after the clay has dried it is taken up and hauled a short distance to the storing sheds by means of an automatic clay gatherer. From the sheds it is taken on side dump cars to the pulverizing room, which is situated directly to the rear of the press room. The cars dump into granulators which serve to thoroughly mix the clay and also furnish a uniform feed to the roll crushers. The latter are of the conical roll type. After passing through the rolls the clay is elevated to the third floor, where it is discharged on to stationary inclined screens, dropping from these into mixers and thence through spouts to the press hoppers below.

The arrangement of both the plants is practically the same, the clay being gathered, pulverized and manufactured by the same machinery. "The press that Scott builds" is strongly in evidence, some of the presses having been in continual use for over twenty years. The large common brick plant, yard A, has eight up draft windguard kilns of 315,000



Clay Field of the Ittner Brick Co.



Gathering Clay at Ittner's Plant.

capacity each, which are at present being burned by the Boss method. This plant has a capacity of over twenty million brick per annum, and even at this the business the company has been doing has taxed it to the utmost. The yard B plant is, strictly speaking, the stock brick plant, since it has eight down draft kilns, holding 183,000 each, and one up draft kiln holding 315,000. The plant has a yearly capacity of twelve million brick, and during the past year has made something over this amount of red face brick, stock brick, brown and mottled and ornamental brick.

Immense stock sheds afford ample room for properly as-

sorting and storing the wares. The brick are set in the kilns direct from the presses and dried by a system of induced draft, the American Blower Company direct connected engines and exhausters being used in this connection. The power plants of both of the yards are compact and well arranged, the one at yard A consisting of two horizontal flue boilers of 150 horsepower each and a 125 horsepower heavy duty slide valve engine. At yard B the boilers are the same as at yard A, while the engine is a 100 horsepower Corliss. The yards are equipped with a complete machine shop, where all repairs are attended to by the company's own engineers.

Trade Schools
The Salvation
of The Nation.
The Hope of The
Employer and
The Employe.



Manual Training
Is To The
Workman, What
The University
Is To The . . .
Professions.

THE Winona Technical Institute is a system of trade Schools, which includes schools of iron molding, printing, tile setting, lithography, electricity, carpentry, pharmacy and library work, with a number of schools in other lines of trade in contemplation. The Tile Manufacturers' Credit Association is one of a number of national trade organizations which have seen the necessity for training young men in various industrial lines in trade schools, instead of in shops. The National Lithographers' Association gave \$15,000 for equipment of its school in the Indianapolis institution and also gives \$5,000 a year for scholarships. The National Founders' Association, with the iron trade suffering for want of molders, helped in the establishment of a school at the Technical Institute, by subscribing several thousand dollars for a new building, several thousand more for equipment, and \$3,000 per year for scholarships.

The School for Tile and Mantel Setting receives from the Tile Manufacturers' Credit Association \$2,000 for the scholarship fund. Before the school was opened the question of equipment was disposed of by each factory in the association sending a given quantity of equipment. The Technical Institute buildings and grounds were, until about three years ago,

occupied by the United States Government as an arsenal. The grounds include over 76 acres, near the heart of Indianapolis, and the government spent about \$600,000 in the buildings. When the government decided to abandon its arsenals, the people of Indianapolis, by public subscriptions, bought the property in their city and gave it for the use of trade schools.

The building occupied by the School of Tile Setting is one of the largest and most substantial in the group. It has an attractive setting, on an elevation that is surrounded by forest trees. The building is well lighted by many windows, and, while the government erected the structure for military use, it has readily been turned into a well arranged school house for young tile setters.

The authorities of Winona Technical Institute at Indianapolis and the Tile Manufacturers' Credit Association have combined their efforts in opening new opportunities to the manufacturers and dealers in tile and to young men who would become competent tile setters. The opportunity is in the School for Tile and Mantel Setting, the first of its kind to be established west of New York, and it is expected to go a long way toward helping manufacturers through the dealers



Pupils Laying Floor Tile at the School of Tile and Mantel Setting, Winona Technical Institute.

who have to deal with the question of how and where to obtain capable workmen.

The making of tile month by month becomes more and more a question of interest to clayworkers. The scarcity, or at least the high prices, of wood and other building materials, is causing attention to be turned to tile and, in the face of largely growing demand for this material both for building and decorative purposes, there comes a demand for workmen that is unprecedented, and that is probably the chief factor in the present day with which tile manufacturers and dealers have to do. In Chicago there are about 45 tile setters, and about 150 in New York, a very insufficient number to meet the requirements of the trade. It is said that 50 of this class of workmen could be used in Portland, Oregon. It is evident that all over the country there is urgent demand for tile setters and until this demand can be more adequately met the tile industry can hardly come into its own. From all quarters comes the call for well trained workmen from dealers, as well as makers, for the dealers find that customers who would spend their money for tile have not the time nor

The department of tile setting began operations in October with seven students, and the enrollment is steadily increasing. J. G. Drummond is the director of the department, and after two months of operation he sees his students doing what under the old apprenticeship method requires a beginner two and a half years to learn. Mr. Drummond applies to his students the same methods he had to learn when he was an apprentice. With his knowledge of the trade he can guide a student through difficulties which they will have to face when they take up tile setting as a means of livelihood. Instead of making helpers of the students, he puts them through a well defined course of instruction and fits them for foremanships, or for places requiring highest skill from a tile setter. He knows the needs of the factories and dealers for skilled setters. For five years he was an apprentice with the United States Encaustic Tile Company at Indianapolis, and later spent eight years with this company. Altogether he has had twenty-three years of experience. He served his apprenticeship under the English tile setters, who were imported by the United States Encaustic Tile Company in the hope that these



School of Tile and Mantel Setting, Winona Technical Institute, Indianapolis.

patience to wait, for perhaps weeks, for dealers to obtain workmen who are competent to set the tile.

The apprenticeship system, or the method of training tile setters which has long been followed in the industry in this country, has not developed workmen as rapidly as the demand for tile has grown. Factories might turn out any quantity of tile, but its sale would be more or less retarded until experienced workmen could dispose of it. Under the conditions which prevailed, when the question of opening a school for the training of young men was presented to the Tile Manufacturers' Credit Association, the idea was seized upon by the manufacturers as their only salvation. The association now has the satisfaction of seeing the school in operation, with about a dozen students from many states, and a committee from the association, which acts in an advisory capacity with the authorities of Winona Technical Institute, is composed of F. W. Walker, Beaver Falls, Pa.; Charles Cooper, Indianapolis, and B. O. Haugh, of Anderson.

imported workmen would spread the knowledge of tile setting among enough Americans to solve the question of workmen.

Under the methods of the School of Tile and Mantel Setting young men, who would ordinarily serve an apprenticeship of three years out on jobs with setters at \$1.50 a day, can in six months complete the schooling. He may then not only help the factories and dealers meet the demand for workmen, but will himself be competent to earn from \$3 to \$4 a day.

The inducements to young men to become students in the school, are the short time required to learn the trade and the comparatively easy method of disposing of the tuition question. In all of the schools of Winona Technical Institute, the same plan for disposing of scholarships is followed. While national industrial organizations have subscribed about \$16,000 for scholarships, scores of individuals have given generously. The purpose of the scholarships is to help young men who would otherwise be day laborers at meager pay become

skilled workmen in some line of industrial effort. If the young man who is ambitious to acquire a trade and get on in the world does not have the means to pay his tuition in one of the institute's trade schools, he may borrow the money from the scholarship fund. The money is lent to a student on his personal note. He has the use of it without paying interest. He does not begin repaying the loan until after he has learned his trade and gone from the Technical Institute to regular employment. Then he is placed on honor to repay the loan from the scholarship fund and has ten years in which to do it. As these loans are repaid, the money becomes available to other young men who aspire to learn a trade. A large number of young men in the various departments of the Technical Institute have availed themselves of the use of the scholarships. A scholarship amounts to \$100 and each one is perpetual, as the money is passed along from one student to another.

The school terms in the department of tile setting begin in October and May. The cost of taking the course of instruction is fifty dollars. Nine or ten dollars will pay for the overalls, aprons and special tools which are required, the other tools being supplied by the Technical Institute. The preparatory instruction which a student in tile setting receives begins with a study of the history and of the manufacture and uses of tile. It is followed by teaching the qualities, shapes, sizes and designing of tile with colors. Students also receive knowledge of the materials used in the work of a tile setter. Mechanical drawing is taught to the extent that a student may read a blue print and make a working drawing. The uses of the rule and working to different scales are included in the instruction, this information being imparted through the medium of daily lectures.

The students in the department of tile setting give most of their time and effort to practical shop work. It begins with floor work, when they are impressed with the importance of laying a good foundation and with having it true. They learn how to prepare a span that is to be tiled, also the floating of the cement, placing the tile and finishing.

In wall work instruction is given in applying metal lath, plumbing walls and scratch coating them, setting coves or base tile, floating cement, placing the tile, setting the cap and finishing.

In mantel work the students are taught the preparation of a floor for hearth space, laying the hearth, building brick arches, putting up the facing and lining a fireplace. The instruction also goes into slab work.

Besides the practical end of tile setting which a student is trained in, the instruction takes up the chemical side under the direction of J. H. Gertler, at the head of the School of Pharmacy. Four hours a week are given to this subject, when the properties and action of cement and other topics are taken up, the students doing work in well appointed chemical laboratories. An hour each week is given to the artistic phases of tile setting, in which the simple and fundamental principles used in tile construction are taught.

In addition to the text work and shop practice, a student in tile setting and mantel work is required to give five hours a week to mechanical drawing. While it is not the purpose of the school to give a detailed course in draughtsmanship, it is important that the student should be equipped with a working knowledge of the subject as it affects tile setting and designing. In the course of shop practice a sketch of some work is given a student and he is required to make a working drawing of it before proceeding with the work itself. This enables the student to become familiar with the different phases of the work as exemplified in the shops of the makers of tile.

Winona Technical Institute differs widely from any other system of trade schools in this country. It was not established

and is not operated with a view to making financial profits. Its efforts are along philanthropic lines to the end of helping deserving and worthy young men into the path of earning a living. Before all the students is placed the idea that honest labor not only glows with dignity but that it leads to right living, the development of character and imbues the worker with the spirit of good citizenship. The men of means who stand behind the Technical Institute have set their names and effort to work in the cause of young men. The institute is not heavily endowed with money, but its methods and practical work appeal to men with even limited means who would like to contribute to the active effort of helping young men who only need sufficient financial aid for them to gain a foothold in the world.

The president of the Technical Institute is Dr. S. C. Dickey, who for years was identified with the Presbyterian home mission work in Indiana, but who for the last twelve years has been giving his efforts to broader lines of work toward spreading the teachings of Christianity among the common people. The president of the board of directors is Hugh H. Hanna, also president of the Atlas Engine Works, Indianapolis. H. J. Heinz, a Pittsburg manufacturer; Alexander McDonald, president of the Standard Oil Company in Kentucky; John M. Studebaker, wagon manufacturer, of South Bend, are the vice-presidents. E. A. K. Hackett, owner of the Fort Wayne Sentinel, is secretary, and W. J. Richards, president of the Union National Bank, Indianapolis, is treasurer. The directors include lawyers, bankers, ministers and men from other walks of life, all of them identified with uplifting movements in their home cities of the whole country.

IMMENSE PLANT OF FISKE BRICK COMPANY DESTROYED BY FIRE.

On Friday, December 28, 1906, the large brick making plant at Dover Point, New Hampshire, operated by Fiske and Company, Inc., under the Fiske Brick Making System Patents, was entirely destroyed by fire, which was of incendiary origin and started when there was only one man at the plant. About 5:30 p. m., after the workmen had left the premises, robbers entered the office, attacked the bookkeeper and knocked him insensible, taking his watch, cash and other valuables on his person, as well as the valuables from the safe, and after locking him in an inner office, either purposely or accidentally set fire to the premises. When the bookkeeper regained consciousness, the fire was well under way and before he could summon help, had gained such headway that it was impossible to put it out.

The entire plant, with its main building 600 feet long, machinery house, boiler and engine room and office was reduced to ashes, and nothing remains of the splendid plant but a mass of junk. The loss was about \$200,000, and was only partially covered by insurance.

This was one of the most modern plants in the world, and was the only one in which bricks were handled in large masses by overhead traveling cranes throughout the entire process of manufacture, although another plant under Mr. Fiske's patents is now being erected at Salt Lake City, Utah, by the Salt Lake Pressed Brick Company.

Over 12,000,000 brick were manufactured at the Dover Point plant during eight working months of the year 1906, these brick having been handled from the brick machine to the dryer, and from the dryer to the kiln by one man. The operation of the plant had been successful in every way and the Fiske brick were in great demand during the whole of last year, as they were of a most excellent quality.

Plans are now being prepared for rebuilding the plant with a steel building thoroughly fireproof throughout, the yearly output of the plant to be 25,000,000 brick.

TYPES OF GERMAN RESIDENCES.



A Private Villa.



A Suburban Home.



A "Zoppot" Cottage.



A Street Scene in Zoppot.



A City Home.



Splendidly Equipped Engine and Boiler Room of the Zoppot Brick Co.

"BRICKMAKING IN GERMANY"—See Page 54.



A View of Zoppot, on the Baltic, Prussia.

Written for THE CLAY-WORKER.

BRICKMAKING IN GERMANY.

Interesting Details of the Methods of Manufacture that Prevail in Emperor William's Domain.



IN ACCORDANCE with the request of the Editor of THE CLAY-WORKER, I will describe as best I can some of the brick and tile plants of Germany. Just as we over here are interested in illustrations and descriptions of the brick and other clayworking plants of America, so I presume the readers of THE CLAY-WORKER will be interested in the clayworking plants of this country. The plant illustrated is not celebrated or perfect, but just an average plant such as is found all through Germany.

Zoppot is a beautiful bathing place on the Baltic, located some 250 miles northwest of Berlin, and is well known through Germany, Austria, Russia and Roumania. Formerly it was a small village whose inhabitants were simple fisher folk, but now it is a little town of 10,000 inhabitants, and this is increased during the summer months to 20,000 by the strangers who come for the bathing. During these months people are

here from all over the world, and many charming cottages have been built for the accommodation of the visitors. These cottages add very much to the attractiveness of the town.

As the town began to grow, came the demand for good building brick, and the Zoppot brick and tile plant, which originally was a small hand plant with one kiln, has been enlarged until it now has a capacity of over 8,000,000 brick a year. They make buff and red building brick, red pressed brick, various kinds of hollow brick, roofing tile and drain tile.

The clay is taken from the pits and stacked in the open air until ready to be transferred to the machine room, where it is taken in lifts mechanically driven. The clay from which the roofing tile, hollow brick and drain tile is made, is allowed to freeze during the winter months, and then when used is passed through a machine with heavy rollers; from this machine it is taken to a storage shed and during the summer months it is watered from time to time, as it needs, and must lie four to six days to absorb the dampness. From here the clay goes to a machine from which it comes out in cubes 21 inches in length which are stored in the clay cellar until wanted for the various wares. For the common brick the clay is taken direct from the clay pit to a pulverizer or crushing machine; from there the clay goes to the mixer, where water is added as needed, and from there to the brick machine. As



The Factory of the Zoppot Brick Company, Overlooking the Clay Pit.



THE HOFFMAN KILN AT THE ZOPPOT PLANT.

The Upper Views Show Ware Going in and Coming Out of Dryer. The Lower Views a Group of Ware and a Chamber in the Continuous Kiln.

the bar of clay comes from the machine it is cut in brick by a wire cutting machine. These machines, as will be seen by the sketch of plant, are arranged one above the other, the pulverizer first, then the mixer and finally the machine, and the brick are delivered from the machine onto little cars holding about 100 brick. The same arrangement is used for the soft clay, intended for hand molding, the prepared mass falling onto cars which take it to the laborers under the sheds.

The plant is equipped throughout with good machinery, including rollers or pulverizers, mixers, brick machine and presses, wire cutting machines, rope lifts and elevators, etc. It is also equipped with a little dynamo of 170 volts for furnishing light.

All of the clay, with the exception of that from which the roofing tile are made, is mixed with one-third sand, as it is too fat, and would crack badly if the sand were not used. The pressed and molded brick dry in the regular way in large sheds and buildings adjoining and over the kilns, being dried by the heat from the kilns. It takes two to four weeks for the pressed brick and six to twelve days for the molded brick. The roofing tile and pressed brick are dried in six to ten days in an artificial dryer warmed by exhaust steam. The hollow brick dry in from eighteen to thirty-six hours, in a patent dryer of Dr. Mullers, by which all dampness is driven out. The Mullers tunnel dryer is a long tunnel in which as many tracks can be placed as desired, and on which the loaded cars are run. As the cars of green brick are pushed in at one end of the tunnel, the cars of dried brick are pushed out at the other end by a mechanical device. The dryer is operated both by live and exhaust steam, a fan being used to exhaust the moisture laden air.

The ware is burned in two kilns, one a continuous Hoffman kiln, and the other a kiln invented by Jacob Buhrer, what is known as the "Zick Zack" kiln, so-called from the peculiar construction of the tunnel. All kinds of ware can be burned in these two kilns, and any kind of fuel can be used. In the old kiln it costs to burn with coal per thousand brick, 1.96 marks, and 1.74 in the "Zick Zack" kiln. (A mark is the equivalent 25c.) The plant has a capacity of 60,000 brick per day of ten hours. At present time, ordinary brick sell for 27.00 marks, best red pressed brick for 50.00 marks, roofing tile for 75.00 marks, hollow brick, single form, 27.50 marks, double form, 66.00 marks.

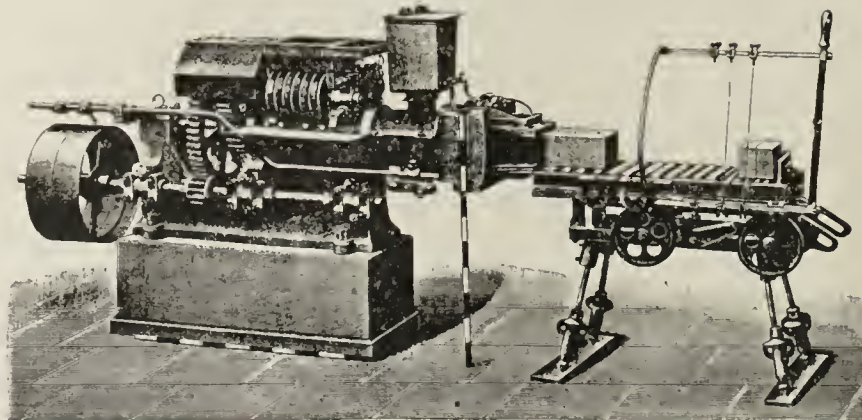
In addition to the illustrations of the plant, we also send some photographs of buildings constructed of Zoppot brick, and also a picture showing some of the different products of the factory.

G. PASCHKE.

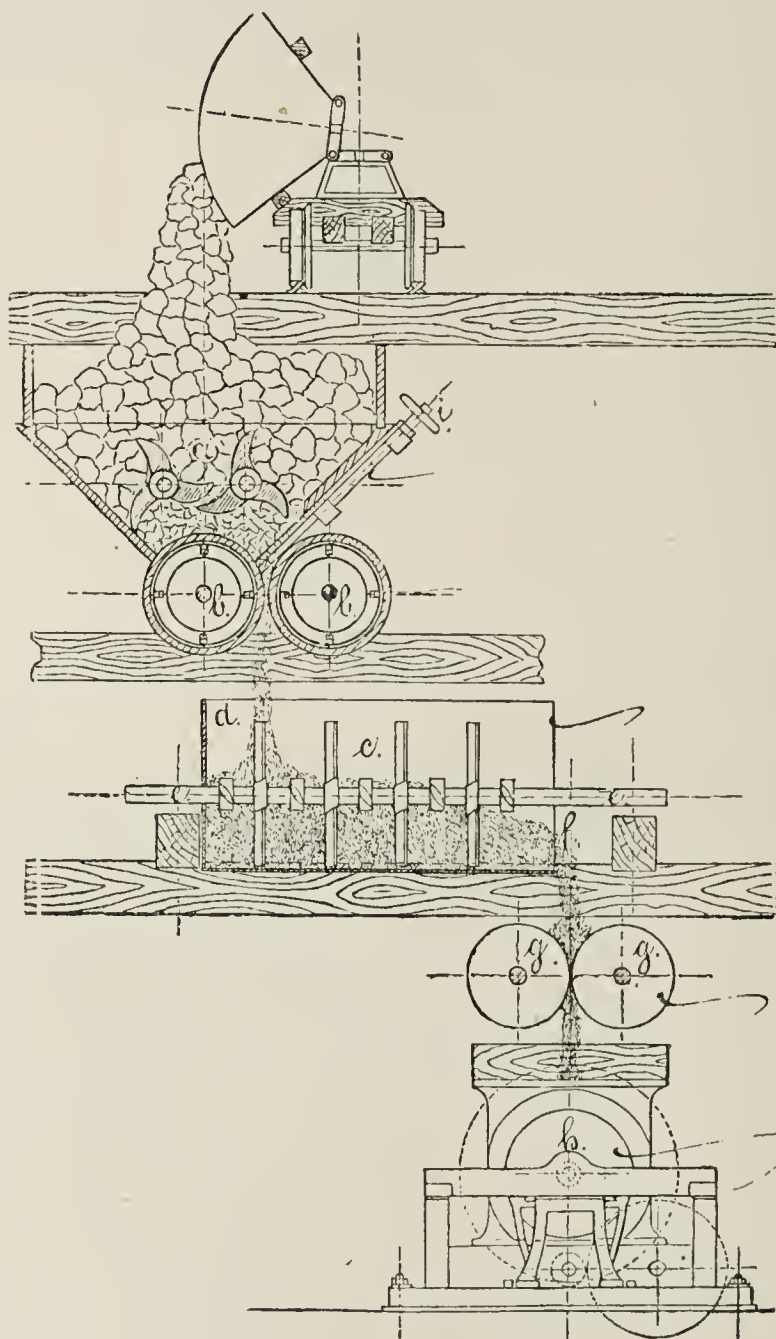
THE CHMELEWSKE PATENT KILN.

One of the latest inventions along the continuous kiln line is that now being put on the American market by Paul Chmelewski, a citizen of the city of Helsingfors, Finland. The invention has many good points, as seen on paper, and may be of value to the clayworkers in this country. This kiln is claimed to reduce greatly the cost of burning and to aid materially in the manufacture of high grade, uniform ware. It is simple in construction, durable, cheap, easy to operate or care for, and claimed to be capable of producing clean, well burned and more perfect goods in quality, greatly exceeding the production of the common continuous kilns now in use, during an equal period of time. The walls of the kiln can be increased in height so that the capacity of the burning chamber will be larger. This continuous kiln is oval in shape, having a continuous endless burning chamber, which can temporarily be divided into separate compartments, while the kiln is in operation. The brick or other materials to be burned are introduced into the compartments through openings which are placed near the bottom of the outer wall. Between the open-

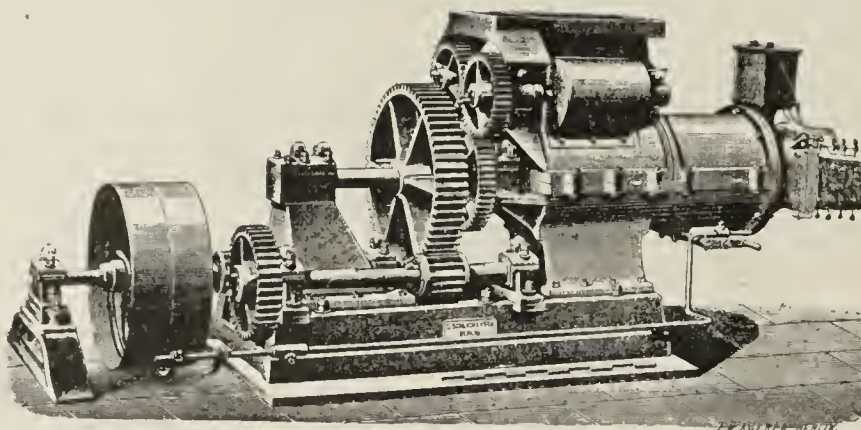
GERMAN BRICK MACHINERY.



A Small Capacity Brick Machine.

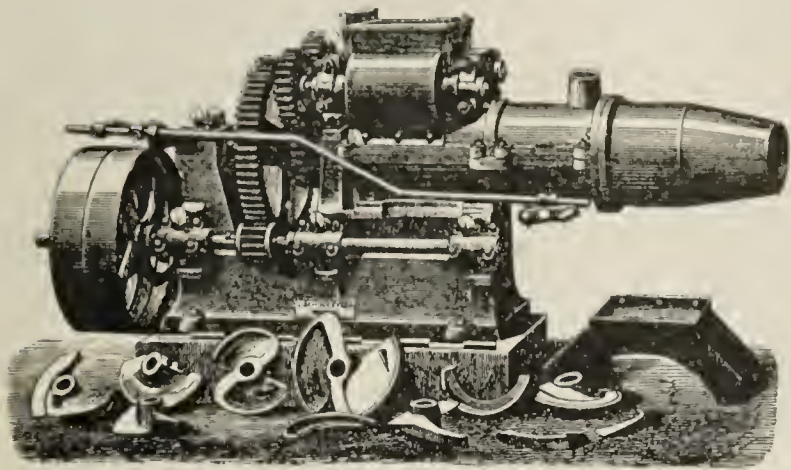


Processes Through Which the Clay is Passed.

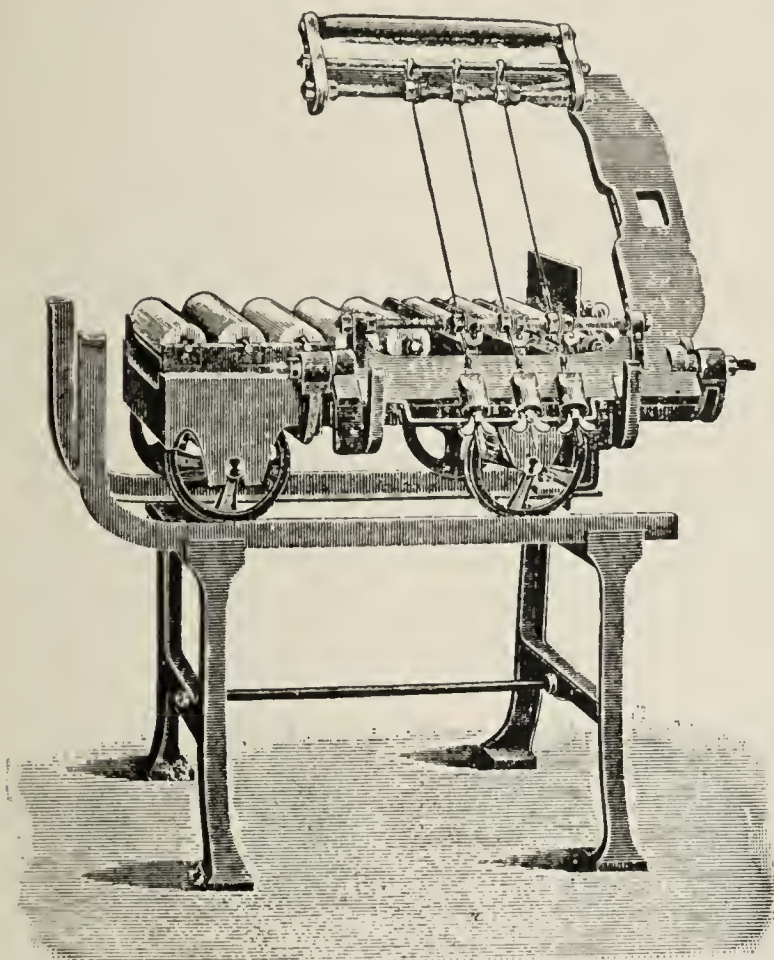


Large Capacity Brick Machine.

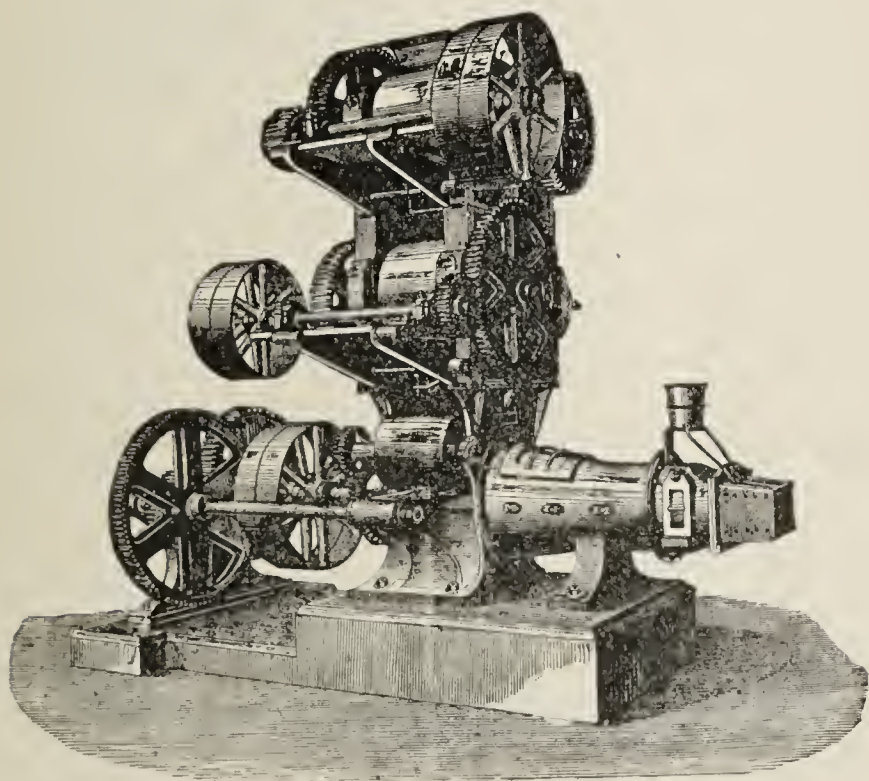
GERMAN BRICK MACHINERY.



Pug Mill or Clay Cutter.



Brick Cutting Table.



Combined Crusher and Brick Machine.

ings at the bottom of the same wall are smaller openings, through which the fuel is passed to compartments in the burning chamber.

No arches are used, temporary coverings of two layers of brick being employed, made tight by mortar and covered with dirt. The merits of the kiln can not well be fully explained in a short notice of this character, nor have we the space to attempt a detailed description. Those wishing to become better acquainted with the construction and cost of this kiln should write Dr. Herman Robergh, Fitchburg, Mass., who is sole agent in the United States and Canada for same.

The Brickmakers of Lippe.—A great many strong and healthy men and young men go away every spring from the little principality of Lippe to work at their trade in foreign countries for four to six months. These people are called "The Brickmakers from Lippe." Formerly these people were known under the name of the Holland or Friesland Wanderer, while in the start, about the last decade of the eighteenth century, these people went only to Holland to work at their trade. Now, however, they go all over Germany, also Scandinavia, and often they go to Russia.

The brickmakers of Lippe have always been in great demand; they know their trade, and even today they have no competition as far as their workmanship is concerned. They are known as being a very saving and industrious set of people. They make much money while working in foreign countries, and when they return home for the winter months it brings business to the little country. The official census of the brickmakers was taken last December, which shows the following statistics: The total inhabitants of the country was 145,557, of whom 70,767 were men and 74,810 women; 14,397 were brickmakers, who were at home at that time, while 4,950 brickmakers were still in foreign countries. Of the above number, 1,554 resided in towns, while 12,843 lived in the country; 1,022 persons were brickmakers' foremen. Taken all in all, it can be counted that about 20 per cent. of the total population of the country is brickmakers. According to old statistics, this trade among these people can be counted as being of a permanent character; then in 1885 only 10 per cent. of the population was counted as brickmakers.—Deut. Topf. & Z. Z. No. 91, 1906.

The Clay Mining Industry of the County of Coblenz.—In Europe, and especially in England and Germany, clay mining for commercial purposes is carried on on a very large scale. Clays which have proven of an excellent quality are shipped far away to clay works for the use of manufacturing the better class of clay ware. The County of Coblenz, in the valley of the Rhine, has a very large industry in this respect. Around Mulheim and Kaerlich we find blue and yellow clay which are both exported for fire brick purposes. The Kaerlich clay is used also for zinc and gas retorts. The total amount of clay mined in this locality was about 100,000 tons, and there were about 350 men employed in this section. In the Ahrweiler district we find also a good fire clay, which is mostly used for fire brick purposes. In the Neuwied Basin, and in the Bendorf district, we also find several clay mines which are exporting clay.

The total production of the Coblenz County was about 212,000 tons, with a value of about one million marks (\$250,000). There were employed about 700 men in this industry. Most of the mines or clay banks are open on the hillsides, while only few are deep mining. The greater part of the production was used in Rhineland and Westphalia, while the export extended to Holland, Belgium, America, England, Russia, France, Switzerland and other countries.—Sprechsaal, No. 44, 1906.

It is how much he saves—not how much he earns—that counts when the trial balance is taken.



CLAY PRODUCTS *of* EARLY BABYLONIA



Written for The Clay-Worker by Edgar J. Banks, Ph.D., Field Director of the Babylonian Exposition of the University of Chicago.

HERE is an Oriental legend which says that in the early days of the world, when primitive man came into the plain of Shinar, as Babylonia was then called, and would build a city and a tower, they found no stones in the level plain, and that necessity taught them to

form bricks of clay. Certainly it was in Babylonia, a country inhabited so early in the history of the world, that it is called the cradle of the human race, that clay was first commonly employed.

The entire country of Babylonia, from Bagdad southward to the Persian Gulf, is one vast alluvial plain, as level as a floor, save that it is dotted here and there with artificial mounds. Made from the deposit of the Tigris and Euphrates rivers, its soil is a blue clay, adapted to brickmaking, while the sand, which is popularly supposed to

constitute the desert, is found in many places, and with every passing breeze changes its location, drifting here and there like shifting snow. The native Arab who would build a house loosens the clay soil, moistens it, kneds it by treading with his bare feet, and, after allowing it to stand over night, heaps it up into high narrow walls, or shapes it into bricks, which, if protected from the winter rains, are practically imperishable. So the Babylonian of six thousand years ago, and earlier, built his house; of the same clay he formed nearly every object of his household furnishings, pottery, decorative vases, drains, wall-hooks, dolls, toys, ovens; in fact, everything necessary for the comfort of the families of those days.

In my recent excavations at Bismya for the University of Chicago, we were fortunate enough to come upon the oldest known civilization of man, and among the ruins which may date as early as ten thousand years ago down to 2400 B. C., were found 45 varieties of brick. The first brick ever made by man was an irregular rectangular chunk of clay dried in the sun, and it was the only brick known until about 4500 B. C., when men learned to bake them. Who the great discoverer of the burned brick was we shall never know, but certainly he was some half-naked Babylonian who noticed that the mud beneath a previous camp fire had become red and hard like a stone. The discovery was one of the greatest ever made, for it gave the world its most common building material and the common household utensils of clay.

The first burned bricks were small, flat upon the bottom and rounded upon the top, or plano-convex with rounded corners, and the mason, instead of laying them flatwise in the wall, set them upon edge, reclining them against each

other, and filling in the intervening spaces with mud, or with bitumen, a natural pitch of the country. As buildings increased in number, the small rounded bricks became larger and thinner until 3800 B. C. Sargon, of that date, the first of the Semitic kings of Babylonia, employed a monstrous brick 16 inches square and 4 in thickness, and so heavy that a man would care to carry but a single one. Unlike the earlier rounded bricks, they were laid flatwise in the wall.

The bricks of Sargon were too heavy to last. Although the form remained square, the brick rapidly decreased in size, and by 2800 B. C., a brick measuring 13 inches square and 3 in thickness had been evolved. This brick has continued in the East to the present time. When the square brick had been perfected, other forms arose. There was the half brick, in form and size nearly identical with the bricks of our own country, for completing the courses, the triangular brick for wells and columns, the circular and semi-circular brick for smaller columns, and the square brick with one or more of its edges concave or convex, or with one or more of its corners cut away to fit any angle or curve. The variety of shapes commonly employed in Babylonia was greater than at the present time in this country.

In color the bricks varied exceedingly, creamy white, yellow, pink, all shades of brown, red and black. The composition of the soil of Babylonia is such that the modern bricks of Bagdad present an equally great variety of tints, depending upon the heat to which they have been subjected. In durability the Babylonian bricks are still more remarkable. At Bismya we built a large house from the bricks of an ancient temple, some of which were 6,500 years old, and they are still as perfect as ever.

In general each Babylonian brick bears the mark of its maker, and the most ancient of the Bismya series contains the first brick mark made by thrusting the end of the thumb into the clay before it was baked. Later the mark was varied by drawing lines with the fingers, either lengthwise or diagonally upon the face of the brick, and in number from one to ten. Sargon, who first employed the large square brick, seems to have been the first to stamp his name and titles upon them. The stamp was also of clay burned to a dark red. From this time till the fall of Babylon, in 538 B. C., the brick inscription, excepting in length, remained practically the same, though it was sometimes carefully written by hand.

In every age in Babylonia, clay was employed for nearly every purpose that we now use paper. The books of the day, and they were many, and some of them were so long that they were in several volumes, were all of carefully kneaded clay finely inscribed with minute wedge-shaped characters, and baked. The contracts of the people, receipts for all sorts of transactions, letters, tags for attaching to merchandise, the historical records preserved in the walls of public buildings, and in fact everything which called for writing was made of clay. Probably half a million inscribed clay tablets have been found in Babylonia, and many of them are as



E. J. BANKS.

perfect as ever. In size they vary, according to the amount of writing which they were intended to contain. Some are 18 inches long and 12 wide, and upon each side are six finely written columns, while others are hardly half an inch square, merely large enough to contain the two or three words for which they were made. Sometimes the letters were provided with envelopes, also of clay. When the letter had been stamped with the little wedge-shaped marks of which the language is composed, a thin coating of clay was wrapped entirely around it. Sometimes the inscription was repeated upon the envelope, or merely the name of the writer was inscribed, and the letter was then placed in the sun to dry or in the oven to bake. A sharp pointed bronze instrument was employed to open it by breaking the envelope away.

It was in the manufacture of the Babylonian pottery that clay was of the greatest service. The ruins of the ancient cities are so thickly strewn with potsherds that in places the ground beneath is invisible. Wherever we dug, terra cotta pottery appeared. Some of the vases were funeral urns, some had been buried with grain, some were the treasure places of the merchants where they stored their documents, but the

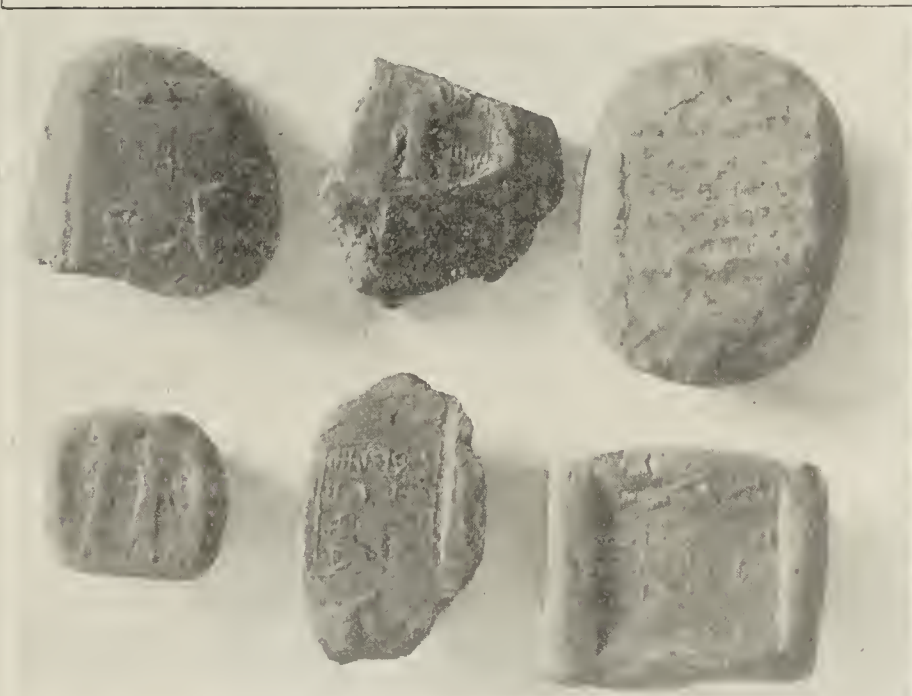
pots were placed in the graves, they varied greatly in form and in size, yet they were provided with a pointed base to stand in the sand.

In the deepest strata of the Bismya ruins, dating not far from 10,000 years ago, we recovered several baskets full of fragments of nearly black pottery. None of the pots were entire, yet from the fragments their forms could be restored. Many of them were built up by the hand; others were thrown upon the wheel. The potter's wheel, therefore, is an exceedingly ancient thing, yet the fragments indicated that it was then in its most primitive stage. It seems that the potter rested the clay which he was shaping upon a flat stone or board, and while building up the clay, he turned the object, whatever it was. The Babylonian who first conceived the idea of attaching the stone or board to a pivot that it might revolve evenly invented the potter's wheel. Even then the clay was formed with one hand, while the wheel was turned with the other, or an assistant was employed to run it. It remained to attach a foot power, and the wheel was complete.

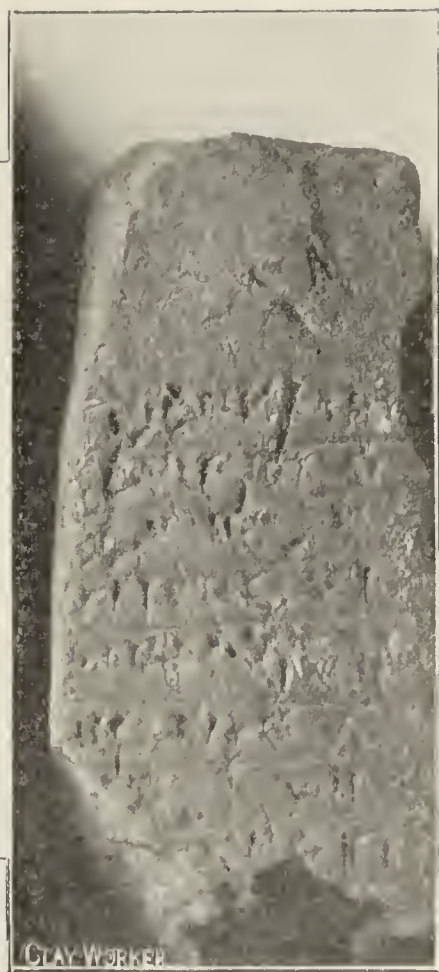
The chief adornment of the early Babylonian pottery was



BABYLONIAN RELICS:
1. A Common Type of Vase of 3000 B. C.



2. Ancient Seal Impressions Upon Clay.
3. Inscribed Edge of a Babylonian Brick.



greater part were the common household utensils. Almost every conceivable form was employed in their manufacture, and many of them possessed beauty unsurpassed by the best Greek pottery. In size they varied as much as in form. One which I found at Bismya was scarcely half an inch high, and provided with two small handles pierced with holes for suspension; others were three feet high and with an equal diameter. A common form for storing water in the houses, as in modern Bagdad, terminated in a point at the base, that it might be inserted into the sand, and thus made to stand erect. The drinking cups of about 3800 B. C., which were 7 inches high and 3 in diameter, were also of this shape, an indication that the people of that age, like the modern Arab, ate while squatting upon the floor, and stood their cups in the dirt at the side. The drinking cups of a still earlier date were shallow, with a flat base, resembling the modern saucer or oatmeal dish. The larger jars for storing grain were provided with huge bodies and small necks, and with lids of clay which were always pierced with a small hole in the center for ventilation. Though frequently the ordinary house

the graceful form, for seldom was a design scratched upon the surface, yet occasionally wavy or reticulated lines appear. Less seldom was coloring matter employed, and then it was applied by inserting red, white or black mineral substances into small incisions in the vase. The larger vases of a very early period were sometimes encircled with a number of rope-like clay coils or ridges. It may be said that 6,000 years ago every form of vase was known which now one may see in the bazaars of Bagdad, the city where coarse pottery is used as commonly as anywhere in the world. Glazing was unknown to the Babylonians excepting of the latest period, or from the time of Nebuchadnezzar, and even then it was not extensively employed in pottery.

Among the countless fragments it is only occasionally that one with a blue glaze appears. However, upon bricks glazing was more common. Each of the seven stories of the great temple tower of Birs, a suburb of Babylon, which scholars associate with the story of the Tower of Babel, was glazed with a different color, and now about its base one may pick up white, black, blue, green and red fragments in

abundance. The walls of Babylon, lately uncovered by the Germans, are decorated with huge lions and bulls in relief, made entirely of glazed bricks, of which blue, black and yellow are the prevailing colors.

At Bismya drain tiles in shape, size and in the flange at one end for fitting to the next tile, identical with those now in use in this country, were found beneath the foundation of a temple constructed 2750 B. C. In the public buildings, and in several of the larger private houses, vertical drains of terra cotta rings, two feet in diameter, carried the refuse matter down thirty-five feet or more into the desert sand below. Some of the drains, when found, were still open, and although the clay of their tiles had become fragile with age, in appearance they were as perfect as ever.

Clay was also an essential element in ancient warfare. At the base of the city wall, constructed about 4500 B. C., we found thousands of balls of clay, burned so hard that they resembled stone, and varying in size from a walnut to a large orange. Many were round, others were square or egg-shape, and still others were diamond-shape. They were the sling balls of more than 6,000 years ago.

Small images of clay, baked and unbaked, some grotesque, others natural, appeared in the ruins of every age. It is uncertain if they represent the household gods, or were merely the dolls of children. The terra cotta animals were certainly toys: dogs, cats, horses, elephants and birds; and in the residential portion of the city, dating from 3800 B. C., a baby's rattle of clay, which even now emits a sound worthy of entertaining the modern child, was recovered. It consisted of two saucer-like dishes cemented together, while the small pebbles within produced the sound.



Clay Tablets Bearing Inscriptions.

Clay was so necessary to the life of the people in Babylonia that one is not surprised at the strange purposes to which it was put. Clay ovens, similar to those still used by the desert Arabs, clay strainers, clay water cocks, clay chicken coops, clay rings and beads, clay spindles, clay weights and clay gameboards are among the objects which the early Babylonians manufactured from the soil. The geologist speaks of the bronze age; in Babylonia it might better be called the age of clay.

BACHELORS.

"Bachelors can be found roaming at large in all parts of the world. They inhabit apartments, clubs, open fields, bodies of water and music halls. They are also seen behind the scenes. They hover at times near front gates, and have been found in back parlors with the aid of a searchlight.

"Bachelors are nomadic by nature and variable in their

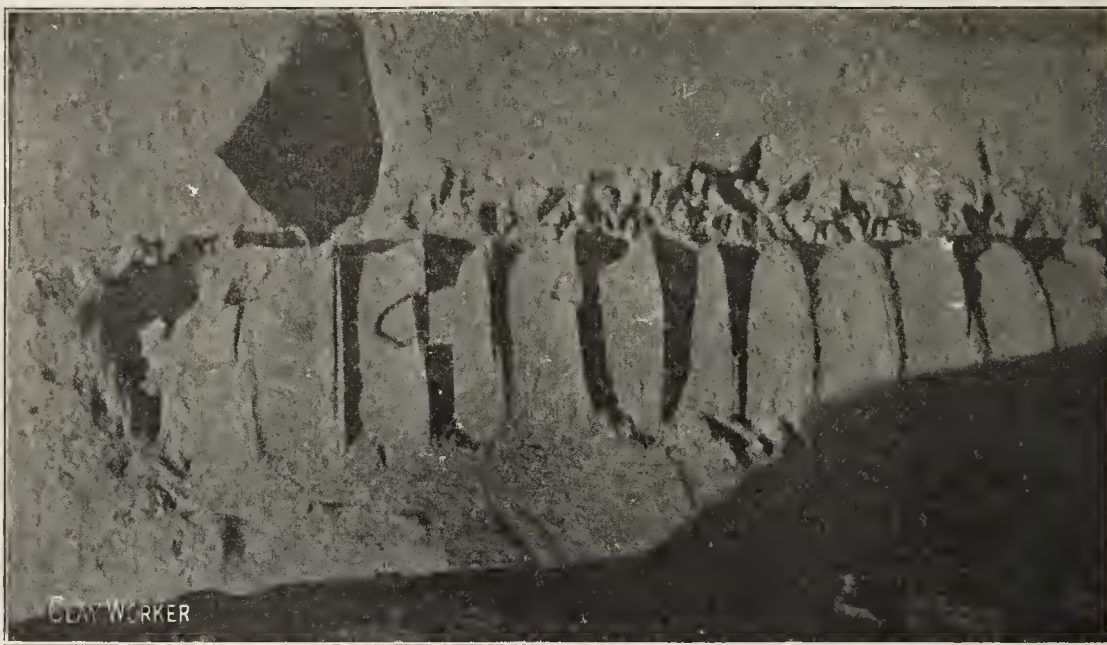
tastes, never going with one girl long enough to be dangerous.

"Bachelors make love easily, but rarely keep it. Rich bachelors are hunted openly and shamelessly, and are always in great danger. Those who finally escape are, as a rule, useless ever afterwards."—Tom Masson, in the December Delineator.

EXHIBITION OF FINE POTTERY BY CRAFTSMEN SOCIETY.

AT THE exhibition of the Craftsmen Society in New York, some time ago, some excellent samples of porcelains were shown by the Robineau kilns, at Syracuse, N. Y., of which Mrs. Adelaide A. Robineau is the leading spirit. Decorated porcelain was shown by Mrs. Caroline Van Briggie, of Colorado Springs. The designs were striking and original.

Pottery was liberally represented. The established and



A Vertical Drain Found Beneath the Temple at Bismya.

well-known names of Volkmar and Grueby were represented by an array of handsome tiles, tall vases, jars with rough cucumber skin of green and pale yellow, and bowls of smooth finish, mottled in some mysterious way under the glaze to give a difference in the tones of the coloring. Some of the newer names among the exhibitors included Miss Jane Hoagland, Miss Mason and Prof. Charles T. Binns, instructor in the State School for Pottery at Alfred, N. Y. Russell G. Crook, of South Lincoln, Mass., had some good work. Mrs. Amelie Dady had some odd and singular fancies

in pottery. Some excellent bowls were shown by Miss Foard, Miss Penman, Miss Elizabeth Proctor, Miss Beach, Miss Carpenter and J. M. Hibler, of Milwaukee. These bowls, in some instances, revealed numerous artistic ideas in shape and tone of coloring. This department of the exhibition attracted its full share of attention. During recent years any pottery exhibition is certain to be popular and there is a growing appreciation of the art of the potter and the decorations as means of artistic expression. Even though it is probably the first art that mankind ever practiced, it was neglected for centuries, but in recent years there has been a revival of the desire to know more about it and to undertake upon a larger scale its production. The result of this revival is seen at these exhibitions. Those interested are determined to make the art successful and to create anew such conditions as will lead to a hitherto unsuspected development.

If we bust all the trusts the next question is, what will we do with the pieces?

Written for THE CLAY-WORKER
BUTTON-HOLE TALKS.

WHAT do you preachers think of this newspaper laundry business?"

It was the voice of my companion, the "Captain of Industry," and it pulled me abruptly back from my contemplation of the boy with the old-time pants. Pulled me away and ripped me through all the array of years since I wore those pants, and slammed me up against the matter of fact present, in a manner that jarred and irritated me, that shook up my mental faculties as slamming against a wall would jar my physical particles. I was irritated. Even a



W. D. GATES.

worm is said to turn, and why not an alleged man? The worm has no vertebrae to be shocked by the sudden smash. The man has, or ought to have. Anyway, I pulled little Willie together, put on a dignified front and hit back. "Look here, stranger," said I, "what do you suppose I know about the laundry business. You captains of industry have been petted so much that you are spoiled. You think you know most everything, and

that if there is anything you don't know, all you have to do is to ask the first man you meet and he has got to tell you. More than that, you called me a preacher, which I am not. I am only the 'trouble adjuster for a worry factory'."

"Hold on, stranger," he put in. "If you are not a preacher you ought to be or take in your signs. You may not have it inside, but you surely have it outside, as far as signs go, but what do you mean by calling me a 'Captain of Industry'? I am a drummer for a chewing gum house, but a student of human nature, all the same."

"What I mean by newspaper laundry business, is this washing of dirty linen in public. All the common people wash their dirty linen and hang it in the back yard. They keep their own wash and their own little affairs to themselves, but just as soon as your high society scrappers see a little dirt or blotch of smut, they hang it out in the park, or the most public place they can find, and yell and pull people in to look at it, and call their especial attention to how much of it they have collected and how very dirty it is and ask them to please show it to some one else. If they can get a front page in the newspaper and a double heading they seem perfectly happy."

"Now, we common people, when we get into mire keep mighty quiet; we know the difference between famous and notorious. We have enough trouble trying to hold the esteem of our fellow citizens by exposing everything in as cleanly a manner as possible. If the shirt is dirty we cover it up with a veneer of clean cuffs, collar and cravat; we don't believe in taking the dirty shirt off and putting it on over our coat."

"The very fact that the really respectable people, who, by the way, are the majority of the people, adjust all their laundry affairs quietly—both the physical and moral wash—makes this public laundrying conspicuous and distasteful. People don't want other people's dirt and it don't do them any good to fool with it. The trouble is that those yellow journals have made those people think the big world is vitally interested in them and their little affairs, while the truth is, that this great big round world would still go right on revolving just the same if they simply crawled into the little hole

they are really due in. Reputation counts. It may be nice to be noted, but it's nasty to be notorious."

I think he talked more, and that I went to sleep, for it had grown very late. Much time had been consumed by the delegation using the company comb, then a long time had passed while I was dreaming of the pants and living again my boyhood; then, too, he had talked a long time. All the whole big crowd, excepting us two, had settled themselves to their varying and individual snores and snorts in the sleeper. I had had enough of the laundry subject, so I arose and abruptly sought repose. I had sat down on my berth, taken off my coat, got my second yawn and reached for my collar button when the Captain of Industry came along, parted the curtains on the berth directly opposite me and sat heavily back on it. The next instant he struck me like an avalanche, carrying us both back in a heap into my berth, while piercing shrieks, yells and weeping issued from the berth on which he had sat and from which a thin spinster face appeared, in a halo of night-cap, with bulging, leaky eyes and a distended mouth that worked overtime on yells, accusations and denunciations in a manner that quickly brought every occupant of the car into the aisle.

It really was his berth all right and she had pre-empted it, through mistake or otherwise; but do you suppose he had any chance to explain. Not on your life. She kept up such a clatter of expostulation and accusation that he couldn't get a chance to explain, for whenever there was a chance threatening a calm, she simply yelled and had hysterics. She had the undivided attention of the delegation and she held it. She wasn't going to divide time with anybody. He tried the best he could, but all he got was black looks and advice that he ought to be ashamed of himself, and at his age, too. Finally he fled again to the smoking room, where I presently followed, to find him eagerly showing his check and everything else he had to the conductor, but it was the old story of the accusation in a double-headed header on the first page of the paper and the correction on the bottom left-hand corner of an inside page and in small type. Of course, I was sorry for him, but I couldn't help asking for his wife's initials and home address, so I could send laundry to the home wash. However, I was truly sorry for him as he looked at me and said: "Look here, professor, this shows how really damned hard it is to keep up a reputation, even when you are square and there's no inducement. You can lock up or protect diamonds and money, but your character can be ruined by any old antique caricature that has sufficient lung power and opportunity."

GATES.

A PLEASANT INCIDENT.

Mr. Ernest A. Maddison has severed his connection as manager of the Terra Cotta Department of the Denny-Renton Clay and Coal Company, Seattle, and the employees presented him on this occasion with a fine silver punch bowl. Mr. Maddison, who was instrumental in starting this department for the Denny-Renton people, will go into business for himself. He has to that end organized the Northern Clay Products Company, of Seattle. Mr. Anton Richter, who was formerly with the Winkle Terra Cotta Company, of St. Louis, is connected with Mr. Maddison in his company. They have bought the Auburn Stoneware Pottery and will enlarge this plant in order to make architectural terra cotta in connection with the stoneware and fire brick which they have been manufacturing so far. The company owns and controls what are considered the most valuable clay deposits in western Washington. The clays are suitable for terra cotta, fire brick and also for stoneware manufacturing. The Auburn pottery has been in existence for the last eight or ten years, and their product is well known in the Puget Sound cities. With the present large building operations in Seattle, the company will be able to supply readily the large demand for architectural terra cotta.

BRICK PAVED COUNTRY ROADS ABOUT CLEVELAND

Have Proven Money Making Highways—Farmers Profit by Hauling Heavy Loads at All Seasons.



IN THREE years \$2,500,000 has been spent in laying brick roads in Cuyahoga county, of which the city of Cleveland, Ohio, is the county seat. This represents 110 miles of the finest brick pavement in any rural district in America and covers nearly all of the main roads running out of the city of Cleveland. In another three years every main road in the county will be paved with brick and work will then be commenced on the crossroads. Few people realize what this means to the farmer who brings his produce to market, the autoist who ventures beyond the city limits for a breath of fresh air or the family man who takes his wife and little ones out driving in attractive country spaces.

These brick roads have been laid under adverse conditions in some instances. Roads which were simply miry beds of clay and mud have been converted, with much labor and expense, into level floors over which the heaviest wagon may be drawn. The roads have been carefully drained. The roadbeds



A Twelve Mile Stretch, Brick Paved Roadway.

have been made to last and with the exception of one or two instances, where the contractor is being compelled to remedy the fault, they have been built honestly, thereby eliminating the cry of graft which will be sure to go up when an effort of this sort is under way.

The roads which diverge from the city which have been improved are the Berea, Brechsville, Depot, Detroit, Euclid, Kinsman, Noble, North Ridge, North Woodland, Parma, Center, Prospect, Richmond, State No. 1, West Madison and Wooster. Already the county commissioners have under contract three or four others for next year. Four or five roads have been finished within the past three months.

This work is being done under the supervision of a board of three county commissioners, who look after all county improvements. Bids are received for each road and contracts are let in the usual manner. Contracts are hedged about with safeguards and guarantees as in city paving jobs and good work results.

In most instances curbing is used on the country brick roads, to prevent the collapsing of the sides of the bed upon which the brick are laid. The bed is made of crushed stone and thoroughly rolled before the brick are set on the sand cushion.

R. J. MacKenzie, county commissioner, is really the father

of the brick roads movement in Cuyahoga county, for it was with his assistance that the movement was first successfully launched three or four years ago. He persuaded the farmers that even if they had to meet 40 per cent. of the cost of the improvement it would pay them to have navigable highways running near their farms. That Mr. MacKenzie has made good his contention any farmer will agree, for it has raised the value of property to a perceptible degree, has saved farmers much money by enabling them to take their own pro-



Paving a Country Roadway.

duce to market instead of having to sell it to a commission buyer with a strong team of horses.

Mr. MacKenzie is an enthusiastic believer in the value of brick roads and is ready to declare himself at any time.

"For one thing, that they can be repaired quickly and economically," declared Mr. MacKenzie, "and there is a great



Laying Brick on Country Roadway.

deal in that. With the modern vitrified brick they will last practically forever. The whole problem is in the laying of a sound foundation and this we are demanding of all our contractors.

"We are going to spend \$300,000 each year until we get every road in the county paved. We could not spend any more money than that and do it right, so we prefer to go slowly.

"There is no reason why any rural community cannot do the same thing if it wishes to spend the money. Large cities

do not realize the value of these brick roads leading into them. It means that the farmers can come with their produce and sell direct without the middleman's profit. It means that the autoist can spin for miles and miles along roads which are level as floors or the citizen can take his wife and children out in a buggy and get some fresh air without getting in up to the hubs in mud."

Even with the improvements the county has already effected there is a general wail for more of these paved roads. The State has been appealed to in vain and the county commissioners say they are proceeding as fast as advisable. The Cleveland Automobile Club has therefore started a subscription among its wealthy members and will build a stretch of



Just Off the Brick Roadway.

model roadway on Euclid Avenue beyond the stretch of brick roadway, which extends almost ten miles into the country at present. This model roadway will be started the first thing in the spring and will probably be of brick. It is the intention to use this model roadway to impress the State legislators with the need of more of such in all sections of Ohio.

Although Mayor Tom L. Johnson, of Cleveland, receives



Easy Haul Here, Though Up-Grade.

general credit for agitating the three cent fare movement, Commissioner MacKenzie, twelve years ago, put up a valiant fight against a traction company which wanted a franchise on Bedford road. The franchise was granted, but the stipulation was made that the railroad would have to pave sixteen feet of the road when the county got ready to pave the balance. Last year the county did its share of the work and compelled the railroad to pave its half also. The result is as fine

a paved highway as may be found in any residence part of a great city. The railroad also furnishes electric lights along the road and gives three cent fares to the city limits, for a distance of three miles and over.

CHISHOLM, BOYD & WHITE COMPANY WILL FURNISH COMPLETE MACHINERY EQUIPMENT FOR SAND-LIME BRICK PLANTS.

THOSE familiar with the growth of the sand-lime brick industry in this country know without being told that many of the most successful ventures in that line have been equipped with Boyd brick presses and it is equally well known that these successful manufacturers attribute a large measure of their success to the efficiency of the Boyd press.

Heretofore the Chisholm, Boyd & White Company have furnished only the brick press equipment for sand-lime brick plants, the other necessary machinery being supplied by other parties. They now announce that hereafter they will contract to supply complete machinery equipments, including plans and specifications for sand-lime brick plants of any desired capacity under the same guarantee of success that they have been making to the makers of dry press brick for a number of years past.

The reputation of the Chisholm, Boyd & White Co. for thor-



A Fine Speedway, Eight Miles from Town.

oughness and skill in the production of brick presses and other machinery is of itself a sufficient guarantee that plants designed and equipped by them will represent the highest standard of efficiency. In short, it means success for those who employ Boyd machinery in the manufacture of sand-lime brick. Mr. H. J. Flood, the president and general manager of the Chisholm, Boyd & White Company, who is a recognized authority on all matters pertaining to the manufacture of press brick, together with the company's corps of trained engineers and machinists, who are all experts in their several lines, is at the service of those desiring information with a view of going into the sand-lime brick business.

DO YOU WANT SOMETHING?

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

THE IOWA BRICK AND TILE ASSOCIATION.

REPORT OF THE TWENTY-SEVENTH ANNUAL CONVENTION OF THE IOWA BRICK AND TILE ASSOCIATION, HELD AT SIOUX CITY, JAN. 9th AND 10th 1907.

THE CONVENTION at Sioux City was one of the most enthusiastic in the history of the Iowa Association. The delegates began to put in their appearance Tuesday evening, at the Mondamin Hotel, where the twenty-seventh annual convention of the Iowa Brick and Tile Association was entertained, Wednesday and Thursday. By Wednesday noon over seventy delegates had registered. The lobbies were well filled and the good humor of the friendly clayworkers was much in evidence. There was no exhibition room, so the machinery men had to content themselves with displaying their catalogues and novelties of advertising in the convention hall and lobbies. There was a busy crowd of the missionaries who button-holed the delegates and did their best to convince them of the superiority of their machinery, etc.

The only business done at the morning meeting Wednesday was the registration of delegates and the appointment of committees. The resolution committee consisted of F. A. Stephenson, Mason City, W. H. Brecht, Des Moines, and D. Fred Smith, Omaha; while those on the committee on resolutions were, O. T. Denison, Mason City, Chas. Rawson, Des Moines, and Chas. A. Tramp, Audubon.

The first regular session began promptly at 2:00 p. m. Wednesday afternoon. The hall was well filled and every one was in the best of humor.

First Session.

Wednesday Afternoon, 2 O'clock.

President Holman: The Twenty-Seventh Annual Convention of the Iowa Brick and Tile Association will come to order. I have the pleasure of presenting the Hon. W. G. Sears, the Mayor of Sioux City, who desires to give you a few words of welcome.

ADDRESS OF WELCOME.

MAYOR W. G. SEARS.

Members of the Brick and Tile Association of Iowa:

Your president notified me some six weeks ago to be present and give you this address, and the very next day after he had notified me, I happened to meet him in the office of a stenographer, and he had his speech all written out. So you see your president took time by the forelock. But my business was such that I really ought to have been in Des Moines today instead of being here, but when I remembered about it, that your president had everything fixed up so far ahead, I made a great effort to stave the business off, and last, but not least, I got a letter last night from an editor in Indianapolis, and he said he wanted



President C. J. Holman.

ed me to send him my picture. Now, of course, you take any man, and he thinks it is a nice thing to get his picture in a paper—and not only that, he wanted a cabinet size. That settled it, and I concluded to remain here and address you. And then some one requested that I send him a copy of my speech. Now, I can not write out a speech. If I write out a paper and get up to read it before a lot of men looking at me as some of you do, some of them laughing, and some not laughing—that is, I mean all different classes of men—I forget my speech, and my mind gets fixed on the paper alone, and there I am, away up in the air, skiddoo—twenty-three. I have no speech, but I see there is a stenographer here this afternoon who is taking down everything I say. I delivered one speech that was taken down by a stenographer, but I didn't know it was being taken down, and I was rather surprised when I saw what the stenographer said I said. I am a good deal like the fellow and the girl who had been keeping company for several months, and finally he said to her, "I am going to propose to you next

Monday evening" (that was Saturday evening). She didn't like that very well, and said to him, "I had a good deal rather you hadn't told me and had surprised me Monday evening." But this stenographer here just slipped in here like the stenographer who reported my speech. That speech was on a religious subject, and two or three days afterward one of the members of the church, and by the way, I always believe in saying something good about things, for I believe that there is more good than bad in everything—one of the members came to me and he said, I want to get 1,300 copies of the Sioux City Journal with your speech.

But on this manufacturing business upon which I am supposed to address you today, you are all practical brickmakers, except one man who is a lawyer, by the name of Marks, I am at a loss just how to proceed. In fact, about all I can do is to refer to some of my personal experiences. I remember about forty years ago, and that was when I was about ten years of age, my father moved on a farm on the west line of Tama, near Marshall county, and a neighbor of ours had quite a wet slough right next to his house and he was having made what we called a mole ditch. I don't remember much about this except that it was in the shape of a shoe and that it was fastened on an upright cutter, like an old-fashioned cutter on a plow, and they would dig a hole down and put this shoe in and then the oxen would wind it up on the windlass about three feet. It was what they called a mole ditch, I believe. It made a regular sort of a spring there, and as a boy I remember that I thought it was the nicest kind of a thing. The next spring it got stopped up, and the farmers said that it was because the crawfishes got in. As a matter of fact, that ditch was not constructed with any reference to any of the principles of tiling. Some few years ago I went back and visited on that same farm, and that spot, which was a slough, is now dried up, is tiled, and instead of a miry wet slough, he has a tiled drain constructed there according to the principles that you will talk about here in this association today, and that slough is now the nicest body of tame grass that you ever saw. Now, I use this as an illustration to show how the tile and how the drainage business has developed and how it has benefited the soil.

When I was about nineteen years of age I taught school in Tama county, near the line of Marshall county, and off to the northwest about five miles, a man had built a house, and when he moved into the house there was simply a swamp all around there, and I used to wonder how he lived there, and when that section would be settled up. When I was eating Christmas dinner with a gentleman who sat opposite me, he said he knew that house and remembered it, the one to which I had referred, and I told him how worthless it was thirty years before, and he said that

land was all tiled and drained today and was worth \$100 per acre. So much for the tile.

When I first went away to school I went to the agricultural college at Ames, one of the professors of which is present and will address you today, and right west of the college there was a little brick yard, and they used the old way of molding brick by hand, and I used to watch them. He would pick up the clay and throw it into a box-like affair, I guess you call it a mold, and then take it out and dump it on the ground. I do not suppose there are half a dozen men here today that would carry on this molding business by hand for two hours.

During my electioneering I went through the different yards here. One of the men said to me, you go and get a turkey and bring it over and we will roast it. I never attended but one of those turkey affairs. It was not like the turkey that mother used to cook and it sort of turned my stomach and I didn't want any more of it.

I used to live on Seventh street, near Douglas street, between Pierce and Douglas, and at that time we had nothing but cedar blocks, and I remember there was one block of brick paving, and it looked to me as if everybody had to go rattling over that block of brick paving. They used to move houses along there in the night sometimes, and I never knew they could make half so much noise. I went along there today and, although that was in 1895 that I lived there, that brick pavement is as intact as ever. It is a good, solid substantial pavement, and I do not think we have had to assess any of the abutting property owners for the purpose of repairs as we do on some of our other pavements that look a little bit better but no more serviceable than the brick.

I hired a man in my house to fix up my cistern which had been leaking. He bricked it up and cemented it. I wanted a filter and he brought a brick filter and fixed it right around the water pipe that went down and connected with the pump. I said to him, "What are you doing?" and he said "That is a soft kind of brick and the water will run right through it." And so we have a filter of brick. And on the outside of my chimney he has put hard burnt brick, and he said, "That brick will last longer than you do." He says, "They have got this brickmaking down to such a science that they can use it for a filter or use it where it is exposed where one wants the hardest kind of brick." And so I say to you brick and tile men that you are to be congratulated on the way you have perfected your art and your occupation and the good that you are doing to the country. It is the time now that lumber is very high and it is bound to be higher, and some of the brick men will have to take the place in a large degree of the lumber men.

Now, as I look towards you, it is an easy matter for me to talk something about our cities. I see here a body of men of whole headedness, probably different religions, different politics, of course, and we are a cosmopolitan city, and while the Pope directory gives us not as many population as Des Moines, we do not claim to have as many as Des Moines, we have a good likely city here. Some people reflect on our morality a little, and while we could be somewhat better, we could be very much worse. Tonight is prayer meeting night, and if you gentlemen want to go to prayer meeting there are fifty prayer meetings right around here in Sioux City tonight,

and they represent all the languages of the Caucasian race. We have a number one Methodist college. We have good theaters, the Peavey Grand has a splendid play on tonight, I am informed, and we have the Lyric, the Peoples, and I think a theater called the Unique. If some of you want to play golf we have got an old brick maker by the name of W. B. Lower, who is not only a golf player, but who owns the whole Golf and Country Club grounds at Riverside and he will take you out there without a bit of expense to you and show you all around.

Now, as I said, I used to live down in Tama county, and in some of our towns down there we have to drink out of a bottle, and we have to reach in our vest pockets to get a bit of coffee or a clove. Here in Sioux City we have nothing of that. If you are so inclined you can go into a place and you can get any kind of a mixed drink you want, and you can get any kind of a chaser. If you want an oyster chaser you can get one; if you want a gin chaser you can get one, or anything like that, and afterwards you can go up to the bar, or one side, and you will not have to reach in your pocket to get a clove or a piece of coffee. (Applause.) I will say to all of these gentlemen that I hope you will pitch in and have a good time.

Your president here, Mr. Holman, has



Mayor W. G. Sears.

taken special pains to make this meeting a success, and I will say frankly that there are twice as many men here in attendance as I expected to meet and I am glad to see you and hope that you will continue to perfect your business in every detail. Of course you have your troubles. You probably have your demurrages to look after. I see that you have a paper called "Breakage."

When I was electioneering I went through one of the yards here, and had a box of cigars with me. I don't smoke myself, but of course there are times when a man has to do those things, and I never had a man turn me down on cigars but once. I went up to this fellow and offered him a cigar and he wanted to know my politics. Well, of course I didn't say very much just then and only said, "I am a democrat," and he says, "Well, I am a socialist and I could not smoke a democratic cigar." Of course at those times you don't feel like arguing, but think, says I, young man, if you have such great and high principles as those, I do not know whether you will ever own a brick yard, but I think you will continue to wheel

brick here and talk your principles. However, I passed on without arguing with him about the relative merits of the socialist and the democratic party.

So I will turn the keys of the city over to you, and I do not think that any of you will be unfortunate, and if you are, why just raise the hailing sign of distress and I will respond. A man who was once here said to me, "I am from Clinton, and we have a plant down there, and one day I was going through that plant, and some one shouted out, what are you rubbering at around here, and I says to him, the Mayor told me to." "Go right ahead and look at anything you want to," he replied. You can go through all of our plants here and you will find a welcome, and if anybody is cranky to you like this gentleman was, tell him that the orders are from headquarters, and when he finds that you are a visitor he will treat you well, and if he does not he is no Sioux Cityian and we want to know him and instruct him in the Sioux City way, that he must make the visitors welcome.

Gentlemen, I bid you welcome and I hope you will have a pretty good time. We are glad to have you here and we hope to receive more benefit from your visit than you do from the visit here. This is another Sioux City way, we take in a little more than we give out, and at the same time give out a good deal. (Long applause.)

President Holman: I will call next on Mr. J. E. Randall, associate editor of THE CLAY-WORKER, who will give the response to Mayor Sears' speech of welcome, in the absence of his father, who, we regret to say, was unable to be with us.

Mr. James E. Randall: Mr. President and Gentlemen: I feel much as did a mighty hunter who had been roaming in the mountains for two weeks searching for bear, without meeting with success. He had used all his ammunition and started homeward when in rounding a sharp turn of the narrow mountain path he came face to face with a large, fierce looking grizzly. He dropped his empty gun and drawing his trusty hunting blade, faced the bear. It was a desperate situation and for the first time in his life he tried to pray. He thought that was his only salvation. He said, "Dear Lord, Good Lord, come and help me, and come quick; if you can't come yourself, don't send your son, for this ain't no boy's job." Well, this is a case where I am now convinced after listening to the eloquent and cordial address of the good Mayor of this city that I am confronted with "no boy's job."

RESPONSE TO THE MAYOR'S ADDRESS OF WELCOME.

Mr. President and Gentlemen of the Convention

I was greatly surprised and pleased as well when, on receiving the program from Secretary Denison, I discovered that I had been assigned the pleasant duty of responding to the Mayor's welcome. I had received no previous intimation of this from the secretary, but I had planned to attend the convention, and was pleased to think that I should have an opportunity

of expressing in a formal way something of the pleasure that these annual meetings afford. Having previously tasted the sweets of Iowa hospitality, it required no stretch of imagination to divine that our welcome would be cordial. Every delegate knew that it would be, and I can assure his honor, Mayor Sears, and the good people of Sioux City for whom he speaks, that the welcome is most heartily appreciated.

In this day and age of investigation, when every form of trade organization is under suspicion, it may be well for me to assure the municipal officers and the builders of this beautiful city, that the purpose of this meeting is wholly and solely educational; the members of the Iowa Brick and Tile Association meet together for the purpose of considering improved methods of manufacture whereby they can furnish better and cheaper brick, tile and other clay ware, and so in the same measure that the convention is successful, the builders and users of clay materials will be benefitted. That the purpose of the meeting is not merely to get together and scheme for higher prices, is made manifest by the fact that all meetings are open to the public. This has always been the case, so, Mr. Mayor, we can look you in the face and say with a clear conscience that we accept your welcome in the same open-minded spirit in which it is tendered, and assure you that while we expect to benefit by our meeting here, we also hope and believe that your city and, indeed, all users of clay products throughout Iowa, will, like ourselves, profit by our sojourn with you. (Applause.)

Secretary Denison: The next in order, according to the program, is the annual address by our president.

PRESIDENT'S ANNUAL ADDRESS TO MEMBERS OF IOWA BRICK AND TILE ASSOCIATION.

The brick and tile business, now grown to one of the largest industries in our state, has developed during the lives of some of the members present here today.

This great territory now called Iowa, lying between two large rivers, watered by innumerable streams and containing the finest body of land on this continent, was then a vast sea of prairie grass. The many beds of clay underlying the rich soil and scattered throughout the state were undiscovered and brick not thought of. Only homesteads were then in demand, and log cabins the pioneers' palaces.

The rapid growth and settlement of this rich territory has created a demand for material to meet the wants of the people that has uncovered the hidden clays and developed the brick and tile maker and taxed his energies and capacity until our industry has grown to a proportion beyond many older states, and of which we may feel proud.

That Nature has provided boundless resources and facilities for a dense population within the borders of our state by the fertility of her soil, the abundance of clay, and large bodies of coal which are now being developed in nearly all sections, is apparent to all, requiring only the energy and genius of the clayworker to meet the demands of a fast growing population, which seems destined to become of vast proportions.

We believe that the organization of our state and national associations has been of substantial help in bringing about these results and placing our industry on a higher plane, developing new methods of manufacturing, new machinery, modern kilns

for burning, a cleaner business, large, well-appointed plants, and a great resource to the country.

That the future promises still greater advance in this fast growing state, and yet greater demands for our wares is beyond the possibility of doubt. The great progress which has been made in all lines of business is fast placing Iowa well to the front, not only in agriculture, but also in the line of manufacturing, of which ours is one of the leading branches, and in the quantity of our output and the manufacture of common brick and paving brick, we have met this demand and kept pace with the improvements so rapidly taking place.

While our country has experienced a period of prosperity during the last few years, which has reached nearly all lines of industry as well as agricultural products, of industry as well as agricultural products, ty? We see that lumber (our greatest competitor) has advanced fully thirty percent., labor and coal much higher, nearly all other commodities show an increase, while brick have declined more than one dollar per thousand in some parts of the state during the same period. This seems to be out of harmony with the conditions



President-elect W. H. Brecht.

surrounding us in other branches and an exception to the general prosperity of the country.

Are we devoting our energies and the output of our yards to one line of the business only—all trying to make the cheapest brick and outdoing our neighbors in placing them on the market at a lower price than our competitors, which can only lead to lowering of quality, when we all know that the cheapest brick is the one that contains the least value in labor and fuel? At the same time, while looking over our home city and many of the cities of Iowa, we see most of the fine buildings faced with imported brick shipped in from neighboring states at large expense to cover up and hide our home-made goods. Can we feel proud of this? Is there not yet more work for our conventions to do? Are not our Iowa clays suitable to make the material for both outside and inside of the present day buildings? The trade seems to demand a variety of shapes, styles and colors, for these sightly structures, some coming from south, others from the east, from Kansas to Indiana. The very looks of these brick are a recommend to the skill and workmanship of the brick-makers who produce them. What conventions do they attend? These are questions that may well be considered at our gath-

crings, both in and out of session, to the end that the brickmakers of Iowa may be on a par with other states and in keeping with other lines of industry in the quality as well as the quantity of our work.

That the rapid growth and continued activity of Iowa as a state will keep the brickmaker fully occupied in the future is apparent from all points of view. Even in times of depression we believe the agricultural advantages of our state will quickly readjust and renew the ever increasing growth. It is therefore of interest to us as clayworkers that the growth of our association and the attendance of the conventions should in the future, as in the past, become a source of benefit and an incentive to the still further upbuilding of our industry until the Iowa Brick and Tile Association, as shown by the products of its labor, shall be worthy to take its place at the head of state organizations. (Applause.)

President Holman: Owing to the fact that Prof. Marston can not be with us tomorrow, it has been suggested that we hear his paper today and I am sure it will be the pleasure of the convention to do so.

FARM DRAINAGE.

BY A. MARSTON, AMES, IOWA.

During recent years drainage has become very important in Iowa. Throughout the northern and western portions of the state great drainage projects, involving the expenditure of large sums of money, have been taken up. Drainage canals are now under construction which are to be compared for size only with natural rivers. In one drainage district, hundreds of miles of ditches are planned, to cost \$250,000.

While the construction of large drainage ditches attracts more public attention than tile drainage, yet anyone thoroughly conversant with drainage must admit that tiling is the more important. In fact, the real object of our drainage ditches should be considered simply to provide outlets for tile drains. The largest ditch can remove the ground water for a distance of only a few rods from its banks, and while such ditches can remove the standing water from ponds, drainage must be extended beneath the surface to really fit the soil for cultivation. After the completion of all drainage projects in Iowa now under way, hundreds of thousands of miles of drains must be constructed before the land will be really reclaimed.

The writer of this paper can speak from his own personal experience of the vital necessity in Iowa of tile drainage. He has had the good fortune to be possessed of the title to some of the fertile lands of Iowa. During the recent wet years disastrous experience brought to his attention the fact that much of this fertile land was practically worthless in wet seasons, for the production of crops. Each year the expense of preparing the soil, of planting the seed, and of cultivating the crop was as great as it would have been for a good crop, and while it is true that there was almost a total saving in the expense of marketing the crop, yet the whole operation was the exact opposite of a financial success.

In 1905, the writer and his brother, who were jointly interested in the land, decided to begin the construction of tile drains. Up to this time practically no drains had been laid in the neighborhood in which the farm was located. The neighbors knew practically nothing about tile, and hence were perfectly free to express their opinions on

the subject, which were usually unfavorable. They thought that, owing to some imaginary peculiarities in the Iowa soil, the methods which had succeeded so eminently in Illinois and elsewhere would prove to be a failure. They also decided that the tile were being laid so deep that the water could not get to them.

Nevertheless, the work was proceeded with, and one field of 20 acres was quite thoroughly drained early in the spring of 1905, and planted to corn. During all the preceding wet years this field had raised practically nothing, but much to the surprise of the prophets, this year during the growing season the corn stood a foot or more higher than that in the surrounding land, which had been considered comparatively dry.

At the present time tiling is proceeding so rapidly in that same neighborhood that it is practically impossible to secure a tiler to do one's work. The writer is proceeding as rapidly as finances will permit with the drainage of the entire farm, and considers the investment to be one of the best he has ever made.

Since the writer is an engineer by profession, this was a case where he had opportunity to take a dose of his own medicine, as for some years previous he had widely distributed over the state the advice to a man about to drain, "First, hire an engineer." After his experience to date, he is more firmly convinced than ever that the best way to economize in connection with the tile drainage system is to hire a competent man to survey and plan it and to pass upon its construction. Hundreds of thousands of dollars have been wasted in Iowa in the improper construction of drainage systems. It is not uncommon to find that the early parts of a tile system have been made too small or laid too shallow to drain remoter tracts. In some cases sags in the grade line are found, and although the tile ditcher will always claim that the water will "siphon out" of these sags, the farmer finds to his cost, after the ditcher has been paid, that the tile is practically worthless.

It must continue to be a source of wonder that the ordinary tile ditcher engaged constantly at drainage work really learns so little about the subject. He seems to acquire a set of notions peculiar to himself, for usually these men disagree in their opinions on the same subject. There ought to be some inexpensive school, which tile ditchers could attend and receive instruction in the principles of land drainage, and in simple methods of surveying and constructing drains. We have had some call for some such instruction at the State College and have in some cases arranged for such men to receive instruction from advanced students whom they pay by the hour for the work.

Drainage Map. Not only should an engineer be employed to plan and survey a system and superintend its construction, but he should be required to furnish the farmer with a complete map of his drainage system. This map should usually be made on a scale of say 200 feet per inch, and should show the exact location of every drain, so that it can be found with ease by any future owner of the land. The map should also show natural water courses, the location of buildings, permanent fences, etc., and the outlines of ponds and marshes. It adds greatly to the value of such a map if the elevations of the land at numerous points are shown. In the case of each tile drain it may be well to indicate on the map the grade, and also the average depth.

Drainage Profile. However, there should also be a set of profiles of the drains, which will show the grades and depths of each drain at every point more exactly than can be indicated on a map. These profiles need not be on a very large scale, and, in fact, the number of separate drawings of the drainage system should be as small as possible, as it is easy for separate sheets to be lost.

It would be very desirable that the map and profile sheets should be bound together with heavy paper, or, better still, with a regular cloth binding, so that they can be readily preserved, and they should pass with the ownership of the land. Any bindery will prepare necessary covers for such plans at an expense of a dollar or two. In my engineering work I have them made for sewer and waterworks plans at an expense of \$1.50.

Complete Drainage Plans. In planning tile drainage the proper method is to make comprehensive plans for all the land which is to be drained to one outlet from the very beginning. Otherwise serious mistakes are apt to be made in the parts of the system first constructed.

Sizes of Tile Necessary. There have not as yet been sufficient data in Iowa collect-



Professor A. Marston.

ed to show with certainty what capacities of tile are needed to meet different Iowa conditions. A few data on this subject are now being collected under the supervision of the State College. However, a capacity under average conditions sufficient to remove one-fourth inch depth of water in twenty-four hours appears so far to have given good results in Iowa. This means a maximum flow of about 6,800 gallons per acre per day, or about 4,360,000 gallons per square mile per day. If the tile are laid at a good depth the upper few feet of soil act as a great sponge to receive the rain as it falls and to deliver it gradually to the tiles. We are now making a few gaugings of the actual flow of drains to determine the maximum rate during the year, but the writer knows of no systems which have been built with the above named capacity which have proved too small. He believes that usually 4-inch tile should be used as a minimum size.

Drainage Tables. In the small bulletin "Drainage Engineering Notes," published by the State College, a table is given of the number of acres of land which will be drained by different sizes of tile, ranging from three inches to twenty-four inches in diameter laid at different grades. These tables can be had by anyone interested by writing to the Director of the Engineer-

ing Experiment Station, Ames, Iowa. They are based upon a capacity to remove one-fourth inch of water per twenty-four hours as above mentioned.

Depths for Tile Drains. The writer strongly advises laying the tile, under ordinary conditions, to a minimum depth of three and one-half to four feet. Many advocate laying the tile at three feet depth or less, but careful consideration must show that tile laid four feet deep will drain effectively a strip much more than 25 per cent. wider than tile laid three feet deep. Moreover, the land drained will be drained much deeper than in case of the three-foot depth. Tiles laid four feet deep can be planned considerably more than enough further apart than tile laid three feet deep to make up for the increased cost per foot of tile, owing to the great depth. Hence, it is economical to lay them at the greater depth, if the system is intelligently planned.

Of course, the soil structure will affect the depth at which the tile should be laid, to some extent. Again, there may be cases in which a very long line of tile would all have to be made deeper on account of a very small tract of low-lying land if the minimum depth of three and one-half to four feet were absolutely insisted upon. In such cases a short strip of the tile can be laid to the minimum depth of three feet.

Distance Apart of Tile Drains. Intelligently collected data are yet lacking in Iowa to show the exact distance at which tile drains need to be laid apart in different soils. The writer's own experience and observation have convinced him that under average conditions of Iowa soil, with clay sub-soil, the drains can be laid eight rods apart if they are put three and one-half to four feet deep. In the first piece of land which the writer drained on his own farm, as mentioned above, the drains were laid eight rods apart at the depth mentioned. Last fall, after a very wet season in that locality, the writer went carefully over the field. Apparently the drainage was perfect half way between the tiles, for the corn there appeared to the eye to be as good as those immediately over the tiles.

In another place on the writer's land one drain was run up through the middle of a wet swale. The last spring proved exceedingly wet and it is now apparent that a drain will have to be added on each side of the first. The writer found that the corn was good for a width of about eight rods, extending four rods each side of the tile.

We now have under way some drainage tests in which it is proposed to determine the height of the ground water at different distances from tile drains in different soils after different periods of time have elapsed since rainfall. We hope to obtain some information in this way to assist in determining the proper distance apart for tile drains.

In the meantime, the writer would, under average conditions, place them eight rods apart for three and one-half to four feet deep, and six rods apart for drains three feet deep.

Avoid Short Branches. One often sees tile drains laid out consisting of a main line of tile with numerous short branches each only a few rods long. This is a very uneconomical plan upon which to lay out tile drains. Each properly laid tile will thoroughly drain the land for a distance of four rods each side. At each junction, therefore, of a branch there will be four rods of tile wasted, because it passes through territory already drained by the main tile. Yet how often one sees branch-

es not more than four or five rods long, which do practically no good whatever.

So far as possible, the tile should be laid in long, parallel lines and there should be as few junctions as possible.

Avoid Unnecessary Deviations from Straight Lines. Another common fault in tile systems is to make the line very crooked. One often wonders what idea the ditcher or engineer had in mind when he meandered about over the surface of a practically level tract. Every deviation from a straight line in a tile drain should be considered an evil, only to be tolerated when it is really necessary.

The general plan of the system should be as simple and regular as possible.

Grades. The writer presumes that there is no one here present who still considers that a steep grade is necessary for a tile drain. A fair rate of grade is a good thing, because it increases the capacity of the tile, though some authorities claim that if the grade is too steep the velocity of the current will disintegrate the soil at the joints of the tile, and sometimes result in stoppage.

In tile drains properly constructed, particles of soil do not enter the tile at all, except, of course, that a little soil may find its way into the tile during and soon after construction, which is the reason for adopting four inches as a minimum size for all tile. Small sizes are too apt to become stopped up at first. After the earth has become recompact above the tile, only clear water should enter. In case quicksand is encountered during construction it should be removed for a shallow depth under the tile, and clay filled in, on which the tile should be laid.

If tile drains are properly built they may even be laid on a level grade and still do good work. Of course, the grade should be no lighter than is really necessary. The lighter the grade the greater is the necessity for careful work in construction.

Construction. In the construction of tile drains the writer thoroughly believes that grade stakes should be set at least as close as 50 feet apart by an engineer, and that the ditcher should be required to stretch a cord parallel to the grade line over the ditch, measuring from the grade stakes, and that each tile should be laid by measuring from this string. Tile should be laid as closely as possible at the joints. In case sand is encountered the tile should be surrounded below and on each side, as well as above, with clay or top soil. It is often well to blind the tile with top soil as they are laid, instead of with clay from the bottom of the ditch.

Outlets. Each tile outlet should be very carefully built. Usually a masonry wall should be constructed to hold the last section of tile firmly in place. It is also well to use a length of iron pipe at the outlet if the size of tile is not too large. The outlet should be planned in such a way that it can be kept open. A very large percentage of tile outlets in the state are exceedingly defective.

Cost. The cost of tile drainage will depend upon the percentage of the land requiring tiling. In many cases the construction of a comparatively limited amount of tile will greatly benefit large areas by taking care of the wet spots scattered here and there. In such cases the cost per acre is low.

In case every square rod of the land had to be drained the cost might run as high as twelve or fourteen dollars per acre.

In the worst case, increased crops will pay for the entire cost of drainage in a few years.

In conclusion, the writer would call at-

tention of manufacturers of tile to the importance of thoroughly disseminating drainage information among their possible constituents. If every farmer in Iowa thoroughly understood the benefits of tile drainage, the correct principles of doing the work, and the cost, four times the present output of all the factories in the state would not begin to supply the demand. (Applause.)

President Holman: I wish to thank Prof. Marston for this very valuable contribution. The paper is now open for discussion. Mr. Denison, we'd like to hear from you on this subject.

General Discussion.

Mr. O. T. Denison: Mr. President, the question is so thoroughly covered that there is nothing for me to say. It is a very able paper and I want to thank the Professor for that paper because it covers the questions that every farmer would like to know and would like to have answered. Every tile manufacturer wants to have those very questions answered as he has answered them.



Mr. O. T. Denison.

We feel the need of it. Every day we have letters asking us how much tile should be put in such a place, and no man can answer that question without a survey, but you can not make a man believe that. He thinks there is some jugglery of process by which his money is to be taken away from him. The statement coming from Prof. Marston convinces him it is honest and true. Such an answer I could make him but he would not believe me because he thinks I am interested. I am speaking of myself as a tile and brick maker. It is a valuable paper and is worth an immense amount to the tile makers of the state of Iowa.

Mr. W. H. Gethman: "Mr. President: I assure you that I am very much interested in the paper we have just heard. As our attention has been called to the primitive way of draining sloughs by means of the mole ditch, I will just give another instance of a mole ditch, comparing the same with the present way of draining the land. We had a mole

ditch on our land and it didn't stop up like the one the Mayor spoke of, but it got so large we were afraid of losing the cattle and horses in it. So this is another comparison of the earlier days of draining land and the present system.

Mr. B. F. Morey: These papers, Mr. President, in the manner they are presented, are just right, but the next question is to get them where they are most needed. The brick and tile men hear them read and appreciate and understand them, but the fellow that we want them to get at is the farmer, the man who owns the land. Undoubtedly this paper will be published in the Journal and I think it would be a mighty good idea if every brick and tile man in the State of Iowa would order a few thousand copies of them printed and keep distributing them where they will do the most good. There is none of our people here that have got farms. We are interested in selling our tile and in educating the people up to the advantages of tile, and I think it would be a good idea if every brick and tile man would push the thing along and try and educate the farmers as fast as we can, as now we can make tile fast enough, and if we get more orders than we have tile, we can shut off for a time.

Mr. C. R. Marks: I am not a brick man, I am a lawyer, but I am interested in the brick interests in a general way. I have been attorney for the Northwestern Mutual Life Insurance Co. for some time. Some years ago they sent a man out from Indiana to assist in taking and reporting on some applications. Of course he came into my office and said, "I was requested to make a special report on Iowa, the conditions here, and on the general merits of loaning in Iowa," and he of course talked with me and I extended all courtesy to him that I could. He says, "You are way behind the times here. The thing that impresses me most here is the fact that you have no drainage for the land in the whole State." I do not understand it. He spoke of certain counties, Pocahontas, and over there near Storm Lake. That was several years ago, and finally it occurred to me that perhaps there might be some merit in his statements. Now, I am not a brick or tile maker, and I am not a farmer, but I have some land that I have spent a few hundred dollars on draining, and that land is now just as good as land need be anywhere. That man intended to convey to me by his remarks that we were way behind the times in the matter of draining our land here in Iowa, but he said the time would come when we would do so and when we did the land would be just as good as the wet land. That the draining increases the moisture through the dry land and di-

minishes the moisture through the wet land. I understand he made a report to the company that Iowa was a very good State to loan money in, but there was a great chance for improvement by the farmers in Iowa for draining their land.

Mr. B. F. Morey: I want to tell the man from Indiana that if we are behind the times we are not going to stay that way very long.

Mr. T. F. Mardis, Winterset: Mr. President: I was very much pleased with the paper read and, like the gentleman at the other end of the house, think that it not only ought to be distributed all over, but that it would be a great blessing to the brick and tile makers and the farmers. Now, there are hardly any of the farmers, take it in the county I live in, that never have had any tile placed in the ground until now, and I have been handling tile for a long time, quite a long time, and they will ask me to tell them something about drainage and I can not tell them a single thing about it. I have got my garden drained and one row of tile running around into the ditch that drains the cellar and that is the only tile that I ever had. So our farmers know very little about the tile situation. But they can be educated, and what we ought to do, and it would be a great blessing to all of us I think, if this paper could be sent to every county seat with the request to use the paper throughout the county. I will take it down to Winterset and try and get it published in three of our papers and try to educate the people of our county and I think besides it will make me a little bit of money because we are going to make the tile. I have been a brick and tile maker all my life, and I used to think a good many years ago that I knew all about brick and how to make them, but I have come to the conclusion that I do not understand anything about it. The methods are altogether different now days. We have got a plant that has probably cost us \$15,000 to \$20,000, and they all look up to me to tell them something about brickmaking, when the fact is that I don't know anything about it. I know I have put my little bit of money in it, but I can not give them any instructions because I do not know anything about the present methods of making brick. I believe a copy of that paper would answer more questions than I could if I talked a week.

President Holman: The next paper on the program is by Mr. G. N. Fairchild, of Sioux City, on Comparative Economics of Down Draft and Continuous Kilns."

COMPARATIVE ECONOMICS OF DOWN DRAFT AND CONTINUOUS KILNS.

BY G. N. FAIRCHILD, SIOUX CITY, IOWA.

I am obliged to state, regarding the title of this paper, that I am unable to give any reliable comparative costs of the down draft, as compared with the continuous kiln, owing to the fact that only the latter type of kiln has been in operation at our yards since my connection with the brick plant I now represent.

In comparing these two types of kilns, the product to be burned must first be con-

sidered, as it is a fact, I think, that the type of continuous kiln I am most familiar with, is more suitable for burning only common building brick.

Although some types of continuous kilns successfully burn almost any kind of product, I think they must employ certain features found in the down draft kilns, which destroys, to some extent, the continuous feature necessary to economy.

For instance, in the type of continuous kiln we operate, the entire coaling is done from the top of the kiln, and the coal or coal dust, is poured in small quantities through small fire holes through the top, or arch, of the kiln, directly on the brick being burned. This coal sprinkles, or sifts, in among the brick and burns while falling to the bottom of the kiln.

The setting must be right, also the flue and damper arrangements, so that the fire is drawn far enough ahead, through the green material, to extract all the heat, thereby getting the full heat value of the coal, so that by the time the draft air enters the flue on its way to the stack, it is not hot and is of no value. In this way all water-smoking and a good part of the burning is done with the heat from the burned brick.

This process is the continuous kiln process as it should be, and when one has to employ down draft kiln features, such as firing in the doorways or firing grate furnaces set in the walls of the kiln, and also



Secretary L. W. Denison.

has to fire from the top, he merely has a kiln that is part down draft and part continuous.

I think for the burning of pavers, hard faced brick, or vitrified pipe, the down draft kiln is the better.

I will give below some of our costs, pertaining to a good hard burned, common, clay brick, which finishes two and one-fourth inches by three and seven-eighths inches by eight and one-eighth inches, and would like to have Mr. C. J. Holman give the comparative costs of the down draft kiln. You all know Mr. Holman has operated down draft kilns perhaps longer than any other member of this association, and has his own patented kiln, which is acknowledged by all to be a very superior down draft kiln.

The following is cost per thousand brick:

Setting from dryers in place in kiln.	.30
Coal for burning.....	.50
Labor of burning.....	.22
Drawing or wheeling out of kiln and loading on cars, or piling on ground	.35
(This also includes cleaning out kilns.)	
Repairs to kilns, average cost about..	.10
	\$1.47

The above I consider a very low cost and doubt very much if all other continuous kilns will do as well. We operate five continuous kilns with 30,000 brick capacity each, per day. We pay \$3.50 per

ton for the coal we use and our head burners receive a salary of \$125.00 per month.

For the burning of farm drain tile or hollow building blocks, I do not think the continuous kiln is as successful as for the burning of common brick, as the "settle" in a continuous kiln is going on all the time, as the fires travel forward, and has a tendency to cause a waste, in too many crooked or warped pieces. Also the throwing of the fine coal in from the top of the kiln is bound to cause some coal to collect unburned inside some of the tile or blocks, and when this coal finally burns it generally clinkers the tile immediately around, or perhaps melts some of the bottom pieces, thus letting all on top slide some and causing a waste.

With Mr. Holman's talk on down draft kilns a comparison may be made.

(Applause.)

General Discussion.

President Holman: I would only say that the comparison between continuous kilns and the down draft kilns is a good deal like the relation between capital and labor. In other words, they are under the head of modern burning and they have come to stay, and one produces one result and another produces another result, and the only idea of comparing them represents the difference in the product. My idea of down draft kilns is that the majority of paving brick in the United States, sidewalk brick and hard material, such as brick to be exposed, can only be burned successfully in down draft kilns. There is no question about the fact of common brick being burned successfully in the continuous kilns, the principle of utilizing that heat as it travels around. It does not seem to me as if there could be anything invented with the combustion of fuel that will do the work any better than the modern continuous kiln. I think our plant foreman has got one of the cleanest burning continuous kilns for my brick that I have ever seen. The continuous kiln process will add to the cost of my brick and did not produce the result. In my kilns, I have twelve down draft kilns, we burn paving or sidewalk brick, which is the equivalent, about the same thing, burning them all down fully twenty-four hours after we have got the kiln of common brick, which represents twenty-four hours of the hardest burning during the process of burning in the kiln. I mean hard firing, what would be the most severe heat on the kiln and produce the greatest amount of waste and damage to the kiln, the last twenty-four hours. For instance, we set the common brick about 7 or 8 inches, while the paving brick will go 9, 10, or 11 inches. As far as the cost of the kiln is concerned, our fuel costs about \$2.00 a thousand, I consider, and \$1.50 to \$2.00 of it is the main part of the burning of the brick. That is about \$1.00 more than Mr. Fairchild's fuel costs. Our hard brick bring \$1.00 more than we sell for paving. Common brick does not bring any more. They are supposed to be a little harder, but I market them for about the same price. We sell a great many of the select brick, and on the pressed brick we can get from two

to three dollars, so that the average represents the cost of the burning. So far as repairs of the kiln are concerned, I think this year our kiln has cost a little over, including everything as I remember it now, about 36 cents. I think the last two or three years it would average between $13\frac{1}{4}$ cents and $13\frac{1}{2}$ cents per thousand, for kiln repairs. So I say that while it is hard to get at the correct difference between the two kilns, they both come under the head of modern burning, and they have both come to stay and will be with us, I think, as long as the world turns round.

Mr. Green: I think this mode of burning clay is one of the most important things that the manufacturer has to contend with, and I think there is plenty of room for discussion. I would be glad to hear from anybody else.

Mr. Fraser: In order to give everybody a fair understanding, I would like to know what the full cost of these different plants is. Now, around Des Moines, the best of our kilns cost about \$2.00, and I would like to hear a comparison, because out here the cost of coal has got to be taken into consideration. Sioux City brick and tile men say it costs them about \$1.50 all told, or about 55 cents for coal. I would like to know in the neighborhood of what they pay for coal.

Mr. Fairchild: We pay \$3.50 for Western, or Wyoming coal. We figure that the coal costs us 25 cents and the dust \$3.25, and screenings. It is from the Hannah mine at Hannah, Wyo. It is a better quality of coal than the Iowa coal. I believe this coal at \$3.50 would be as cheap as the Iowa coal at \$1.75.

Mr. Holman: Iowa coal is about \$3.00 a ton laid down. We get what is called a range coal.

Mr. Gethman: The coal we burn is \$3.50 per ton for the burning of our brick. We burn all down draft kilns, which cost us about \$1.50 per thousand. We burn nothing but pressed brick. The cost of our kilns is about \$1,000 apiece, of 60,000 capacity.

Mr. Green: Is there anybody here who has had experience with the round down draft kilns and the rectangular down draft kilns? Some manufacturers contend that the rectangular kiln is more economical, while others say that the round is the most economical. If there is any one who has any opinion on that I would be glad to have it.

Mr. B. F. Morey: Mr. President, my experience with round kilns and with rectangular kilns in reference to the cost of fuel in our continuous kilns is about the same as Mr. Fairchild's, except our coal is a great deal cheaper. A very good way to arrive, I think, at the cost of burning the brick by way of comparison is that in burning brick in the continuous kiln you could figure on saving about 65 per cent. of the cost of your fuel. I know we do save 65 per cent. of the cost of fuel as between the continuous kiln and the

down draft kiln. What the coal costs per ton does not make any difference, because everybody pays a little different for his coal. After about eight years of experience I have arrived at that conclusion and really know that we save about 65 per cent. of our fuel. Now, as to the difference between the round kilns and the rectangular kilns, I consider the round kiln very much the more economical, and the repairs do not amount to nearly as much. These rectangular kilns contain about 200,000 brick, and I remember that as long as we were using them and pushing them pretty hard, it was hard work to keep the sheriff from getting them away from us, but when we got our continuous kilns started everything went off all right. In regard to the cost of repairs, as compared between the continuous kilns and the rectangular or round kilns, there is hardly any way of comparing. Mr. Fairchild said, I think, that it cost about 10 cents per thousand. We have burned our kiln now for about eight years, and while I have



Treasurer F. A. Stephenson.

never figured it right down, I do not think we have spent \$10.00 this year for repairs. I do not think, from the time we commenced burning kilns, and the fire has not been out of it now for about seven years, and we have burnt about a million of brick a month, the repair bill, I do not think, would amount to 1 cent per thousand. In reference to the quality of the brick, as Mr. Holman states, I think his idea is about right. If you want just common brick, there is no way of burning them as hard as you can in the continuous kilns, and if you want a better grade of brick, a paving or sidewalk brick, the difference in the cost, and the difference in the cost of repairs for your kiln is made up by the difference in price that you get for your brick. If you do not want anything but common brick the continuous kiln is the cheaper. For a man going into the business I would not advise him to have anything but the continuous kiln. It may be that there will be a continuous kiln built by some process and operation that would make just as good a brick

as you could burn in a down draft kiln, but I don't know of such a kiln. (Applause.)

The convention thereupon adjourned to meet the following morning at 9 a.m.

Second Session.

Thursday, January 10, 9 a.m.

President Holman: The convention will please come to order. Mr. C. F. Green, of Sioux City, will read his paper on "Systematization of Office Work."

SYSTEMIZATION OF OFFICE WORK.

C. F. GREEN, SIOUX CITY, IOWA.

With the keener competition which is evident in the present day business world, all classes of manufacture and trade have become more and more specialized. The very growth and prosperity of business in general have demanded that specialists take hold of and push to the utmost of economy and profit, each department of a business enterprise.

The former one-man management has given place to the division of labor, and system has been developed to bind the parts together. But system, like the causes to which it is due, has grown, and is growing until today it is not only desirable but necessary for every business.

The making and selling of brick and tile, probably needs more of a system than any other enterprise of like size, for the manufacturer gathers his own raw material and distributes his own product to the consumer. He should, therefore, study his business thoroughly and install a system which would keep an accurate account of every operation. Such a system would necessarily begin at home.

Before a price is quoted, the cost of an article must be determined. A summing up at the end of the year will not answer the purpose, for most of the product is sold and the profit made or lost. An accurate cost account is then the starting point. This account is fed by items originating in two sources—the plant and the office. The former furnishing the cost of production, and the latter the expenses of managing the business and selling the ware.

The cost of manufacture naturally is composed of labor, supplies and depreciation, and each should receive minute consideration.

In keeping track of labor, to simply record the time of each man and pay him is not enough, but his time should be charged to the exact work in which he is employed, thus enabling the management to pick the efficient men, and also keep the force speeded up to the proper limit. This apportionment is best done by the foreman, and serves the double purpose of making him more careful and giving an opportunity to stop a waste of time at once.

Under the head of supplies would come the item of fuel, oil, renewal of machine parts and tools, the keeping of horses, if there are any, etc.

First, a card system which would give up-to-date information as to the price of the various supplies needed should be used. Of course, there are some things needed which must be got from time to time, but there are many others which could be bought in quantity, or contracted for when the price is down, if one knows by comparison with former figures that it will pay to lay in a stock. Then all supplies should be bought by written order made out in triplicate. One to be kept in the office, one left with the supply house, and the third taken with the goods to the factory where the one in whose department it is used, signs the same and returns it to the office. This makes it easy to check all invoices, and prevents all uncertainty as to where the supplies go and what they are for. Such orders are not, of course, needed for the purchase of coal, as the freight bills and car record furnish sufficient check.

In paying for supplies on which there is a discount, it will be found convenient to have a desk file with a compartment for each day of the month. Invoices filed in the proper place will automatically be brought to attention one or two days before the discount period expires.

The third item which enters into the cost of brick or tile, namely, depreciation, is the least tangible, and the least considered, but is by no means to be neglected. It is often considered enough to charge off 5 per cent. of the entire first cost of the plant, but that is not exact. It is an easy matter, if the extent of your clay is known, to figure out how much stuff it will make and the rate of depreciation is then easily obtained. Then, too, kilns won't last forever, and while they can be patched up, and naturally do need more or less constant repair, which is charged directly to operation, yet there will be a time when they will need rebuilding. The same is true of machinery. When a new machine is needed and the old one has to be scrapped, the cost of a new machine should not be added to the plant, for but one is producing and one is already included in the cost of the factory. Neither would it be satisfactory to charge the whole cost of a machine to one year's output. The sane way to treat the matter is to charge to each thousand of brick or tile, a proportion of the cost of the plant based on the known or estimated life of its various parts. Before leaving the subject of depreciation, let me state the opinion that it is failure to reckon with this item which leaves the manufacturer with a worthless plant on his hands and nothing with which to replace it after a number of supposedly profitable years.

To be added to the before mentioned costs are the expenses which come directly through the office. These charges come under the heads of fixed, including tax's, insurance, interest and salaries, and variable, consisting of supplies and the expense of selling the goods and collecting the accounts. There is little to be said of the fixed charges. They are a known quantity, and do not vary with the output, but must be apportioned according to what is made in a given time. The other items are governed by the same laws as are those of the plant. They are just as much a part of the cost of doing business and have the same ingredients of supplies and labor.

Almost as important as the cost of the product is information as to the supply on hand and what may be counted on. This is more particularly true of the tile business. If a record be kept of the stuff made each day, also of what is set, taken out of kiln and shipped, you may feel safe in dealing with customers, and it is an easy matter to fulfill all promises as to delivery.

With the needed information as to the cost and stock, the manufacturer is enabled to intelligently deal with his own problems, and with the users of his product.

No man can be successful and allow the trade to come to him. He may hold the business for a while, but in time some hustler is going out after his trade and will get it. Advertising and constant solicitation are compulsory. Not the spasmodic efforts which waste both time and money, but a systematic campaign which keeps the goods before the public and urges the public to buy. Such persistence, if properly handled, is pleasing to the buyer, for it gives the impression that his trade is desired.

To keep closely in touch with customers, a list is invaluable. This list may be conveniently kept on cards having spaces for the name, address, railroad and rate in force, and below a record of quotations and the dates on which they are given. On the reverse side of the card may be kept a record of the customer's purchases and settlements. This card will tell at a glance what a man's value as a buyer is, and whether or not his business is coming in the right direction or going to the competition.

Beside the steady business, there are chance sales made by prompt use of trade journal and other information. Once the buyer is found he should be interested in your goods and quotations made him, based on cost, competition and market condition. When this is done, the matter should not be allowed to rest, but should be followed up until the order is clinched or lost. If lost, the reason, properly studied, will help to get an order the next time. If landed, the terms of delivery and payment should be clearly understood and recorded.

From now on, strictly office system is doing the work. A very convenient book will be found to be one which acts as order and sales book combined. The book is so ruled that when the order is filled, extensions are carried out completing the record and the charge may be posted to the ledger. When the order takes several cars, a line may be left for each as would be the case in a separate sales book. With such a book, orders may be filled with very little care, in the order they are received.

Before leaving the yard all loads should be checked by the foreman, and a report made of the number and quantity of goods. This strengthens ones position in case of claim, and will pay for itself many times over.

In collecting the money when due, a simple system helps materially. When the invoices are made the use of a carbon sheet



Secretary-elect C. B. Platt.

will give a duplicate which may be filed in a way similar to the one used for your own bills due. All those which are paid before the time agreed upon should be removed, and the others, as they come forward will serve as a reminder to start the collection machinery. It is usually sufficient to send a statement of the amount with notice of a draft. If this does not bring the money, by all means make draft as promised. The customer will recognize the seller's right to do this, and will have a greater respect for him than if he were allowed to use the manufacturer's money indefinitely, without protest.

In conclusion allow me to say that I think that a system which follows and guides your business from step to step, without any waste of office time, is just as necessary as the proper method of treating your clay. I do not believe there is any system, whether card or loose-leaf, which is a panacea for all the office ills. Your own system must be worked out to fit your business just as every other branch has been developed. If this is done, there is nothing to hinder you from conducting your business to the limit of its possibilities. (Applause.)

President Holman: The paper is now open for discussion.

General Discussion.

Mr. C. B. Platt: A subject in which I am quite actively interested is the subject of system in office work and

work around the brickyards. I think Mr. Green has covered the ground pretty thoroughly, and I do not see as there is anything I could say that would be of any particular interest along that line. I might say that in the matter of records, which he no doubt carries out in his system pretty thoroughly, I think it is of very great importance in the management of any plant to have a good system of records. It will help the foreman, and help everybody, and help to show who is doing good work and who is doing bad work. As a matter of fact, this system of office work is all there is to the management of the plant. I can think of nothing to say in addition.

President Holman: If there is no further discussion, we will proceed with the program.

The next paper on the program is "Discounts, Breakages and Allowances," by C. B. Platt, of Van Meter.

DISCOUNTS, BREAKAGE AND ALLOWANCES.

C. B. PLATT VAN METER, IOWA.

The condition of the tile trade in Iowa is unquestionably full of promise. We need only to examine the government statistics for a few years back to open our eyes to the greatness of Iowa as a tile market. When we were fourth in productive rank, I remember distinctly the remarks of some tile makers who feared Iowa was practically "tiled out" and that they would soon have to go into other business. I think the production since then has far exceeded the production of all the years preceding. This goes to show that all people are apt to measure the greatness of market by their own capacity yard stick and it naturally follows that too much fear is manifested that competition will soon be dangerous. It is a difficult matter to appreciate the extent of the tile using capacity of our wide Iowa fields and to estimate the thousands of rods of necessary tilling and that which is still unappreciated as a necessity to economical farming.

We can safely figure that we have years of unequalled prosperity ahead, years in which the demand will never be fully met. The farmer is fast appreciating that small tile drainage is a comparative mistake and that there is good money in the change to larger sizes.

We can congratulate ourselves on the condition of our market in Iowa without fear of offering inducements for others to take up the business. There is nothing to fear if more do go into it—positively nothing. Our greatest sources of fear are ourselves, our trade means of supplying the demand and our transportation conditions.

Of the first fear—ourselves—I would say that we fear our brother tile maker and he returns the compliment. It all springs from selfishness and an exalted belief in individual ability to supply this great Iowa market with all the tile it can consume. Herein comes the danger of the inclination to rush in and endeavor to "teach a lesson" to some presuming idiot who enters the field. He is presuming just the same though the demand is far from filled and really in its infancy. As a class of manufacturers we are perhaps too much inclined to administer punishment to people who dare to enter this field. As in any other industry the new member in the field pays the price of admission and any effort to make him regret his venture only serves to disturb the general market and profit the dealer.

In considering the method commonly used to reach the consumer, it will be found that tile are usually marketed

through middle men or dealers. As shippers we should appreciate fully whatever advantage there is to us in this system and observe all proper means of protecting such dealers by refraining from selling direct to the consumer, except at an advanced price; give them good tile, an accurate count and undeviating terms, let the price be what it may. There is nothing so disturbing to trade as a wide variation in terms made by different manufacturers. Such a condition is not only needlessly expensive, but a constant source of danger to every manufacturer in the field.

There are in the tile business, three very active "small foxes" eating away the vines of profit. They are known as "cash discounts," "breakage claims" and "count and quality claims." Of the first it can truthfully be said, there is no basis for its existence.

The cash discount sprung originally from a condition not present in the tile business in Iowa. It came from the early days of trade, when new merchandise was being introduced and when such new articles needed introduction work and capital; when it was necessary to carry stocks of such merchandise for an indefinite period. Long time billing naturally followed and with it a discount, as an inducement for cash in ten days. Every tile and brick maker now pays cash, less than 30 days for all he uses, be it labor, fuel or supplies. As clayworkers we are ourselves on a cash basis. Now take the other side—our customers. What do they do for us in return for the protection granted them in not selling to the consumer at a price ranging from \$1.50 to \$20.00 higher than they pay? The dealer sells largely from the car to the wagon, and to the most prosperous class in the world. If the dealer gives the farmer time on his bills he does so not from necessity, but as an inducement against his competition. The dealer carries no stock to speak of and calls on the manufacturer largely during the fall and spring. Tile are always wanted in a hurry and if not obtainable at one point they are obtained, if possible, from another source. They then fail to supply the farmers demand because of shortage of cars and the causes common to rush orders in any merchandise market. This means that the dealer, to whom we allow a 2 per cent. deduction for paying us twenty days ahead of due time which, on a 30 days' billing, means an interest rate of 36 per cent. per annum, is making us, the manufacturers, carry the stock; it means a reduction of volume of business; an overstock at periods and a tendency to unsettle the price current.

Let us consider for a minute the importance of this little 2 per cent. I have conversed with several prominent manufacturers during the past month. All have expressed their dislike for the custom. One firm who manufactures tile and brick said that they did a tile business amounting to \$20,000 and that the discounts taken and allowed amounted to about \$400.00, while they were able to avail themselves of discount privileges in amount of \$16.00. They pay their hands every week, and as we all do, pay for their fuel by the tenth of every month and without discount. I would like to ask how would tile makers appreciate a 2 per cent. government tax for the common good? Two per cent. discount means 20 cents per 1,000 on 3-inch tile at \$10.00 per 1,000. Would a demand from your laborers for this addition to their pay result in a strike? Now this discount business applies to all prices. It is freely taken, no matter what net price is given. It is forced on the tile makers by themselves, no one else has the power to do so. It can consequently be easily overcome and with positively no damage to the trade, to the individual tile maker or the consumer.

Breakage claims are ever present. Why? For the same reason that discount for cash losses are present, or because manufacturers allow them.

Now, why should they be allowed? There is no reason. The tile are delivered to the carrier in good condition and if

broken they are so damaged through the carelessness of the carrier in switching or through rough road beds, both conditions beyond the control of the manufacturer.

It is quicker work and more prompt return of the claim for the dealer to cut out the carrier in the matter and hand the manufacturer the claim as a deduction, along with a cash discount, from his check, the total of which bears no relation to the figures of your invoice.

Unightly heaps of broken tile in the tile consuming towns of Iowa should be salable to the township to improve all their roads and if not disposed of soon will no doubt begin to encroach further on the stocking room of the dealer. The railroads should use them for ballast and pay the bill to the dealer.

Count claims should, and rarely do occur. Every manufacturer should have a loading system which would put such claims entirely beyond reason.

Our remedy in the matter of deductions is plain and available.

Each invoice should be stamped with a rubber stamp stating the terms as "positively net cash in 30 days. No discounts or allowances for breakage." In making quotations care should be taken to state the price as f. o. b. the factory, which price may be made to include the freight, in which case it may be added "with freight allowed to _____."

Let us all endeavor to realize that we



C. A. Rawson.

are in the center of the finest tile market in the world; that there is more than enough business for us all and that the business is in its comparative infancy. Every fair competitor is a help—up to limits which have not yet been reached in Iowa—in building up the trade. Every manufacturer is handicapped in Iowa in one respect. Unless situated on more than one railroad, a profitable market is confined to one line of railway because of a lack of joint freight rates. With joint freight rates congestion on any one line is avoided and with it a tendency to cut prices at periods is done away with because of widened markets. Thus the manufacturer is benefitted, the consumer more readily supplied and in consequence the business grows with benefit to all concerned.

This association should petition the legislature for a joint freight rate. (Applause.)

President Holman: Gentlemen, the paper is now open for discussion.

General Discussion.

Mr. B. F. Morey: We do not have any discounts and we do not allow any claims for breakages, unless a man will make affidavit to it, and he has got to get the railroad agent at the station to

certify to it. We adopted that system several years ago, and I find that it has resulted in our not having claims of any kind. Sometimes, in some new section, some man makes a claim, but we soon educate him to our way of doing business, and we do not have any trouble in that line at all.

Mr. C. F. Green: I am hardly in the tile business enough to say anything about it. As a matter of fact, we have been bothered by those very troubles. There are some customers who will have all kinds of claims for breakages, and there are others where the car seems to go through all right. We find, by referring the claims for breakages back to them, that they soon drop them. As to the matter of shortage in count, that I have tried for more than once. You can prove them if you have checked your car and know the stuff in it when it leaves.

Mr. Platt: The matter of cash discounts is the one particular point that is of vital interest, I think, to all of us. I can say that the men you have called on I have talked to in this regard, and I knew that they were taking the right stand. There are others here in the room that are suffering from a condition of discounts ranging all the way from 2 to 5 per cent., depending on the kindness of the manufacturer. When I have visited the trade in my market I have had them ask me how much breakage I would allow on a car. I have said to them, "What do you mean by that?" "I mean would you allow any breakage without a notation from the agent," they would reply. We meet that kind of an appeal right along. People send us in a bill and we send them back and say, you must note on this the shortage, or we can not get any claim out of the railroad company. Some people are not allowing any discounts or allowances, but that condition exists in Iowa. I find there are other people in the business that have been established for a long time that are in the habit of allowing it because the people ask for it, and I would like to hear from them.

Mr. McKissick: I do not know as we have very much to kick of in the way of breakages, but once in a while we get hold of what we call a sticker, who will try to stick us, and we look after the matter pretty sharp. We ship to some men as high as fifty to seventy-five cars, and our claims for breakage will not amount to \$10 a year. I find once in a while that the railroad company will butt a car pretty hard, and that will break the brick. But on the subject of breakages I have no kick to make. Once in a while, as I say, some parties make a kick when they ought not to. I remember of one fellow; when I went to see him I didn't find more than ten broken brick in his yard. We make 2 per cent. sixty days' discount. We have always done that. I don't know how the rest of you are.

Mr. Platte: On this matter of the price of tile, I am perfectly willing to join in any movement to keep the price

up, but I do not think that is particularly important to the matter in hand, to discuss that point. Every man who is in the tile business ought to know how much it costs him, and how much he can sell for, and he ought to know the condition of the market.

Mr. Denison: I would like to say that in our business for something like fifteen years we have been able to maintain this uniform way of doing business. We have printed on every price list that we have sent out, "This is net cash price, no discount allowed." It is also placed upon their invoice. "These are the net cash figures and no discounts will be allowed," and we have adopted that rule until our customers would no more think of asking for a discount than they would on a dollar's worth of sugar at the store. We would say to them, we have already made you a cash discount. If you want another cash discount we will raise the price and give you a cash discount, which amounts to the same thing. Then the matter is dropped. It is largely a matter of educating your customers and getting them accustomed to your method of doing business. I inadvertently omitted, some time ago, to collect a bill when it was due, and as long as I knew the man was perfectly good, I let it run along for a time, and I never got that bill out of that man for a year. On the matter of breakage, it seems to me that conditions of the trade in Iowa are such that now is a very good time to do away with that mistaken notion and method of doing business. Of course, I am not undertaking to say what the people ought to do, but I am simply telling you what my experience has been. This matter of breakage is largely a matter of individual conditions, and the condition of your tile, but I know there are a lot of people in the tile business, or men selling tile who have fallen into the habit that if you do not allow a discount they will make it up in breakages. I have one customer in Minnesota who invariably files a claim for shortage, and will come back with a claim for just one hundred short. To test that man, I told the foreman to be very careful and count them, and after they had sworn with their right hands held up, that the car contained so many pieces, to put in another hundred. That car went out and there was no claim for shortage. But the very next one there was a claim for 100 short. I wrote to the man that I was not disposed to allow any claim for shortage, or for breakage, because I knew they were all right, and he had deliberately hidden the fact that I had sent him 100 additional. His excuse was that the car went out in the country and he never saw it. Those things are daily brought to us, and it seems to me, gentlemen, that the conditions are such that your interests demand that you make a net cash price.

President Holman: The next paper on the program is by C. L. Smith, of Mason City, entitled "Is Producer Gas

a Possible Factor in Clayworking Operations?"

Mr. C. L. Smith, of Mason City, next read an interesting and instructive paper, entitled "Is Producer Gas a Possible Factor in Clayworking Operations?" This paper will be published complete in a subsequent issue of THE CLAY-WORKER, Mr. Smith being unable to furnish a copy at the convention.

General Discussion.

President Holman: The paper is now open for discussion.

Prof. Bissell: There is great promise for the gas producer. I think I agree with Mr. Smith that where the waste steam can be used with a producer gas engine, it would be a desirable thing.

Mr. Gethman: A producer gas plant costs over 60 per cent. more for operation than a steam plant. Where you can use it for steam, as Mr. Smith states, there would be no advantage in exclusive gas.

Mr. Denison: Is it not a fact that



C. W. Ritz.

you have a producer engine at Algona, on which the students are now studying?

Prof. Bissell: Yes, sir. At the present time they are using a semi-anthracite coal at a cost of six dollars per ton. They were built to produce a full line of brick from the horsepower from the commencement to one pound of coal per hour, which is a very good figure, indeed. We were not able to make a direct comparison with the steam engine. I understand the engine there broke down completely a short time after. You can figure it out for yourself. One pound of hard coal, at six dollars per ton for horse, is quite a cheap fuel. The efficiency of the engine at full load was 20 per cent.

Mr. Denison: In regard to this I made some careful figures in comparison with the Algona gas engine, which is the engine running the electric light and pumping the water for the city. The direct horsepower, which is about the same as we use in our plant in Missouri Valley, taking the Iowa coal on the basis for which we have to pay,

we were losing \$1.50 per day, in the matter of fuel, using steam power as against gas producer. An internal combustion gas engine should have entered into account, the additional cost of the gas producing outfit and the repairs and ultimate destruction. Utilizing the exhaust steam for drying purposes, we were better satisfied to go on with the old Iowa steam coal and the old steam power.

Prof. Bissell: Just where to put the gas engine and this matter of its operation—the idea has obtained that anybody can run a gas engine, but if any one wants a gas engine, it is a good thing to have a machinist in the same town, because any one who runs it will have need for a machinist, sooner or later. In the particular engine at Algona, there was considerable difficulty in keeping it going. We were able to make a test for a considerable length of time, but in the workings of the plant they had considerable trouble, and since then the engine has been entirely replaced with one of entirely different design, and in some details I understand is perfectly satisfactory. But the ordinary steam engineer does not appreciate the gas engine to the extent of being able to give his attention at the time and in the place where it is needed. So that in general it is well to go slow on the gas engine proposition for that reason, notwithstanding the economy is a very attractive feature of it.

President Holman: The next paper in the order of the program is by Mr. C. W. Ritz, of Sioux City, on "Care of the Power Plant."

CARE OF THE POWER PLANT.

BY C. W. RITZ, SIOUX CITY, IOWA.

Among the plants that my wife spends most of her time caring for, I find none by this name, so it must be part of the industry connected with that dusty (not gold dust) and laborious institution known as brick and tile works.

The power plant of these institutions is the most expensive and necessary part for the manufacturing of clay products. In the first place, one should have a sufficient amount of boiler capacity so as not to have to crowd it to its limit, necessitating a waste of fuel in trying to get more power than was intended by the parties manufacturing it. The amount of power derived from a certain amount of fuel and machinery depends greatly upon the ability of the parties having charge of the same, their ability to get the most heat from a certain amount of coal by firing judiciously, keeping the boilers well cleaned and flues properly blown, also one who takes pride in keeping all machinery entrusted to their care, clean and well oiled and always in good repair, not using all of their mental ability in figuring out how many hours in the day and how many fires will be necessary, or how often they will have to look over the machinery.

It is not every one who has the ability to care for a power plant who makes the best man for the position, but one who is willing to do all they can to get the most power with the least amount of fuel and least wear on the machinery and who is not afraid to work a few minutes over time when occasion demands it. That gives the best results and helps to make the inner machinery of the foreman work with less grating. (Applause.)

The next in order was the reports of the various committees.

On motion, duly made and seconded, it was resolved, that there should be no freight rebates unless notation be made on the freight bill at destination of shipment, and in that case there should be credit for same. Resolution was adopted.

It was moved and seconded that no member of the association should allow cash discounts on sale of clayware; that all sales shall be made at thirty days' time, or less, at net prices, and that there should be no allowance for breakage or shortage unless the same shall be noted on the freight bill, certified by the railway agent at destination. Carried.

It was moved and seconded that the legislature be petitioned to provide a fund of \$10,000 for the equipment, and \$2,500 annually for the maintenance of a School of Ceramics at the State College at Ames. Motion carried.

It was moved and seconded that the legislative committee, consisting of J. B. McHose, of Boone; C. B. Platt, of Van Meter; F. A. Stevenson, of Mason City, and B. F. Morey, of Ottumwa, be continued in their labors to secure legislation favorable to the development of the clay industries of Iowa. Motion carried.

Moved and seconded that the president and secretary be authorized to pay the legitimate expenses of the legislative committee in procuring a law establishing a Ceramic School, and those of Mr. D. A. Kent in procuring the needed amendments to the drainage laws, a work to which they were last year asked by this association to give their labors. Motion carried.

Moved and seconded that our thanks be tendered to the citizens of Sioux City for their generous hospitality and kind attention to this association, which has resulted in making this one of the pleasantest and most profitable conventions of the association. Carried.

Mr. Morey: In reference to the report of the committee on transportation, I wish to say there has been some talk about it, but so far we have come to no definite conclusion. We really ought to have a meeting together. I would like to hear from some of the other intended members of that committee. Perhaps it would be well enough to bring it up for discussion here.

Election of Officers.

Committee on nominations reported as follows: President, W. H. Brecht, of Des Moines; vice-president, G. W. Fairchild, of Sioux City; secretary, C. B. Platt, of Van Meter; treasurer, F. A. Stevenson, of Mason City. Motion made, seconded and carried that the officers be elected as nominated.

The secretary then read his report as follows:

Report of the secretary of the twenty-sixth annual convention, held at Des Moines, January 10 and 11, 1905. Num-

ber of members enrolled, 103. Meeting held in the lodge room of the Elks Club.

Treasurer's report:

Amount on hand in 1905, \$228.58; gross receipts for 1906, \$106.00, making total of \$334.58. Expenses for 1906 convention: Badges, \$14.50; stamp supplies, \$5.00; copying papers, \$7.50; Prof. Kent's paper, \$10.00, with the secretary's salary of \$25.00, making a total of \$51.00, leaving in the treasury at the beginning of 1907, \$273.58. The total receipts of the present convention, \$76.00. All the bills of expense are not in at the present time.

Mr. Holman: I would suggest that we establish an appropriation for stenographic work at our conventions. I think we ought to make a full report, and that requires a shorthand reporter at each one of the conventions, at a cost of in the neighborhood of \$20.00, and for that purpose I think we ought to make an appropriation to pay a ste-



Prof. G. W. Bissell.

nographer. On being put to motion, it was seconded and carried.

Mr. Holman: I think out of courtesy to the papers it is no more than fair to have a stenographer and give them all the facilities we can. I think a good many of them seem to be of the same opinion that the association should pay the stenographic work.

The convention now stands adjourned sine die.

The Banquet.

Wednesday evening the annual banquet of the association was held in the ordinary of the Mondamin Hotel, fully eighty-five members and visitors being present to enjoy what the menu afforded and the good humor which generally goes with these gatherings around the festal board. The tables were prettily decorated and the hotel orchestra furnished music while the banqueters were being served. The banquet was arranged for by the local manufactur-

ers of brick and tile and in direct charge of Mr. George N. Fairchild, Mr. Thomas Green, Jr., and Mr. C. W. Ritz.

MENU

Oyster Cocktail
Wafers
Mock Turtle Soup
Olives Salted Peanuts
Baked Halibut, Bordelaise Sauce
Duchess Pot
Roast Turkey, Cranberry Jelly
Browned Potatoes Asparagus
Frozen Egg-Nog
Lobster Salad
Edam and Cream Cheese
Wafers Coffee

Mr. C. R. Marks, a prominent lawyer of Sioux City, and secretary of the Sioux City Brick and Tile Company, ably filled the position as toastmaster. The toasts were impromptu in character. Among those who responded were Prof. George W. Bissell, of Ames College; J. Fred Smith, Omaha, Neb.; Wm. Gethman, Gladbrook, Iowa; J. E. Randall, Indianapolis, Ind.; A. J. Westfall, Sioux City; H. H. Stipp, Des Moines; O. T. Denison, Mason City; H. De Joannis, Chicago, and Hollis Rawson, Des Moines.

Seeing Sioux City.

Thursday afternoon at 1:30, nearly thirty delegates were taken to Cudahy's large packing plant in a special car. They spent a most enjoyable two hours inspecting this wonderfully clean plant. The labeling room at this vast establishment was pleasingly decorated and a most enjoyable lunch served to the hungry delegates. The Cudahy company gave the delegates the freedom of the grounds and made their stay so pleasant that when the car came for the return trip, the visitors were loath to leave. The special car took the delegates back to the heart of the city and thence on a trip through the clay plants of Sioux City, which were fully written up in the December number of THE CLAY-WORKER.

Convention Notes.

There was no exhibition room, the machinery men contenting themselves by displaying their catalogues in the convention hall and around the lobbies. The Ohio Ceramic Engineering Co., Cleveland, Ohio, was the only firm represented that exhibited a model. This was in the shape of a double-deck car. E. R. Frazier, Chicago, represented Chambers Bros. Co.; Charles Burrige, Tecumseh, Mich., represented H. Brewer & Co.; H. J. Votaw, the J. D. Fate Co., Plymouth, Ohio; G. H. Smith, the C. W. Raymond Co., Dayton, Ohio; E. Plummer, Madden & Co., Rushville, Ind.; Lloyd Brown, the Ohio Ceramic Engineering Co., Cleveland, Ohio; C. L. Buxton, the Atlas Engine Works and the Globe Machinery Co., Des Moines; L. Aulman, the Eagle Iron Works, Des Moines; J. J. Gledhill, the E. M. Freese & Co., Galion, Ohio; W. G. Bowers, the Patterson Hot Air Draft Co.; Fred Talbot, superintendent of the Laclede Fire Brick Mfg. Co., St. Louis, represented that firm. Jos. C. Hunton, the Des Moines Mfg. & Supply Co., H. E. Search the Dunlap Mfg. Co., Bloomington, Ill.; C. F. Kaul, of Madison, Neb., the Multiple Down Draft Kiln, and these trade

boomers dispensed lead pencils, picture buttons, memo. books, etc., generously, with the compliments of their firms.

Mr. H. J. Votaw, representative of the J. D. Fate Co., made the hit of the convention in the advertising line, by placing in every conceivable and conspicuous place tags, on the face of which was printed in bold type, "More Fate Machines Sold in Iowa in 1906 than Any other Machine," and on the reverse side, "Ask Votaw Why."

In all probability the next Iowa brick and tile convention will be held at Des Moines.

List of Members.

H. E. Search, Bloomington, Ill.
 E. R. Frazier, Chicago, Ill.
 E. M. George, Chicago, Ill.
 H. DeJoannis, Chicago, Ill.
 L. E. Rodgers Eng. Co., Chicago, Ill.
 J. E. Randall, Indianapolis, Ind.
 Madden & Co., Rushville, Ind.
 Dallas County Brick & Tile Co., Adel, Iowa.
 G. W. Bissell, Ames, Iowa.
 J. A. Williams, Ames, Iowa.
 Boone Brick, Tile & Paving Co., Boone, Iowa.
 Geo. A. Bailey, Correctionville, Iowa.
 Chas. Tramp, Creston, Iowa.
 Barber Asphalt Paving Co., Des Moines.
 W. H. Brecht, Des Moines, Iowa.
 Des Moines Mfg. Co., Des Moines, Iowa.
 Eagle Iron Works, Des Moines, Iowa.
 T. D. Fraser, Des Moines, Iowa.
 Globe Machinery Supply Co., Des Moines, Iowa.
 Thos. Houghton, Des Moines, Iowa.
 C. A. Rawson, Des Moines, Iowa.
 Iowa.
 John P. Stewart, Des Moines, Iowa.
 J. A. Wilson, Dows, Iowa.
 John Brandon, Dysart, Iowa.
 C. G. Kaiser, Dysart, Iowa.
 R. A. Wild, Fonda, Iowa.
 Fort Dodge Brick & Tile Co., Ft. Dodge, Iowa.
 Gethmann Brick Co., Gladbrook, Iowa.
 C. A. Smith, Grinnell, Iowa.
 J. G. Sorensen, Harlan, Iowa.
 H. A. Dessell, Ida Grove, Iowa.
 Lehigh Clay Products Co., Lehigh, Iowa.
 H. E. Rankin, Lenox, Iowa.
 Linn Grove Brick & Tile Co., Linn Grove, Iowa.
 American Brick & Tile Co., Mason City, Iowa.
 O. T. Denison, Mason City, Iowa.
 F. A. Stephenson, Mason City, Iowa.
 Geo. Orton, Maurice, Iowa.
 E. J. Smith & Son, North English, Iowa.
 B. F. Morey, Ottumwa, Iowa.
 W. E. Supernois, Packwood, Iowa.
 J. A. Steinburger, Rockwell City, Iowa.
 A. M. Holman, Sargents Bluff, Iowa.
 C. J. Holman, Sargents Bluff, Iowa.
 P. A. Kryselmier, Shenandoah, Iowa.
 H. T. Shurtz, Shenandoah, Iowa.
 G. N. Fairchild, Sioux City, Iowa.
 C. F. Greene, Sioux City, Iowa.
 Thos. Green, Sioux City, Iowa.
 C. F. Green, Sioux City, Iowa.
 J. M. Lye, Sioux City, Iowa.
 C. R. Marks, Sioux City, Iowa.
 C. W. Ritz, Sioux City, Iowa.
 T. W. Pearson, Spencer, Iowa.
 C. W. Soule, Webster City, Iowa.
 T. F. Mardis, Winterset, Iowa.
 H. Brewer & Co., Tecumseh, Mich.
 Improvement Bulletin, Minneapolis, Minn.
 Geo. H. Smith, Kansas City, Mo.
 Fred Talbot, St. Louis, Mo.
 C. F. Kaul, Madison, Neb.
 Gordon Bell, Omaha, Neb.
 S. A. Corneer, Omaha, Neb.
 Frank P. Gould & Co., Omaha, Neb.
 Andy Hanson, Omaha, Neb.
 John L. Nible, Omaha, Neb.
 J. Fred Smith, Omaha, Neb.
 Ohio Ceramic Engineering Co., Cleveland, Ohio.
 J. D. Fate & Co., Plymouth, Ohio.
 W. T. Bower, Vermillion, S. D.

ANOTHER CONCRETE FAILURE.

Immense Reinforced Concrete Stack Falls of Its Own Weight.

WE PRESENT for the edification of the readers of THE CLAY-WORKER a picture of the wrecked reinforced concrete stack which collapsed some three weeks after its completion at the power station of the Illinois Traction Company, Peoria, Ill. The stack was 200 feet in height. Two of them were built exactly alike; the other one still stands, but naturally is now looked upon with suspicion. The stack was built upon a 25-foot concrete foundation, which remains intact. The first 75 feet of the

stack above the ground level was 14 feet in diameter. Above the 75-foot line a collar divided the first from the second section, the diameter above the collar being 12½ feet. The internal diameter was 11 feet, the walls of the stack being 1½ feet in thickness. It was the upper section which fell. The concrete work was reinforced with heavy steel rods, which were broken off like sticks of wood. The damage to the stack was estimated at \$5,000, with an additional damage to the building of \$2,000, so it appears from a retrospective view that the builders would have done much better had they built a good brick stack, or even a sheet iron stack would have proven a better investment.



The Wrecked Reinforced Concrete Chimney.

Written for THE CLAY-WORKER.

SULPHUR AND SULPHATES.

ALTHOUGH much has been said and written upon the action of sulphur and its compounds as pertaining to the art of the clayworker, it is certain that a full understanding of the facts has not yet been reached. Much less, then, has such an understanding found its way into the brickyards of the country where the troubles arising from this cause are felt most severely.



CHAS. F. BINNS.

It is proposed, therefore, to treat the problem here in a practical and intelligible way, in order that those who have not had the advantage of a training in chemistry may reap the benefit of the discussion. Sulphur is well known to almost every one in the familiar yellow form of the solid and the burning of a sulphur match. It is found in more or less abundance in clays, but not in a pure state. It also occurs persistently in coal. In both

substances it is met with by clayworkers, and therefore both are considered.

The most abundant form in which sulphur occurs in clay is iron pyrites, which is a compound of iron and sulphur. It is a familiar substance, easily recognized by its bright yellow scales. Iron pyrites is insoluble in water and, therefore, is nearly harmless in clay unless the pieces of the mineral are large in size. It does not take a very large fragment to form a fused black spot or to blow off a spall of the ware when fired. It is, however, when pyrites begin to alter that most of the trouble arises. A piece of pyrites exposed to moist air speedily changes its condition. Oxygen is absorbed from the air and water is taken up from the surrounding moisture, and instead of a heavy, insoluble, metallic substance there appears a crystalline powder, white when fine, greenish when in large pieces. This crystal is very soluble. It sometimes forms a whitish scum over a large part of the clay bank or pile. Rains wash it away, but upon the return of dry weather the crystal reappears.

It has a taste like ink and is the same substance as that sold in the drug stores as green vitriol or sulphate of iron.

When a clay containing the sulphate of iron is mixed with water the sulphate is dissolved in the water and as the ware is dried the dissolved substance is brought to the surface and left there. Now, if it is intended to make a buff brick or a light colored terra cotta, the iron sulphate is brought up and deposited as already described, and the result is an ugly brown stain. By whatever process the ware is made the result is the same. Dry press, stiff mud and soft mud are all subject to the trouble, and so long as there is any pyrites in the clay it will keep on changing and producing soluble crystals.

A clay containing lime will sometimes tend to cure itself of the stain on an increase of fire. If the brown stain is only slight, little more than a pink, in fact, the lime will attack and combine with this small amount of iron when the heat is raised, but if the stain be a dark brown no cure will be effected.

This trouble sometimes comes and goes, as many clay troubles will, apparently without cause. Thus a superintendent is using clay from a large bank which seems to be per-

fectly uniform. He has been working at one end and decides to change to the other. At once the brown stain appears on the brick. The reason is this: While he was continually digging fresh clay, clay which had not been exposed to the weather for any great length of time, the pyrites was in the original, unaltered and insoluble condition. Water could not dissolve it, consequently it could not be brought to the surface and left there to form a stain. The other end of the bank, however, had been standing for some time unworked. Rain had moistened it, frost had broken it up and the air had had free access to perhaps three feet of its depth. In consequence of this the iron pyrites had been changed to the crystals of iron sulphate. These, being readily soluble, had been taken up by the water and deposited on the face of the bricks, staining them badly.

Or take another case. A manufacturer is in the habit of digging a large supply of clay in the fall, storing it under a shed so as to keep the plant running all winter. He has a good supply laid up, but keeps on using from the bank until the last moment. When the weather breaks he changes over to the clay which has been stored under cover and at once a brown stain appears on the brick. The reason is almost exactly the same as that given in the first case. The clay fresh from the bank has not had time to oxydize, but that which was stored has been turned over and exposed to the air, thus producing the soluble form of the iron. Moreover, being laid away in a dry place, the rains have not been able to remove any of the salt. It would have been better to store the clay in the open air. The soluble iron would have formed just the same, but some of it would have been washed away when rain fell. It is only on light colored brick and terra cotta that the brown stain is objectionable. It often occurs on red ware, but is allowed to pass unnoticed. There is, however, a corresponding fault on red wares which produces, not a brown, but a white stain. The cause of this is also sulphur, but in a different form. There are three main sources of the white: (1) sulphate of lime in the clay; (2) lime in the water, and (3) sulphur in the coal.

From this it will be seen that both sulphur and lime are responsible and, in fact, it can not be too strongly insisted that in order to produce these troubles there must be soluble substances present.

It has already been shown that sulphur, in combination with iron, does little or no harm so long as it remains insoluble, for then it can not be carried to the surface as the water evaporates, but unfortunately, there is no insoluble form of the compound which sulphur makes with lime. Sulphate of lime, occurring as the mineral gypsum, is always soluble, though not freely. The water takes it up in the clay and, on drying, deposits it as a white coating upon the outside of the ware. The same thing happens when a water containing lime is used, only this need not be the sulphate. Several forms of lime are soluble in water and they all leave the white scum on drying. In the third case, the reaction is not so simple. If a clay contains lime in an insoluble form, it is not likely to do any harm, but when such a clay is burned with a sulphurous coal, the sulphur, entering the kiln, attacks the lime in the clay and forms the objectionable sulphate.

It will be found that most of these troubles occur in the dryer rather than in the kiln. In the case of the sulphate of iron, this is always so, and if lime occurs as gypsum in the clay, or is in solution in the water, the trouble arises in the dryer. This fact can easily be demonstrated by taking a dry brick or two and scraping off the outer skin before burning them. It will very often be found that brick so scraped will not show any of the discolorations with which their neighbors are covered.

Trouble of this sort may also occur in the dryer if waste heat be used. The air from cooling kilns usually contains a considerable amount of sulphur and this may attack the lime of the clay just as it attacks the iron framework of the cars. In fact, if it is found that the cars rust out rapidly in the dryer, some effect is almost sure to occur on the brick. The simple experiment of scraping, already mentioned, will answer the question whether the trouble occurs in the dryer or in the kiln, and the effect of the water may easily be determined by taking a portion of the dry clay and working it up

with rain water. If the bricks so made show the stains the evil lies in the clay; if they come out clear the source of the loss must be sought in the water. It is not a very simple matter to cure water which contains lime salts. Much depends upon the form in which the lime occurs. In fact, if there is serious trouble from this cause, the advice of a chemist should be sought, for the non-scientific man, in attempting to cure one evil, may cause another.

If the sulphur is in the clay, either as sulphate of lime, giving white stains, or as sulphate of iron, giving brown, it may be rendered insoluble and therefore harmless by the use of carbonate of barium. This compound may be bought in the precipitated form, which is finely divided and in practice it is usual to sprinkle it on the clay in the pug mill. Of course, it is an expense, but if it insures a clean product it is money well laid out. The barium carbonate has no effect upon the lime or iron, it simply attacks the sulphur, or rather, offers a point for the attack of the sulphur. Sulphur or sulphuric acid has a stronger appetite for barium than it has for either iron or lime, so that it forsakes these in order to attach itself to the other. This change would have no effect but for one fact, the sulphate of barium which is formed is much less soluble than the sulphates of either lime or iron. The reaction

trays of lime throughout the kiln in order to trap the sulphur before it could affect the clay.

Sometimes the brown stain is utilized in order to mask the white. A little sulphate of iron is added to the clay. Of course, only a red burning clay can be thus treated, and the brown stain thus caused conceals the white.

The whole subject of the action of the sulphates in clay wares is worthy of study, for there is no single thing which has given more trouble or occasioned more loss and that, too, in often unsuspected ways.

CHARLES F. BINNS.

A POTTERY AT AUGUSTA, GEORGIA,

By Otto Veatch, Assistant State Geologist, Atlanta, Georgia.

A SMALL EXPERIMENTAL pottery is in operation at Augusta, Ga., for the purpose of demonstrating to local capitalists the value of the kaolins of Georgia and South Carolina in the manufacture of porcelain and china ware. There are large undeveloped deposits of kaolin in the State of Georgia, and it is the purpose of the promoters of this test pottery, consisting of prominent business men of



A Model Pottery at Augusta, Ga., for Testing the Kaolins of That Section.

which takes place is that insoluble barium added to soluble sulphate of lime results in sulphate of barium and lime—both insoluble and, likewise, insoluble barium added to soluble sulphate of iron gives sulphate of barium and the iron is left in an insoluble form.

The problem, therefore, as already stated, resolves itself into the destruction of the solubility of these troublesome substances, for when they become insoluble they are harmless.

The white occurring in the kiln is not so simply dealt with, but, first of all, it should be made quite clear that it is in the kiln and not in the drier. Two constituents contribute to it, lime in the clay and sulphur in the fuel, for it is only the white scum which appears at this stage.

The lime can not be removed from the clay, but it is possible to procure a coal comparatively low in sulphur. A red ash is a pretty fair indication of a sulphurous coal.

Carbonate of barium added to the clay will help to effect a cure, but a great deal must be used and this is quite expensive. At the present writing no other remedy has been discovered, though some terra cotta manufacturers have set

Augusta, to encourage the establishment of a large pottery at Augusta which will utilize the clays in that vicinity.

The pottery is modeled after the small pottery which was in operation at the St. Louis World's Fair. The machinery is furnished by the Patterson Foundry and Machine Company, of East Liverpool, Ohio, and consists of a small blunger, slip tank, slip pump, a 22 chamber filter press, glaze mill, pug mill, one jigger and one lathe. The machinery is operated by an electric motor. There is one updraft kiln, six feet in diameter and ten feet high, having a capacity of about 175 dozen cups and saucers. In addition the pottery is equipped with a small muffle kiln for fixing decorated ware.

The kaolins thus far used are one from Aiken, S. C., and one from Gibson, Ga. These kaolins are used in the crude state, that is, just as they are taken from the deposit and without preliminary washing before reaching the pottery. Analyses of the crude clays show that the South Carolina clay contains only 1.06 per cent. of quartz sand and that the kaolin from Gibson, Ga., contains only .48 per cent. Both clays burn to a dense white body at Seger cone 9. It is purposed not to

import any of the raw material necessary in the manufacture of white ware, it being maintained that the kaolin, ball clay, flint and spar can be found in abundance in the two above mentioned States.

The work is in the charge of an experienced potter from East Liverpool. At the present time two kilns of semi-porcelain have been burned with encouraging results. The success of this test pottery will mean much to the clay industry in Georgia. It is believed that on account of the abundance and excellence of raw material at hand, potteries established in the South can compete with those in the North.

Written for THE CLAY-WORKER.

ARBUCKLE & SON TILE COMPANY.

THIS PLANT, which is located at Homer, Ind., is one of the pioneer drain tile factories of the country, established by Nathan Arbuckle in 1872, then a small plant with only one kiln and crude methods of manufacture, due to the youth of the tile business at that time. It has kept up with the pace set by modern tile manufacturers and has developed into a very successful drain tile and building block plant. It was reconstructed in 1892, all the old buildings being torn down to give way to larger, stronger buildings, with better facilities for drying their ware. The kilns were also torn down and more substantial ones erected.

They own a large body of land near the plant, rich in clay, so that they have nothing to worry them along this line. The clay is uniform, easily worked, a yellow surface clay,



Receiving End of the Arbuckle Tile Factory.

averaging four feet in depth, below which is limestone gravel. The clay at the present time is taken from a point about 800 feet from the plant. An inclined track runs from the second story of the plant down into the clay field. The clay is thrown by a shovel and spade into dump cars of the company's own construction and hauled up to the platform above the disintegrator by means of a rope cable and drum. Each of the cars has a capacity of a yard and three-quarters of clay. The clay is dropped into the disintegrator and is then dropped into the tile machine. Both of these machines are made by Madden & Co. The younger member of the Arbuckles has an interest in the Madden & Co. firm, which is located at Rushville, eight miles from Homer.

At the time of the writer's visit to their plant they were putting in a new machine, throwing out an old machine made by another firm, which had proven unsatisfactory. It was only during the past year that Mr. Arbuckle bought a half interest with Mr. Morgan, of Rushville, in the Madden & Co. firm, manufacturers of clayworking machinery.

From the tile machine the green ware is taken, by means of spring trucks, to the drying floor. The main dryer is a three-story structure, 130x50 feet, having drying floors covering over 48,000 square feet. At the further end of the plant

is a one-story dryer, 120x50 feet, having a drying room covering 6,000 square feet of ground. The boards in the floors of the dryers are set about an eighth of an inch apart, underlaid with steam pipes. Exhaust steam is used during the day, while live steam is employed at night. The engine and machinery rooms are located between the two dryers. The power is furnished by a 70 horsepower Chandler & Taylor engine and two 120 horsepower Atlas boilers.

After the tile are thoroughly dry, they are taken to the kiln. The smaller dryer accomplishes its work in four days, while the larger one requires seven days for the drying. They burn their tile in four kilns, all down draft, two of which are 30 feet in diameter, while the other two are 22½ feet. The small kilns require four days to burn, while the larger ones are finished in five days. Thirteen tons of coal is sufficient for each burn. They are thinking of installing a system for the utilization of waste heat in the near future.

A 65-foot stack gives the draft for the two small kilns, while chimneys on the walls of the two other kilns are used. They consider the latter more satisfactory. All the shipping is done by rail on the Pennsylvania road. A side track has been constructed to the very doors of the kilns, so that the cars are loaded at this point.

They recently built a two-room office to the right of the plant proper. The buildings are all constructed of building block manufactured at this plant.



Stock Pile, Arbuckle and Son in the Foreground.

Drain tile is their important product, but as a side issue they manufacture close to 35,000 block and about 60,000 brick annually. The four-inch drain tile is their money getter, however. The plant has a daily capacity of 20,000. They recently furnished 15,000 building block for the new foundry of the Madden & Co. plant. Sixteen men are employed, two in the clay field, six in the machinery room, one day burner, one night burner and the rest at loading, setting, etc.

They manufacture a beautiful red tile, which finds a ready market. Mr. Sherman Davis is foreman. There are three gas wells on the company's property, but not sufficient gas for use in the firing of the boilers or burning the ware.

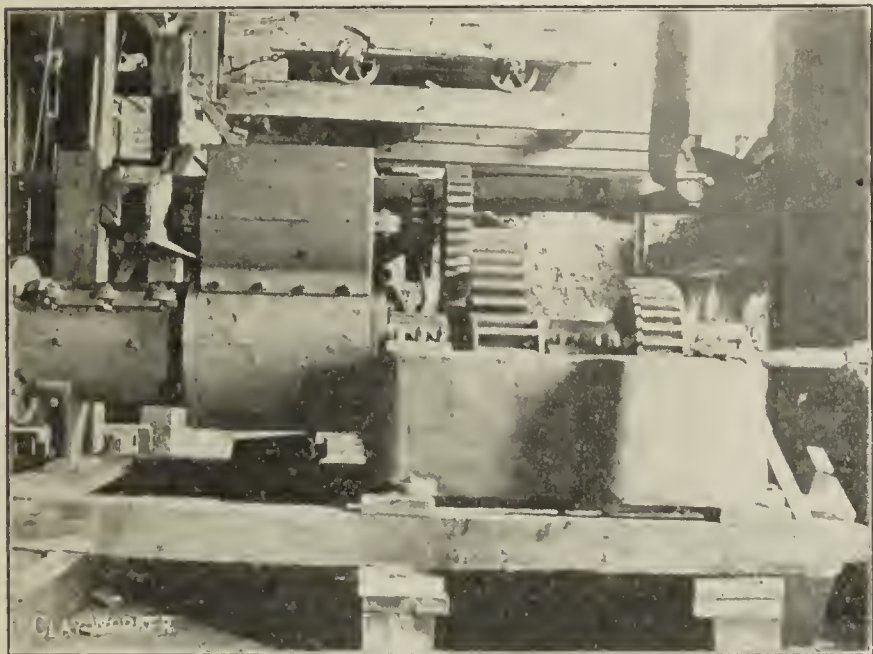
HOLLOW TILE HAS STOOD THE TEST.

Hollow tile was first used in this country in the Vancorlears flats, New York city, erected about thirty years ago, says an exchange. It was the first tile of that style made in the United States. The experiment was successful, and in 1877 there were 100,000 tons of hollow tile fireproofing material sold in the United States. Today, the output exceeds 2,500,000 tons a year, a plant at Perth Amboy alone having a capacity of 20,000 tons a month.



DRAINAGE OBSERVATIONS.

THE PAST season in many localities should lead to a careful study of the need of tile drainage. The wet conditions interfered seriously, in some places, with the planting, and again after planting the ground was so wet that little could be done in the way of cultivation. It was hardly possible to keep the weeds down, in fact some did not keep their corn weeded out because of the wet condition of the soil. Where the land was well tiled out there was little if any trouble in working the corn. In a few hours after a rainfall the cultivators could be started without injury to the soil and benefit the growing crop. On the other hand, if the land was not underdrained, the farmer's hands were tied much of the time because he could not do on account of the wet weather.



The New "Hoosier" Tile Machine.

Those who have in the past few years done something in the way of tile draining their land, possibly as much as was needful in their opinions, were reminded again and again of the need of extending the work so as to embrace practically all or most of their farm land. It is a fact that looks many in the face squarely, that most all of our clay soils would be greatly benefited by thorough underdrainage. A system of drainage that will carry away quickly the surplus water in wet weather and serve to conserve the moisture in dry weather. A practical system of tile drainage will return a generous interest on the investment in the way of increased crop production, as well as protect us so certainly against loss in a wet or dry season, that it does seem a pity that all do not see the security and profit that would be thus afforded. The sufficient underdrainage of our land is more necessary than some of the improvements that we do make. And it is the best possible improvement that we can make, looking forward to the best soil conditions for generations. All in all, the best and right thing to do is to prepare the soil properly by a thorough system of underdrainage. Don't treat the matter lightly; this added improvement of our soil conditions may be the corner

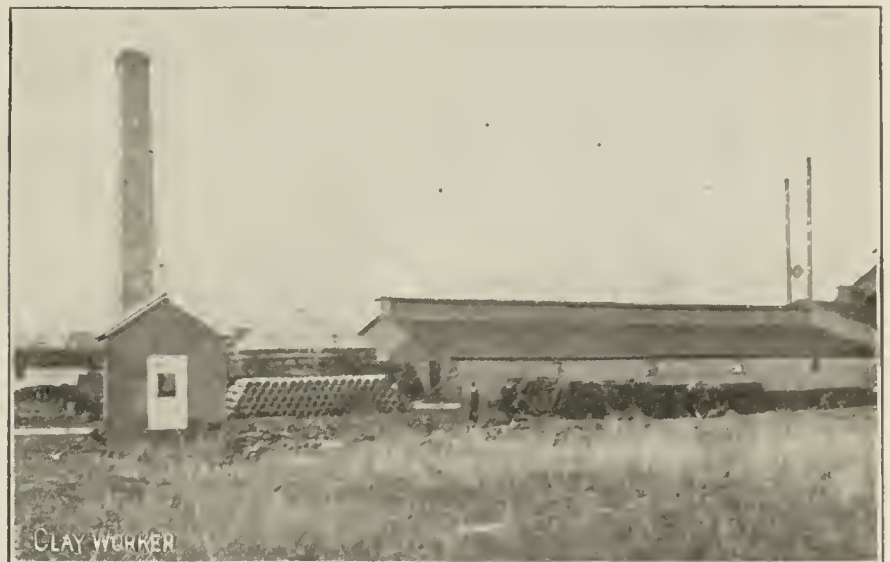
stone that we need to lay in order to insure our future success in crop production. The influence of underdrainage on the important matters of soil temperature, soil ventilation, the removal of free water, and the conservation of soil moisture, is so important that land drainage is certain to play a much larger part in the future of agriculture than it has in the past, and needs to be carefully studied, so that what is done in the future of the work may be done intelligently.

CHOOSE WISELY.

There are scores of farmers who will not take the trouble to investigate the claims made for tile drainage as a reliable means to improve farm lands; meanwhile a more progressive class recognize the advantages to be gained by tile draining their land. They see by actual experience how they can double the crop production in some instances, and in so doing double the value of the land for agricultural purposes.

There is a marked tendency to hesitate about investments of money in cheap lands yet remaining in the out-of-the-way lands of the far west, where life may be too short to profit by the long waiting for the comforts of life. Then is it not wiser to improve the lands we have by thorough underdrainage and so increase their productivity that one acre will produce as much as two acres lacking this important improvement, and do this, too, where our social, moral, religious, political and business relations are already fixed and enjoyable?

The average farmer cannot afford to occupy a farm simply



Arbuckle & Son's Factory Office and Plant.

for the pleasure of a country residence. While we eat the fruit from our own vines and trees and enjoy our home comforts we want to make some progress, and we cannot see a more certain and satisfactory way of doing this than to lay the foundation by sufficient tile drainage for the best soil conditions.

In due time these investments will command a liberal net gain above the actual cost of labor and money expended. Mr. Goodrich, of Wisconsin, says, "I commenced about eighteen years ago on some land that was not thought, by many, to need underdrainage; the tile drains doubled the crop production and I could sell the land for double the money that I could have sold it for before I tile drained it, and the drainage cost me about \$20 per acre and the result is very satisfactory to me."

A wise man was once asked, "What is the most valuable improvement ever made in agriculture?" He answered, "Drainage."

The only man on earth that ever had an absolute monopoly of all things was Adam, and even at that, history leads us to believe that he wasn't satisfied.

LARGEST CLAY MACHINERY PLANT IN THE WORLD.

Nothing more convincingly shows the magnitude of the clay industry of the country than the size of the plants devoted to the manufacture of clayworking machinery. For some time the American Clay Machinery Company, of Bucyrus and Willoughby, Ohio, has been conceded to be the largest plant in the country manufacturing this class of machinery. The American company has not been content with being the largest concern of the kind, but has from time to time made extensions and betterments which constantly increased the magnitude of the concern.

The latest movement of the American company has been the erection of a mammoth shop at the Bucyrus plant, to be used as erecting room and machine shop. This big addition is 330 feet long and 100 feet wide. Through the entire length

terments and enlargements. Evidently the American company is determined to take the best possible care of the trade that modern methods in a shop will make possible. The car department has been running overtime to keep up with its orders and other departments of the shop will be compelled to work more hours until the new shop is in operation.

HUMOROUS LOGIC.

What is the need of raising the salary of congressmen? The jobs seem to be in great demand at the present figures.

Playing a cornet for an hour or two each day is said to be fine exercise. It would likely exercise the entire neighborhood.

More people swore off the first of this year than usual.



Interior of the New Shop of the American Clay Machinery Company, Bucyrus, Ohio.

of this shop will run a monster thirty-ton electric crane to facilitate the handling of parts from the machine department to the erecting floors. The magnitude of the new building can be more fully appreciated by a glance at the accompanying cut which was taken on New Year's day and shows a part of the new structure. It will be seen that it is built of steel, along the most modern lines. It has brick side walls and will have a clay shingle roof, half the roof being glass to furnish ample light. Work on the roof is now progressing, and new boring mills, lathes and other tools are being installed. When completed this shop will be one of the finest factories in the country. In addition to this latest and largest building the American company has just completed doubling its foundry, erection of a new clay testing building, new car shops, and is still figuring on further bet-

There was all the manufacturers of impure food and most of the habitual users of railroad passes added to the list.

A girl out in Wichita, Kan., got married the other day, and can hardly be blamed for wanting to change part of her name, as the old combination was quite suggestive, being Carrie Wood.

It is understood that when Mr. Bryan recently remarked that the nomination for the presidency was "an honor no American should decline," he was not speaking of the present occupant of the presidential chair.

The fact that the death rate is a third below the average in the Middle West is not worrying the undertakers. A new use has been found for coffins. They are now used for the shipment of game through States having a strict game law.

There must have been something very attractive about

that investigation of what pure whisky really is. We note that Secretary of Agriculture Wilson has decided to pay another visit to the distilleries. Some of the scenery around these distilleries is said to be beautiful.

It is very clear that the shippers are to blame for all the car shortage. The railroads are unanimous in saying so. In fact, the shippers seem to be blamed for everything except the railroad dividends. They all come from good management on the part of the officials.

Written for THE CLAY-WORKER.

NEW YORK AND THE EAST.



DECEMBER was a remarkably warm month in some localities where brickmaking is an important industry, and the result was a better closing up than is sometimes the case. and now, as this is written, January 10, the rivers are all open and belated schooners and barges of brick are sometimes seen going down to New York or elsewhere. Last winter was mild, but there was ice in the rivers before this date which prevented shipments being made. A good deal of work has been done about the yards in different localities which couldn't have been done in an ordinary winter in this latitude. So far the ground hasn't frozen to speak of, and the mercury has ranged as high as 65 degrees this month. This is almost summer temperature and has been of vast benefit to those who were more or less delayed about their closing. It is noted that the North Jersey Brick Company, at Carlstadt, N. J., has a kiln of brick ready to burn. They are made outdoors in the ordinary way, too. Perhaps this exemplifies the mildness of the winter as well as anything could.

Along the Hudson, workmen are kept busy cleaning up and getting things in shape for the cold weather which is coming. A good deal of machinery has been overhauled and some old machinery has been thrown out to make room for new. Arrangements are being made for possible new buildings and scores of other necessary things are being done which would have been quite impossible had the weather been as cold as it usually is at this season. The cleanup has been more pronounced and there has been a better preparation for the winter than ever before, or for many years, at least.

Along the Hackensack river there has been more or less activity ever since the season was supposed to end. Occasionally a schooner or barge load of brick goes down the river, but not many can go, the supply is so low. No one has attempted to make during the mild weather. It would, of course, be dangerous, owing to the fact that freezing weather is liable to come any moment and the burning would be spoiled before it could be finished. The brick business has been one of the most profitable industries in New Jersey through the past two years and there is a feeling that this prosperity is to continue, at least, for a while longer.

In Connecticut the closing of the season occurred some time ago and manufacturers have since been figuring out their profits. The inventory is completed, showing a satisfactory balance on the right side of the ledger in nearly all instances. It is no doubt true that the season just closed was the most profitable of recent years, and that sales of brick were far ahead of anything known for many years, if, indeed, there was anything like it ever known before. The yards are virtually clear and the market outlook for the coming year is quite as promising and has quite as interesting possibilities as it has had for the past two years.

This same observation applies in varying degrees to the rest of the New England States. The market has been active, there has been a good sale of everything procurable and the outlook favors a continuation of the same desirable condi-

tions. Accordingly, manufacturers are justified in preparing for an active and profitable trade this season.

The New York market is quiet. Very little selling is in progress, though there is still some delivering going forward. Prices are practically the same as last month and are quoted as follows: Front buffs No. 1, \$32.00; grays, shaded and speckled, \$32.00; white No. 1, \$32.00; Hudson river, common, \$7.00 to \$7.50; light hard, \$5.50 to \$6.00; pale, \$4.50; No. 1 fire, American, \$25.00; No. 2 fire, American, \$20.00; Scotch, \$35.00.

Business in Boston is more or less quiet, due to the fact that building and other operations requiring brick are at a standstill, or nearly so. Prices remain substantially as reported last month. While movement is light and quotations, for that reason, are little more than nominal, nearly all holders are firm and refuse to concede anything to possible buyers. Quotations are as follows: Up and down s. s. brick, f. o. b. New Hampshire or Massachusetts yards, \$7.75 to \$8.25; Up and Down w. s. brick, \$9.00 to \$9.50; New Hampshire selected, f. o. b. cars New Hampshire, \$12.00 to \$13.00.

A difficulty has arisen about New York which has caused some speculation as to what shall be done to modify the trouble. It doesn't seem possible that building operations in Greater New York were \$50,000,000 less than they were in 1905. The great prosperity and activity of the year, the steady work on construction of various kinds and other features which attracted more or less attention during the year, seemed to show that sales of brick for building purposes were much larger. Yet here are indisputed figures which apparently prove the contrary. On the other hand the character of the building operations was such that perhaps a proportionately larger quantity of brick were required than ordinarily. The cause of this was said by those interested to be the difficulty in securing money at reasonable rates of interest. In other words, prosperity has been of such a nature that expansion in one direction has retarded growth in other ways to some extent. Money could be loaned more profitably for other purposes; accordingly builders were compelled to go without. Where there was money to be had the interest was prohibitive and everything had to be abandoned. Nevertheless, the operations which have been pushed forward are of such a character that the loss to brick manufacturers has not been important as yet. Great public and semi-public works have taken everything offered and the largest of these works are not yet finished, nor will they be for some years to come.

A bill has been drawn by the Passaic Sewage Commission in New Jersey and will be presented to the legislature which convened early in January. It provides for the construction of an immense trunk sewer to convey the sewage from the Passaic river towns as far up as Great Falls and deposit it on the Hackensack meadows, where some adequate method of disposal is to be provided. Of course, no specifications have been prepared. Not even plans have been drawn, but Newark and Paterson have agreed upon a plan. This is a long step in advance. Agreement has never before been possible. It is not known whether the bill will pass or whether it will be laid over until the coming season. It is admitted without fear of contradiction, however, that the bill ought to pass and that the Passaic river ought to be cleaned and restored to the people who live along its banks in its pristine purity. In doing this many thousand brick will probably be used.

Sewer Pipe of Reinforced Concrete.—In Germany and France and other countries of Europe, sewer pipe of concrete has been in use for many years; however, lately the reinforced idea has taken hold, and now we find that many large sewers are made in that manner. The cement people claim many advantages for concrete sewer pipe, first, that it will hold water better than either clay sewer pipe or sewer constructed of brick; second, that they will stand more pressure than clay pipe. They are cheaper than clay sewer pipe, and are usually made right at the place of the sewer construction, which saves a large amount of freight and handling.—Deut. Topf. & Z. Z. No. 92, 1906.



OFFICIAL ANNOUNCEMENT.

THE TWENTY-FIRST NATIONAL CONVENTION TO BE
HELD AT ST. LOUIS, MO., FEBRUARY 4 TO 9, 1907.

**American Ceramic Society and National Paving
Brick Manufacturers' Association Hold Sep-
arate Sessions February 4 and 5.**

The Sessions of the N. B. M. A. Will Begin Wednesday After-
noon, February 6, and Continue Thursday and Friday,
After Which the Time of Delegates Will Be
Devoted to Visiting Clay Plants, Etc.

THE twenty-first annual convention of the National
Brick Manufacturers' Association will be held at St.
Louis, Mo., February 4 to 9, 1907. Tickets will be
good going from January 31 to February 6, inclusive, and
will be good returning up to and including February 13. As



The Planters Hotel, St. Louis.

in former years, the week will be divided by the National As-
sociation and the affiliated bodies, as follows:

The American Ceramic Society will meet in the Planters
Convention Hall, Monday and Tuesday, with a final session
Wednesday forenoon.

The National Paving Brick Manufacturers' Association will
meet Tuesday at 10:00 a. m., in Parlor B.

The sessions of the N. B. M. A. will begin Wednesday
afternoon at 2:30. The following sessions will be held in the
forenoons of Thursday and Friday, thus leaving the afternoons
of those days open to sight seeing, trips to clayworking plants
and other points of interest. If the program can be completed
on this schedule, there will be no session Thursday afternoon
or Friday afternoon.

The Convention Hall and Exhibition Room.

All the convention sessions will be held in the Planters
convention hall on Parlor floor. The local committee on en-

tertainment and the ladies' reception committee will have
headquarters on that floor. An exhibition room will also be
provided there for the display of clay products, specimen
brick, and trade literature. There is not sufficient space to
justify the display of models and machinery, but the manu-
facturers of machinery will be given space for display of their
printed matter. The exhibition room adjoins and opens into
the convention hall and the entire arrangement is most ex-
cellent.

Hotel Headquarters and Rates.

The Planters Hotel will be headquarters during the con-
vention. It is a modern brick and terra cotta structure, and
will afford unexcelled comforts and facilities. Delegates and
those accompanying them will be accommodated on the Amer-
ican plan at the minimum rate of \$3.00 per day for each per-
son, two or more in a room, parlors and rooms with bath
extra. Those preferring to stop on the European plan will be
accommodated at the minimum rate of \$1.50 per person, two
or more in a room; single beds for each person being furn-
ished when desired. Those desiring special accommodations
are requested to apply for same to the hotel direct. Those
ordering reserves in advance should invariably state date of



Oriental Parlor, Planters Hotel.

intended arrival, character of accommodations desired, and
number in party.

Reduced Railroad Rates and How to Get Them.

Reduced railroad rates on the certificate plan, affording a
two-thirds rate for the round trip, have been granted by
all traffic associations, covering the entire territory in the
United States east of Denver. Canadian lines have also
granted the same rate.

To obtain the reduced rate, delegates, and those accom-
panying them, must pay full fare for the going trip and **TAKE
A PROPER CERTIFICATE** for same from their ticket agent.
This certificate, when properly vised, will entitle the pur-
chaser to a return ticket at one-third the fare paid, making a
two-thirds rate for the round trip. Those starting from small
towns should make inquiry of local ticket agent a few days
in advance to insure the receipt of proper certificate. If cer-
tificates are not taken, the reduced rates cannot be secured.
As it takes some little time to make out the certificates, dele-
gates should present themselves at the ticket office at least
thirty minutes before the departure of trains. If through tick-
ets cannot be procured at the starting point, local tickets
should be purchased to the nearest point where such through
ticket can be obtained, and there purchase through to St.
Louis, and a certificate from the ticket agent at the place
where each purchase is made should be requested. The latter
feature is imperative. No refund of fare can be expected be-

cause of failure of delegates to obtain certificates. Should any ticket agent be unable to furnish a certificate on the regular printed form, delegates should take a written receipt, setting forth the fact that certificate was asked for and could not be furnished, and stating the amount of fare paid, the name of the station where purchased and the names of the railroads over which purchaser is ticketed. Such receipt, bearing the agent's official stamp, will enable delegates to obtain a proper refund. Return tickets will be good until midnight of Wednesday, the 13th. Tickets good going from January 31st to February 6.

The Annual Banquet.

An Associational Dinner will be served Thursday at 8:00 p. m., in the banquet hall of the Planters Hotel. All delegates and guests, including the ladies, will participate in this function, which will be given under the auspices of the clayworkers of St. Louis.

There will be other entertainment provided for the visitors, including a theatre party for the ladies, of which further announcement will be made at the convention.

N. B. M. A. PROGRAM.

FIRST SESSION—WEDNESDAY, 2:30 P. M.,
FEBRUARY 6, 1907.

Prayer by Rev. Dodson, St. Louis, Mo.
Enrollment of New Members and Roll Call.
Welcome to St. Louis by His Honor, Mayor Rolla Wells.
Response by Wm. H. Hunt, Cleveland, Ohio.
President's Annual Address, John R. Copeland, Birmingham, Alabama.
Report of Treasurer, John W. Sibley, Birmingham, Alabama.
Election and Installation of Officers and Members of Standing Committees.

1. "The Importance of Trade Schools for the American Boy,"
Dr. S. C. Dickey, Indianapolis, Ind.
Discussion, led by Murrell Dobbins, Philadelphia, Pa.

WEDNESDAY EVENING, 7:30 P. M.

A lecture by Prof. Edward Orton, Jr., Columbus, Ohio, on the subject, "The Occurrence and Preparation of High Grade Clays for the Market." Illustrated with stereopticon views.

SECOND SESSION—THURSDAY, 9:30 A. M.,
FEBRUARY 7, 1907.

2. "The Needs of the Hour,"
C. B. Platt, Van Meter, Iowa.
Discussion, led by _____
3. "Cutting Eye Teeth in the Brick Business,"
C. P. Mayer, Bridgeville, Pa.
Discussion led by _____
4. "Life in Brickwork,"
Charles I. Schneider, Cleveland, Ohio.
Discussion led by _____
5. "Strength of Brick and Brick Piers,"
Lieut. J. A. Howard, Watertown Arsenal, Mass.
Discussion led by R. G. Eisenhart, Horseheads, N. Y.
6. "Some Evidence of How a Paving Brick Should Be Burned,"
Ross C. Purdy, Champaign, Ill.
Discussion led by _____
7. "Permanent Improvement of Public Highways,"
E. L. Powers, New York, N. Y.
Discussion led by _____

QUESTIONS FOR GENERAL DISCUSSION.

8. Are paving brick burned successfully in continuous kilns?
9. What is the limit of size for a round down draft kiln that will burn brick successfully? That is, the height and width.
10. How shall we decide the best time to close a kiln of vitrified brick?
11. How and to what extent is bauxite used in the manufacture of fire brick?

(Continued on Next Page.)



Reduced railroad rates to St. Louis, fare and one-third on the certificate plan, have been granted by all Traffic Associations, in territory throughout the United States and Canada, east of Denver. See above map. Members from points west of the line shown, should use their local mileage to the point east of the line from which they can buy through ticket. There purchase through ticket to St. Louis taking necessary certificate.

TICKETS GOOD GOING FROM JANUARY 31 TO FEBRUARY 6. GOOD RETURNING UNTIL MIDNIGHT OF FEBRUARY 13.

12. What is a fair requirement as to percentage of loss allowable in the Standard Rattler test for street pavers? Is the Standard Rattler test being adopted generally for paving brick?

THIRD SESSION—FRIDAY, 9:30 A. M.,

FEBRUARY 8, 1907.

13. "Mechanical Versus Hand Work on the Brickyard."
W. P. Alsip, Winnipeg, Manitoba.
Discussion led by _____
14. "The Use of Heat from Cooling Kilns for Drying Brick,"
A. R. Harwood, San Antonio, Texas.
Discussion led by _____
15. "Artistic Brickwork" (An Illustrated Opinion),
Dean J. M. White, Champaign, Ill.
Discussion led by _____
16. "Report of Committee on Technical Investigation,"
Prof. Edward Orton, Columbus, Ohio.
Discussion led by _____
17. "Burning Brick with Producer Gas,"
C. A. Guignard, Columbia, S. C.
Discussion led by _____
18. "Mixing Coal in Clay in the Manufacture of Brick,"
Caleb C. Marshall, Catskill, N. Y.
Discussion led by _____
19. "Hydraulic Stripping of Clay,"
General discussion, led by Frank W. Butterworth, Danville, Ill.

QUESTIONS FOR GENERAL DISCUSSION.

20. What is the best means of increasing the number of journey-men bricklayers?
21. How can we as an organization prevent concrete construction supplanting brick?
22. Is the drying of stiff mud brick in the kiln a practical and commercial success?
23. What is the best means of overcoming the prejudice in certain markets for any but soft mud brick?
24. Should the N. B. M. A. make an effort to establish standard sizes and shapes of hollow building brick and block?
25. Which is best—a low or a high pressure in burning brick with natural gas?

Rules of Procedure.

All formal resolutions shall be presented in writing.

At the close of each essay or address an opportunity will be afforded for the full discussion of the subject under consideration.

No papers or essays not included in the regular program will be heard unless previously submitted to and approved by the Executive Committee.

In and About St. Louis.

The fame achieved by St. Louis during the World's fair makes it unnecessary for us to comment on the city's attractions. Its theatres and other places of amusement compare favorably with those of any other American city, and the same may be truly said of its great commercial structures, its educational institutions and beautiful parks. The famous Eads bridge which spans the Mississippi is itself one of the engineering feats of the nineteenth century. St. Louis is a great clay center. There are in and about the city a large number of enormous clayworking establishments embracing almost every modern clay industry, her common, pressed and ornamental building brick manufactories are both extensive and up-to-date in equipment. The same is true of the great fire brick and other refractory plants, all of which will be open to inspection throughout the week of the convention. St. Louis clay manufacturers are organized for the express purpose of welcoming and entertaining the delegates to the convention, and it is needless to say that our members and those who accompany them will be received and entertained with open handed cordiality that will make the St. Louis convention a memorable event to every participant.

Souvenir Badge of Membership.

A handsome and appropriate badge of membership will be presented to all delegates and guests, which will prove a pleasing souvenir of the occasion. All trains into the city enter the Union Station, one of the most famous depots in the world. Those desiring can take an Eighteenth street car at the station, which passes the main entrance of the Planters.

All sessions of the convention are open to the public. Those who are interested directly or indirectly in clay work of any character are invited to join the Association and at-

tend the convention. Members and their families or friends who may accompany them will be entitled to reduced railroad and hotel rates, and to participate in all the side trips, etc. Those desiring further information as to requisite of membership, etc., are requested to communicate with the Secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,

JNO. R. COPELAND, President.

THEO. A. RANDALL, Secretary,

AMERICAN CERAMIC SOCIETY PROGRAM.

As the members will perceive, the following program is the most extended in the history of the society. So far as can be foreseen, the St. Louis meeting will be the most brilliant, the most widely attended and the most scholarly of any meeting yet held. To all whose circumstances will at all permit, the following program should offer sufficient inducement:

FIRST SESSION—MONDAY, FEBRUARY 4, 1907.

All sessions will be held in the convention hall of the Planters Hotel.

1. Call to order at 10 a. m.
2. Address of the retiring president, Willard D. Richardson, Columbus, Ohio.
3. Appointment of scrutineers of election.
4. Reading of the minutes of the meetings of 1906.
5. Reports of officers.
6. Announcement of results of election.
7. Installation of new officers.
8. Reports of committees.
9. Old business.
10. New business.
11. Recess.

SECOND SESSION—MONDAY AFTERNOON, FEBRUARY 4.

12. Call to order at 2 p. m.
13. Announcements from the president and board.
14. "Fritted Glazes: An Investigation Into the Effect of Variations in Their Oxygen Ratio, and Their Silica Boracic Acid Ratio," by Ross C. Purdy and Harry B. Fox, Champaign, Ill.
15. "Plaster of Paris Molds," by George Simcoe, Victor, N. Y.
16. "Reduction in the Over-Glaze Decorating Kiln," by Charles E. Jackson, Syracuse, N. Y.
(A note on "Spitting Out" in the decorating kiln, by Mr. R. G. Cowan, Alfred, N. Y., will be read in the discussion of this topic.)
17. "A Comparison of the Costs of Preparing Frit by the Frit Kiln vs. the Sagger Method," by Arthur E. Mayer, Beaver Falls, Pa.
(A note on "The precautions to be used in the mechanical preparation of glazes," by Herbert Goodwin, Columbus, Ohio, will be read in the discussion of this topic.)
18. "Glazes and Bodies," by Charles Weelans, Trenton, N. J.
19. "A Simplified Method of Getting the Cost of White Ware," by Thomas Gray, East Boston, Mass.

THIRD SESSION—MONDAY EVENING, FEBRUARY 4.

20. Call to order at 8 p. m.
21. "Crystalline Glazes: The Effect of Variation in Their Oxygen Ratio and Ro Composition, with Different Crystallizing Agents," by Junius F. Krehbiel, Champaign, Ill.
22. "Note on Terra Cotta Glazes," by C. W. Parmelee, New Brunswick, N. J.
23. "Note on the Relative Cost of Firing Biscuit and Glost Kilns," by Thomas Gray, East Boston, Mass.
(Data on this topic has been promised in the discussion of this topic by Herbert Goodwin. Others having data are requested to present it.)

FOURTH SESSION—TUESDAY MORNING, FEBRUARY 5.

24. Call to order at 9 a. m.
25. Brief business session.
26. "Polychrome Glaze Decoration in Architecture," by H. A. Plusch, Rocky Hill, N. J.
27. "The Technical and Mechanical Problems of Terra Cotta Manufacture," by S. Geijsbeek, Seattle, Wash.
28. "The Construction and Operation of a Terra Cotta Plant," by W. J. Stephani, Philadelphia, Pa.
29. "Symposium on the Terra Cotta Kiln"—
(1) "Note on the Burning of Terra Cotta in Open Kilns," by H. P. Humphrey, Bradford, Pa.
(2) "Note on a Terra Cotta Kiln of Unusual Design," by A. Boleschweiler, Perth Amboy, N. J.
(3) "Note on a Muffled Kiln for Enamel Bricks," by John B. Millar, Toronto, Can.
(4) "Design of a Terra Cotta Kiln," by W. J. Stephani, Philadelphia, Pa.
(5) "Data on the Northwestern Terra Cotta Kiln," by A. F. Hottinger, Chicago, Ill.

FIFTH SESSION—TUESDAY AFTERNOON, FEBRUARY 5.

30. Call to order at 2 p. m.
31. Brief business session.
32. "Some Aspects of the Physical Chemistry of Fusing Silicates," by A. V. Bleininger, Columbus, Ohio.
33. "Porcelain for Electrical Purposes," by A. S. Watts, Victor, N. Y.
34. "A High Temperature Carbon Resistance Furnace," by Allan Coggeshall and A. V. Bleininger, Columbus, Ohio.
35. "The Influence of the Rate of Cooling on the Toughness of Vitrified Paving Brick," by Leonard B. Coulter, Columbus, Ohio.
36. "A Study of the Absorption of Cooling on the Toughness of Vitrified Paving Brick," by Leonard B. Coulter, Columbus, Ohio.

SIXTH SESSION—TUESDAY EVENING, FEBRUARY 5.

37. Call to order at 8 p. m.
38. "The Government Testing Station at St. Louis and Its Work," by one of the corps of officials connected with the station. (In connection with this topic, a discussion of the proposed inclusion of clays and ceramic products in the field of the government's work, and the attitude this society will maintain to this movement is desired. A visit to the fuel and cement testing station will probably be arranged for the afternoon of February 7.)
39. "The Relation Between the Composition of a Fuel and Its Value in Ceramic Firings," by A. J. Aubrey, St. Louis, Mo.
40. "Note on the Rational Analysis," by H. Ries, Ithaca, N. Y.

SEVENTH SESSION—WEDNESDAY MORNING, FEBRUARY 6.

41. Call to order at 9 a. m.
42. Brief business session. Announcements.
43. "Some Compression Tests of Bricks," by H. A. Wheeler, St. Louis, Mo.
44. "Pyro-Chemical Changes Occurring in the Burning of Clay Wares," by Ross C. Purdy and Joseph K. Moore, Champaign, Ill.
45. "The Difficulties of Salt Glazing Utah Sewer Pipe," by A. F. Greaves-Walker, Salt Lake City, Utah.
- (In this connection, the proper ratio of kiln area and fire-box area for salt glazing is raised for discussion.)
46. "Surface Pimpling on Salt Glazed Sewer Pipe," by A. J. Aubrey, St. Louis, Mo.
47. "The Effect of Time on the Manganese Employed in Making Gray Brick," by John B. Millar, Toronto, Can.
48. Closing business. Installation of newly elected members.
49. Adjournment.

(By agreement between the two organizations, the American Ceramic Society must adjourn on Wednesday noon, to make way for the meetings of the National Brick Manufacturers' Association, who begin Wednesday afternoon at 2:30.)

Come and enjoy the unselfish pleasure of "Opening up," and the benefits of fraternal intercourse with your kind.

For the Board of Trustees,

EDWARD ORTON, JR., Secretary.

Columbus, Ohio.

Brick Business Good in Detroit.

Editor THE CLAY-WORKER.

Enclosed please find remittance of \$2.00, for which kindly enter our name on your list of subscribers for another year.

In answer to the article written in November number, under the head of "Detroit Brick and Building News," regarding our concern, we are much tickled to know that our brickmaker friends are taking such interest in our welfare and to those or the writer of that item, we can frankly say that the closing down of our plant, October 16, was not at all due to labor troubles or to the low wages offered them, as we have always paid as high wages as any of our competitors. We have simply closed down because we had a large stock of brick on hand and our plant needed repairing, and this was an ideal opportunity to do it.

Hope you may find a little space in THE CLAY-WORKER to insert this to satisfy all comment among our brother brickmakers, those who are so deeply interested in the situation of the F. H. Wolf Brick Company, and will also say that we have made brick a great many years and when the time comes we shall continue to do business at the same old stand.

Business has been good in Detroit the past year and we are satisfied with the portion we received.

Wishing you the compliments of the year, we beg to remain

Very truly,

THE F. H. WOLF BRICK COMPANY.

Detroit, Mich., December 21, 1906.

THE ORIGINAL EXHAUST STEAM DRYER.

A FEW years ago the National Dry Kiln Company, of Indianapolis, Ind., realized the need of a dryer that would utilize exhaust steam. Being practical dryer men, they had no trouble in designing the National Exhaust Steam Dryer. This dryer is free from all complicated methods generally used in dryer construction. There are no heaters in pits, packed joints, fans, engines, etc., which have always had a tendency to discourage the brickmaker with the subject. The simplicity of the heating apparatus (being free from all unnecessary turns, etc.) allows the use of exhaust steam.

Every foot of piping is placed directly under the car and above the cross rail (still not crosswise under longitudinal rail). Thus assuring every heat unit the pipes radiate the heat must go directly up through the loaded car. It also allows instant access to any pipe. All joints in heating apparatus are in sight, and in case of repair none need be disturbed except the one requiring repair.

For drainage (which has always been a serious question) every foot of piping is on an incline, which with exhaust steam must be by gravity to prevent back pressure. This piping will completely drain itself after steam has been turned off. This is not a fact with any other dryer on the market today.

Steel cross rails have taken the place of wood ties and steel roof supports have been installed. This construction assures the track to always be in line and a roof support that



National Dry Kiln Company's New Brick Dryer.

will not decay. The cars are of steel, fitted with steel roller bearings. Carefully selected material is used throughout and every part has had its special attention.

This dryer was immediately accepted by practical brickmakers throughout the country, has been installed in many new plants, and has been placed alongside many well-known types of dryers, and in each and every instance has received the hearty endorsement of its user.

About three years ago, the Nonpareil Brick and Clay Company, of Nazareth, Pa., installed a National Exhaust Steam Dryer. A few days ago a prospective National customer wrote them in reference to same from a practical point of view. Their reply was as follows:

"Your favor at hand, and in reply beg to say that we consider the National Dryer, from a practical point of view, the cheapest and most durable dryer on the market, for the following reasons: During working hours, we run in the exhaust from the engine, which costs us nothing, and during the night we run in live steam. We have had same in use for three years with an expense of about \$4.50. It is simple to operate and practically nothing to get out of order. You certainly will make no mistake in installing 'The National'."

The prospective customer wrote several other National users, and in every instance received favorable replies.

Mr. D. A. Layton, of Marion, S. C., who has another well-known dryer besides his National, wrote in part as follows:

"The National is decidedly the finest dryer that I have ever seen. Everything about it is so simple and it gives me

perfect satisfaction, and I have found the National people will do just what they say."

The prospective customer bought a National, which the National people are now shipping, along with another for the same locality.

A new catalogue, No. 500, has just been issued, which goes into detail. It contains many letters from representative brickmakers, who are elated over the Exhaust Steam Dryer.

It will pay every brickmaker to send for this catalogue.

Written for THE CLAY-WORKER.

CEMENT BLOCKS.

Reasons Why They Will Never Come Into General Use.



MORE THE QUESTION is investigated the less the clayworkers have to fear the inroads of concrete construction. Any new thing causes some of us a certain amount of anxiety. To be sure, the use of concrete in building construction is by no means new, though relatively new uses have been made of it. The cement block, which it is affirmed that any one can make in the back yard or under a shed, or any place where sand and gravel are accessible, threatened at one time to have some influence on the brickmaker,

but the more the cement block is understood, the more generally it is used, the fewer friends it has. A few years ago, there was a cement-workers' convention in Indianapolis and it was very thoroughly given up to the makers of cement block machinery. Much was claimed for it and, in truth, the idea was well promoted from the promoters' standpoint. The year following, the cement users had their convention in Milwaukee and the proceedings were made up very largely of discussion as to cement block problems. The character of the block, from the structural standpoint, has never been satisfactory and, while the proceedings of the first convention were largely made up of prophesies and expressions of hope and encouragement, the second convention, at Milwaukee, was based on the troubles of the previous year. The proceedings of that convention would indicate, as they did, that these block are a very poor building material. Structurally, they are deficient, and the difficulties in the way of laying them properly were shown to be very great, if not insurmountable. When they were made for the purpose of carrying out a good design, their cost was so great as to place this material outside the market. But the greatest of their troubles was that which relates to the absorbing qualities of the block. Almost literally, the rain beat through the walls. The cement block building was damp on the inside. This difficulty was not made very conspicuous at the first convention, though it was discussed to some slight extent. It was more conspicuous in the Milwaukee convention and various dopes and preparations were suggested for rendering the block impervious. At the last convention, just held at Chicago, this feature was decidedly conspicuous and there were many concerns represented in that meeting who were offering solutions to the "humidity" problem, this feature, in itself, indicating the serious character of the problem. A number of the builders and engineers took up with the cement block idea with some enthusiasm and considerable interest, but so far as the writer knows, among the architects, the cement block has not, at this time, one capable friend. Many who were desirous of specializing in the use of the cement blocks have been compelled, because of the character of the material furnished, to entirely abandon their use.

The artistic value of the cement block now is, and always has been nil. It was argued in the beginning of the recent history of these blocks that an artistic reproduction of various

forms could be cheaply made and that a building having all of the beauty of form and color of stone could be readily secured through the use of this material; that any place where there was sand and gravel one could build a highly decorative and substantial structure which would have all of the interest of the cut-stone building. Some very good work has been done by one or two concerns, not with the hollow cement block, but with a cement stone composition which was cast in sand molds, but this was not the cement block ordinarily known in the building trades, but was a material requiring great skill and special preparation in its manufacture. The cement block which we now know is always associated with the idea of ugliness. The writer never saw a cement block building that was not ugly, and he never saw a cement block which a self-respecting architect or an ambitious builder would use in any building where there was any consideration whatever for appearances. The makers of cement block, as ordinarily understood, can not point to any building of de-



The Concrete Crack at Close Range.

cided artistic merit. This leaves out of the question altogether the matter of structural excellence. One great difficulty which users of this material have to contend with has been the difficulty of carrying out good designs. It is very expensive to make blocks of great varying size, either in height or in length, and no one wishes to conform the size and spacing of frames to suit a particular machine. There are relatively few plants in existence which can take the plan of the ordinary stone or brick building and carry out the design in cement blocks. This feature, alone, has been very largely instrumental in condemning the cement block idea. No architect cares to make his plans to fit a material. He prefers that the material should be made so that it will fit his plans. The condition, as it now stands, places the cement block outside of the range of possibility as a material which will compete with brick and stone. Saying nothing about this feature of the cement block idea, leaving out the question of the absorbent qualities, also that of form, who is it that ever saw

a cement block that was not dull and dead and leaden in color? The cement block idea was received with a certain amount of interest because of its alleged cheapness and the promise of its excellence. The latter promise has not been fulfilled and it is neither as cheap nor as good as brick. The cement block will have a certain sort of pioneer existence for some time. It will continue to occupy new fields, but there is a limit even to this. The new fields having been exhausted, the market for the machines will have been exhausted. The cement block idea is passed.

At a recent meeting of the Engineering Societies of the State of Indiana, Professor Hatt, of Purdue University, remarked that the architects would have to reform their styles of architecture to accommodate the cement block. This was a remarkable acknowledgement coming from an eminent authority on the subject of concrete building materials. Of course, the architects will do nothing of the kind. To begin with, their spirit is unfriendly to this material because of its

out materially toward the top and stands a gaping demonstration of the element of uncertainty in concrete work.

Written for THE CLAY-WORKER.

SYSTEM IN THE CLAY BUSINESS.



MARKETING of clayware of the ordinary class, particularly drain tile, is burdened with some queer and antiquated customs; customs which present day conditions do not call for and which are simply nothing more nor less than a cut in the price, not made by the seller but permitted by him, even in defiance of printed conditions on invoice. In a good many sections it is the

general custom to allow deductions from invoices for brick and tile, under claims for shortage, breakage and 2 per cent. for cash in ten days.

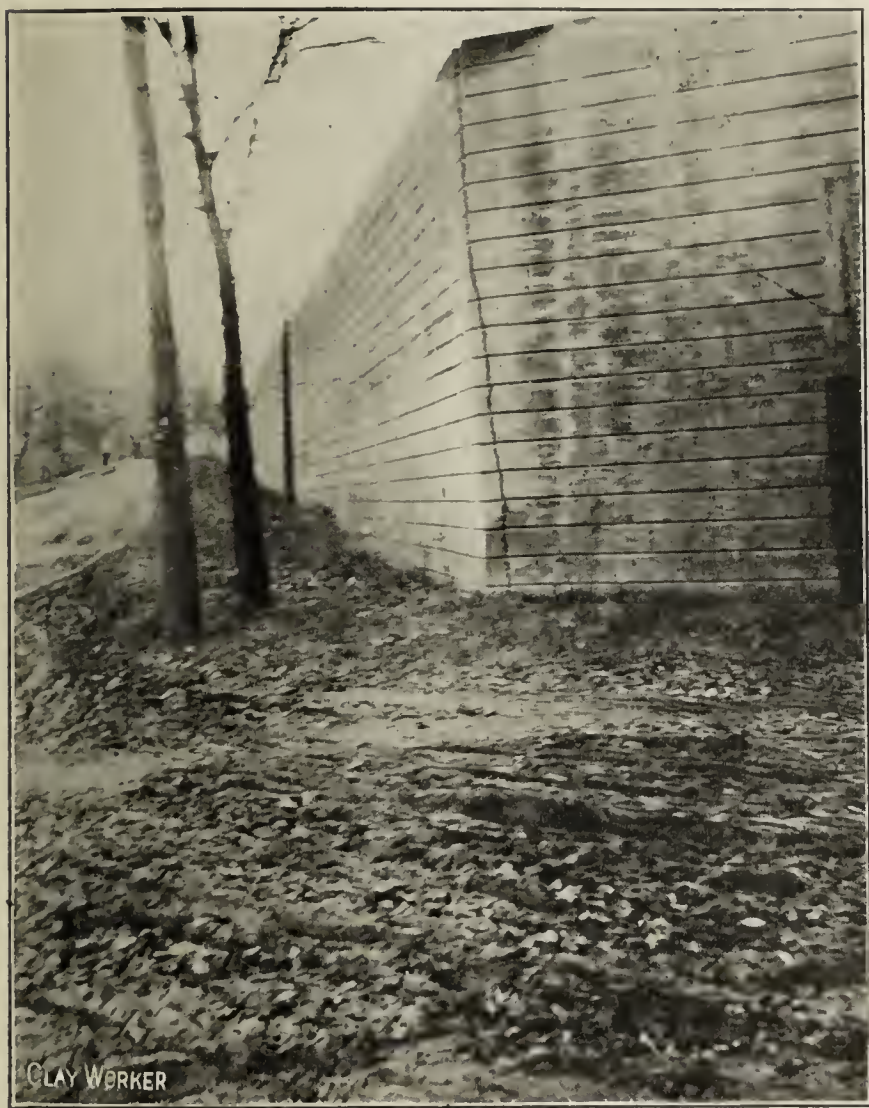
The first claim, or that of shortage, is the only one which the manufacturer should allow and the only one on which the purchaser should have recourse against the shipper. Such concessions, even, should be rigorously guarded through a good loading system. When a good loading system is in force, real claims against the honest shipper should be practically eliminated. No particularly extensive system is required, in order to have an accurate check on loading count. Tile and brick are usually loaded on barrows and any variation of count from the regular number is quickly detected. A certain number of barrows are placed in each tier of the car, and here again any variation quickly shows, even to a few tile or brick. A count of the tiers quickly gives the contents of the car. The shipper should advise the consignee of the manner of loading, so he could check the carload, and after checking one tier the consignee can quickly convince himself that the count is correct or otherwise. The shipper is further assured of his count in the checking out of kiln totals. On the other hand, the claimant often unloads a car, in part at least, direct into wagons, employing an uncertain method of counting. Oftentimes the purchaser loads and counts. Some are stocked and the checkup comes from various counts made by as many different persons. Of course, no satisfactory means of overcoming shortage claims can be arrived at unless there is a first positive check by the shipper, which the consignee fully understands. When such is in force, it follows that greater care is shown by the consignee in the selling count.

Breakage claims are without doubt chargeable to the carrier. Such losses come, invariably, from careless switching, poor roadbeds and other conditions beyond the control of the shipper. In this connection it is advisable that the shipper quote prices f. o. b. factory, or if it seems advisable to quote a cost at destination price, make the quotation f. o. b. factory, with freight added to the ordinary factory price and allow deduction of freight. Such a quotation would indicate the intention of the shipper not to guarantee delivery. In such a case breakage claims would have to be made of the carrier.

In these two counts, or points of annoyance and loss to shippers, there is a means of doing away with suspicion of dishonesty, which is harmful to business. Many shippers tell tales of claims for shortage and breakage which they claim to have proven dishonest, yet they have allowed them because others do and they are afraid of their competition.

The arbitrary manner in which claims are usually made indicates the feeling of security on part of the dealer that it is not necessary to take the longer and more uncertain manner of getting through breakage claims by the carrier route, since a remark that others allow them, immediately convinces the shipper that his competition offers no resistance to such claims.

Shortage is, in fact, inexcusable. It is carelessness and bad for all concerned. It would no doubt be interesting to learn



The Concrete Crack from Top to Bottom of Wall.

unsatisfactory history, and again, the architect is not fond of substitutions of this kind.

A CONCRETE CRACK.

DOWN AT THE metropolis in the land of Colonels, Louisville, Ky., there has been building a new water-works system, including a reservoir, settling basins, etc., and they have been building it for several years, so many in fact, that it's a sort of standing joke. In this work lots of concrete has been used. Down at one corner of a high monolithic concrete wall where it stands something like 18 or 20 feet above the ground there is a crack extending from the ground to the top, which tells its own story. Two views of the crack are presented herewith, one taken close up to show the detail and the other far back to show the full scope. The one taken close up shows the crack down near the ground, and, as can be observed from the other view, the crack widens

the extent to which some large shippers in other lines are called on to make good claims of shortage. It is not through the power of control of the market that they keep down such claims, but rather through a sure counting system. Their quotations are made in no uncertain manner and every point in connection with shipping is done with painstaking and honesty. It follows that claims are few, not to be thought of by the honest claimant and avoided as useless by the dishonest.

Cash discounts are an absurdity, that is all there is to it. This statement maintains in all trades. The call for cash discounts no longer has a foundation. It is not the custom during prosperous periods to make long-time billing. Originally such concessions were made where both the manufacturer and the retailer had to carry a large stock on hand, owing to uncertain and slow transportation facilities, and time billing, which to the manufacturer is virtually carrying stock on hand, was a practical necessity. It is to be admitted that cash discounts prevail, to a greater or less extent, in all trades, but it has been because of the influence of the trader with "ready money" and the fear of competition, not to any sensible business reason. A business custom is nearly always slow in changing.

Why should a clayworker allow a 2 per cent. discount on tile sales and no discount on brick? Custom only. Why should he allow any discount? He certainly should not. He has to pay cash, generally net, for all he buys. He pays his men every week, or every two weeks. If he is a borrower of money, he pays 8 per cent. per annum, or less. It would seem difficult to find any reason why tile should be billed 60 days and brick 30 days, particularly since the tile are usually not ordered by the dealer until the farmer is ready to haul them away, and brick, when retailed, are usually held a much longer time. Now, as to the rate of interest a manufacturer of tile is paying for the use of his own money when he allows a discount of 2 per cent. The billing is, or should be, 30 days. Ten of this the dealer takes in which to pay, less 2 per cent.; result, the paying of 2 per cent. for your money for 20 days, or something like 36 per cent. per annum.

The remedy: Rubber stamps; the impression to be put on all invoices—"This invoice is 30 days net. No discounts allowed. Claims for shortage must be made within five days. No claims for breakage allowed."

A KENTUCKY BRICK PLANT.

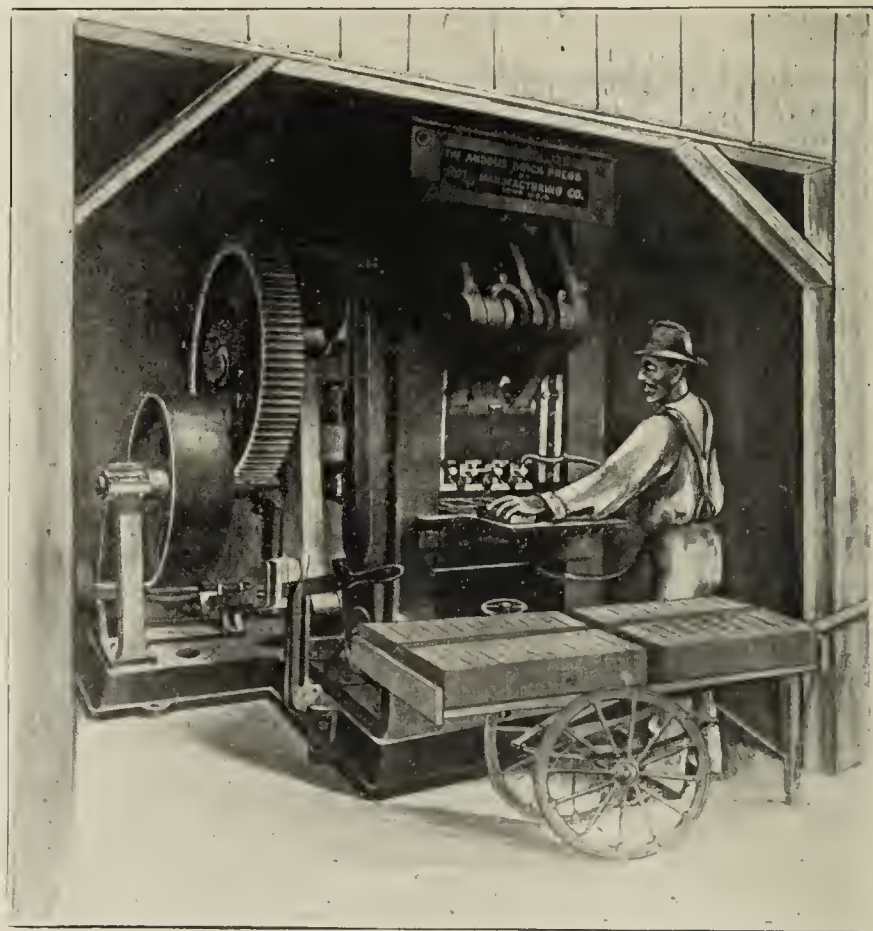
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"BLUE GRASS" State is famous for its women, its horses, and—its blue grass, but it is seldom referred to as a great manufacturing commonwealth, but there are many great manufacturing enterprises within its borders, aside from the distilleries, which entitle it to more prominence in this connection than is generally accorded. Some fifty miles south of Evansville, Ind., on the St. Louis division of the Louisville & Nashville Railway, is the thrifty county seat of Madisonville, and here during the past season, has been established a press brick plant, which, though not enormous, is of interest to the readers of THE CLAY-WORKER, inasmuch as it is a model small capacity plant.

The proprietor and builder, Mr. W. L. Hall, while a novice in the dry press line, is an experienced brickmaker, having been engaged in the manufacture of tempered clay brick since 1883. The new plant was started in May last, but the season has been very unfavorable; there has been an unusual amount of rain for that section, so the record for the first year is but little more than 1,000,000 brick, but as a large percentage of these were face brick, the net result is more satisfactory than it would have been with a soft mud plant. It is Mr. Hall's intention to build additional kilns, and to increase his capacity next year to 5,000,000 brick,

which he expects to make in ten months, intending to shut down the plant in January and February.

The property includes ten acres of good clay which ranges from six to ten feet in depth. The clay is gathered in the manner usual to dry press plants; that is, it is plowed and gathered with a wheel scraper, and stored under an immense shed, where it is allowed to weather; and the longer this process continues the better. In the process of manufacture, the clay is first passed through a clod masher, and then conveyed by a cup elevator to a 42-inch Scott pulverizer. From the latter it is taken to the third floor, and again started downward, passing over a fine screen, which separates the coarse particles, turning them back to the pulverizer. The screened material goes to a Scott clay mixer, and thence into an Andrus brick press, from which they come good hard brick, measuring two and seven-sixteenths by



The Andrus Dry Press at Hall's Plant.

four and three-eighths by eight and three-fourths. Green bricks are trucked directly to the kiln, which are of the up-draft type, and are twenty-eight feet wide and sixty feet long, setting forty high. They contain over 400,000 brick each.

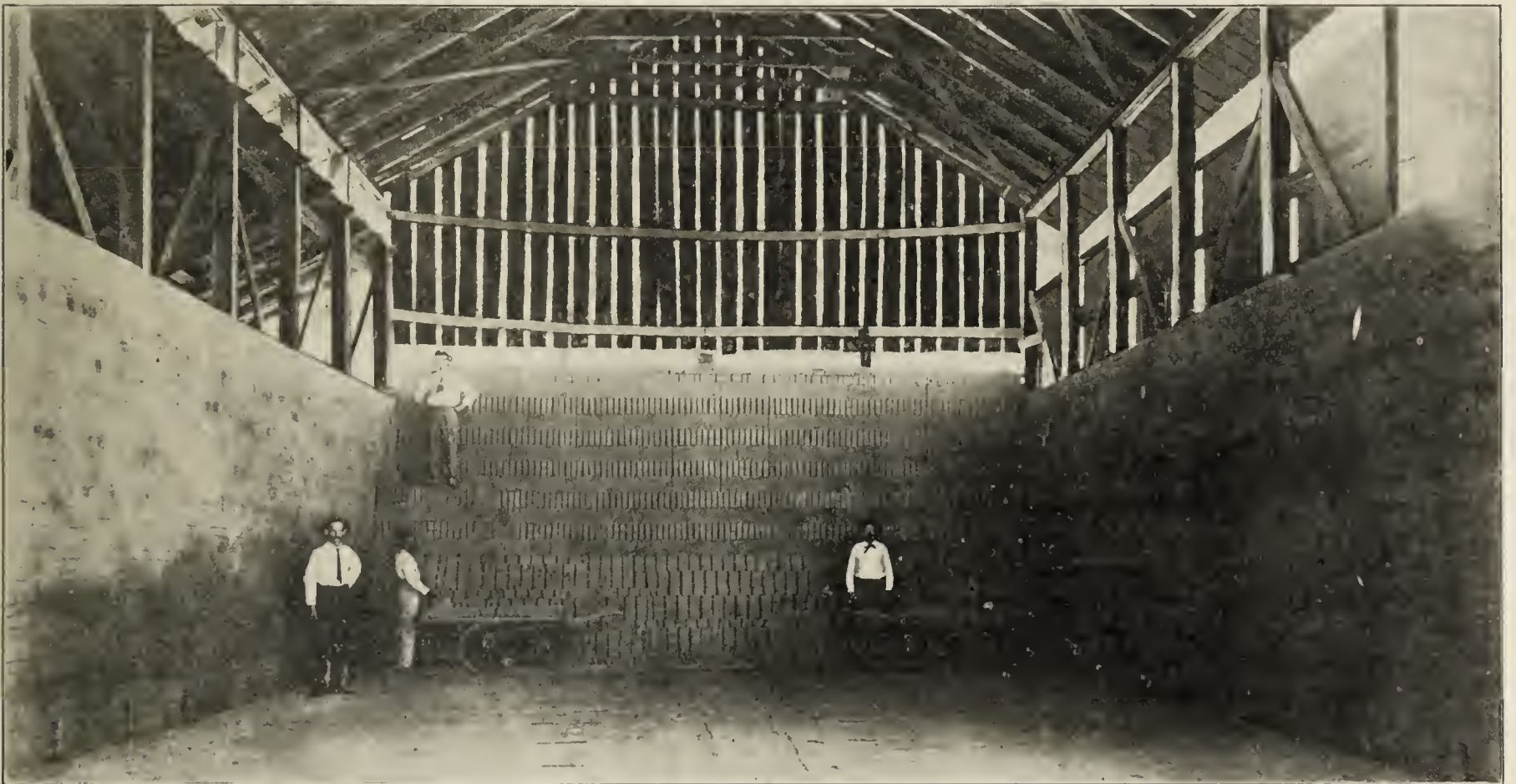
The brick are dried off or water-smoked with wood, which takes about eight days. After that they are burned with coal, which, as a rule, takes another eight days. Wood and coal are both fairly cheap in that section, the former \$1.75 per cord and the latter \$1.35 per ton delivered. Common labor costs \$1.25 per day of ten hours; brick setters and engineers get \$2.00 per day. The past season brick have been delivered by wagon at \$6.00 to \$7.00 per thousand for common brick and \$15.00 per thousand for face brick. Next season Mr. Hall expects to have a railroad switch into the yard.

Mr. Hall is much pleased with his brick plant and its equipment and gives a goodly portion of the credit for its success to Mr. P. E. Heutel, the engineer who planned and supervised the erection of the plant, which is one of the "Scott Noiseless" variety.

Among the many handsome illustrations in this issue, that of Phillips & McLaren, Pittsburg, Pa., on page 253 is noticeable. The old saw, "Handsome is as handsome does" applies well in this case, for the users of Phillips & McLaren dry pans commend them highly.



A Kentucky Brick Plant—General View Showing Power House and Kiln.



Filling an Up Draft Kiln With Dry Press Brick.



Gathering Clay at Hall's Plant, Madisonville, Ky.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



AFTER HOLDING OFF until it began to look as though building was to go on throughout the entire winter without interruption, the winter's storms struck San Francisco about the middle of December and since then the interruptions have been frequent. During a number of days all outside work was suspended and on others it was considerably interfered with. The deplorable condition of the streets has made matters worse, as, since the beginning of the rains, the transportation of materials has been difficult. The combined effect of the stormy weather and the holiday season has been too much for the building record and those who hoped to see the December record equal or exceed that of November have been disappointed. The total number of permits issued during the month for buildings ranging over \$1,000 in value was 457, authorizing work to the amount of \$6,121,000, as compared with 624 permits for work, amounting to \$7,399,000 during November. This shows a loss of 162 permits and of \$1,278,000 in valuation for the month, all of it in the latter half of the month. Most of this loss, however, was in frame construction, the loss in brick construction being only \$310,000. The number of permits issued for brick construction work was 104 for work of the estimated value of \$3,607,000, as compared with 173 permits for work to cost \$3,917,000 during November. This shows a considerable increase in the average cost of the brick buildings undertaken during the month just closed. The falling off in the amount of reinforced concrete construction work was just about one-half, the value having dropped from \$829,000 in November to \$429,000 in December. The only sort of construction that shows a gain for the month is corrugated iron, which has increased in value from \$9,000 in November to \$95,000 in December, most of the increase being due to one large building.

The brick situation has not changed very greatly since last month. The demand has been just about the same, which, in view of the general unfavorable conditions, is considered a good indication for the future. The makers of soft mud brick, though not any too busy, will be satisfied if the demand holds its own throughout the winter. The features of the situation continue to be the use of old brick and of reinforced concrete, and until the new year is fairly under way there will naturally be considerable speculation as to just how much these things will cut into the use of brick and other clay products. The general idea is that second-hand brick will continue to displace new brick for foundation work and for all the cheaper class of brick buildings for a long time, as the quantity available is very large. It is noticeable, however, that as the old brick are used up in certain localities there is a tendency to use new brick rather than have second-hand brick hauled in from distant quarters. Brick men believe that, notwithstanding the general interest in reinforced concrete, the proportion as between brick and concrete in construction work will not, during the next year, be less favorable to brick than at present; that is to say, that there will at least be \$10 spent on brick construction for every dollar spent on concrete.

M. A. Murphy, manager of the Carnegie Brick and Pottery Company, says that his plant has considerably increased its output during the past year. The many improvements and extensions in the various departments have placed the company in a good position to do a large part of the work in its line that will be required in connection with the great rush of building work consequent to the rehabilitation of San Francisco during the next few years. The entire State of California, and for that matter, all the other Coast States, are also doing a great deal of building. The products turned out

at the company's plant near Tesla are face brick, enamel brick, fire brick and sewer pipe. The demand for all these has been extremely heavy ever since the San Francisco fire. While a great deal of fine architectural terra cotta will be required, the erection of so many reinforced concrete buildings will make the total required much less than would have been the case if all the large buildings were to be of brick. Many of these reinforced concrete buildings have a cement exterior finish and do not require a great deal of terra cotta on the inside, as compared with the amount used in the buildings formerly erected here. While the use of second-hand brick from the ruins of the city has somewhat reduced the demand for common brick, as compared with what it otherwise would have been, Mr. Murphy finds that the pressed brick manufacturers have had and will have plenty to do. There are four large factories in and around San Francisco, which produce large quantities of face brick and terra cotta. In Mr. Murphy's opinion, these plants can take care of the new year's demands in fair shape, although, if nothing occurs to interfere with building construction, the year 1907 will far eclipse all previous records in the demand for building materials. This company has now erected a large frame warehouse at its new San Francisco yards, on Tenth street, between Mission and Howard, where a large stock of its products is carried. The general offices are still located in the Montgomery Block, on Montgomery street.

An assessment of \$10 per share has been levied on the capital stock of the Holland Sandstone Brick Company, of this city and Antioch, Cal. The headquarters of the company are at 142 Stewart street; and its plant is at Antioch.

M. F. McGowan, of Bremerton, Wash., is preparing to start a brickyard at that place and hopes to be able to begin operations in about three months. He has already closed a deal for an old pottery site at the neighboring town of Port Orchard.

Colonel Carlos Gonzales is making the necessary arrangements for the installation of a new brickyard between the cities of Torreon and Coahuila, Mexico.

The Los Angeles Pressed Brick Company, which is now arranging to increase the size of its plant at Point Richmond, Cal., by 50 per cent., has contracted for 1,000 additional horsepower of electric energy.

The Board of Supervisors of San Francisco is arranging for the issue of between \$5,000,000 and \$6,000,000 in bonds for the rebuilding of school houses, fire engine houses, city and county hospitals, alms house, police stations, etc.

Reports from the town of Clifton, Ariz., which was recently almost entirely destroyed by a flood, show that the great bulk of the property damage was due to the fact that nearly all of the houses in the town were of adobe. As the town is a necessity to the rich surrounding mining region, it will at once be rebuilt, brick being used in place of adobe. The few brick buildings in the place went through the ordeal with but little injury. As lumber is very scarce and very high in Arizona, even the smaller class of buildings will probably be built of brick.

The annual meeting of the Pacific Clay Manufacturing Company will be held at 312 Ballard Block, Los Angeles, Cal., on January 15.

Manager Fairlee, of the Benson Fire Clay Company, of Benson, Ariz., has received an order from the Copper Queen Mining Company, of Douglas, Ariz., for 600 tons of fire clay. The mines of the Benson Fire Clay Company, which have been closed for some time, will be reopened.

The San Francisco Board of Works has awarded the contract for a storm sewer on Harrison street, to J. J. Dowling, on his bid of \$9,989.

S. P. Merle, with the California Power Company at Kennet, Cal., has bonded a tract of land at Oregon Gulch, four miles from Redding, Cal., on which he will erect a pottery.

The Remillard Brick Company enters the new year well equipped to take advantage of the situation. The company now has offices at Berry, near Sixth street, in this city, and at Second and Clay streets, in Oakland, and has put both locations in shape to carry very large stocks of the company's output. Its yards at Pleasanton, San Jose and Green Brae

are fully equipped and will be ready to do their share in turning out brick for the rebuilding of the city.

The Wilson Brick and Tile Company has been incorporated at Lakeport, Cal., with a capital stock of \$25,000, subscribed by J. Wilson, Wilson Ellis and A. W. Green. SUNSET.
San Francisco, January 4, 1907.

Written for THE CLAY-WORKER.

A SIGN OF PROGRESS.

THERE was an assembly of trade missionaries at Bucyrus recently which betokens the spirit of modern progress. The salesmen of the American Clay Machinery Company gathered there to compare notes and offer suggestions for the betterment of the business. This spells improvement in methods of manufacture, and consequent advantage to the users of brick, tile and pottery machinery throughout the world, for be it said, American machinery is sold in every clime.

Those in attendance were R. C. Penfield, New York; L. W. Penfield, Willoughby; Preston Penfield, New York; J. A. Ridgway, New York; W. W. Whiting, Pittsburg; J. D. Whitaker, Raleigh; N. C. M. Tippery, Philadelphia, Pa.; G. C. Stoll, Chicago; H. L. Harmon, Chanute, Kan.; H. B. Wiley, Chanute, Kan.; A. R. Batley, Fort Worth, Texas; T. L. Myers, Los Angeles, Cal.; E. J. Rutland, Chilhowie, Va.; S. J. Heafeld, Columbus, Ohio; E. J. Shaw, Seattle, Wash.; E. G. Castenhuber, Schenectady, N. Y.; W. J. Carmichael, Willoughby, Ohio.

A feature of the gathering was a fine dinner served by Mr. Penfield at the home of F. L. Hopley, advertising manager of the company. Covers were laid for thirty, including the salesmen and heads of departments in the offices of the

company. The dinner was an unusually pleasant affair, after which R. C. Penfield, as toastmaster, called for remarks from each of those present. The balance of the evening was devoted to social enjoyments.

The menu was as follows:

Blue Points on Half Shell	
Bouillon	Celery
Roast Turkey and Roast Duck and Jelly	
Brown Sweets	
Asparagus Tips and Toast	
Mashed Potatoes	Lettuce and Eggs
Lemon Ice	
Fruit Ice Cream	Assorted Cakes
Nuts	
Cigars	Coffee
	Crema de Menthe

The occasion was a very pleasant one, and every detail of a formal banquet, even to a beautiful souvenir menu card, which was decorated with the national colors and the bird of freedom, embossed in gold, beneath which was the following verselet:

From Brooklyn Bridge to Golden Gate,
From Lakes to Gulf, from State to State,
American boys from far and near,
Are welcomed to this bit of cheer.
Now clasping hands from sea to sea,
Let's drink this toast to victory:
"We show the world by words and deeds,
The 'Built Right, Run Right' always leads!"

On the back cover was the following acrostic:

Praise to the boys from sea to sea;
Each one is here for victory.
Neath every sun in every land,
Foremost "Built Right, Run Right" must stand
In our own land, or other shores
Each one has pushed these goods of ours.
Let's drink the toast with joy tonight—
Don't fail to push "Built Right, Run Right."



The Representatives of the American Clay Machinery Co., In Front of the Main Office, Bucyrus, Ohio, January 3, 1907.

Written for THE CLAY-WORKER.

THE HOT AIR CONVENTION.



MAY BE SAID with considerable truth that hot air is becoming a staple commodity. Conditions apparently demand more or less of this lubricating material to make the wheels go round. No business appears able to exist and develop without it, and least of all, the brick business. Without hot air how could the brick be dried and burned? Without hot air how could brick be sold? Without hot air how could the use of brick be increased? These are all pertinent questions, and upon the answer to them will depend in great degree the success of the brick business.

The fourth annual Hot Air Pow Wow, given by the John B. Rose Company, occurred in the Murray Hill Lyceum, New York, on January 16. These pow wows, as the originators of the gatherings call them, are unique in that they are gatherings at which every person who attends is the guest of the company. About five hundred invitations are sent out annually, and the most interesting feature of the matter is that all are generally accepted. Perhaps one-half the invitations go to brickmakers. The other half go to brick buyers and consumers. The great object of the gatherings is to get the brickmakers acquainted with each other in the first instance, and enable them to get in closer touch with buyers and consumers in the second instance.

The invitations go to all makers in the vicinity of New York, which includes those in both the Hudson river and Hackensack river valleys, with such scattering manufacturers as may be within reach of these two important eastern centers of the industry.

It is interesting to note that the first meeting was not attended by any considerable number of manufacturers. The second meeting was more successful from a numerical standpoint, and the two following have been record breakers in point of members. Last year the meeting was rather more enthusiastic than it was this year, but there was plenty of it this year to make one wish he was a brickmaker.

John B. Rose is the moving spirit in this unusual method of achieving fame and arousing interest in the industry, and his enthusiasm is contagious. It speedily diffuses itself through the whole throng and many glasses clink in unison when his health is drunk.

In his remarks this year, Mr. Rose welcomed the manufacturers in behalf of the firm, extending to them the hospitalities of the place and day, and informed them that if there was anything they wanted that was not in sight to ask for it and the request would be granted, if it didn't cost too much.

He said that the business was not in as good shape now as most manufacturers would like to see it, but he added that probably if they all had to have private conveyances to carry around their money they would still feel that things might be better. He said that the good fellowship which had been engendered at previous meetings of this kind had contributed something of benefit to the trade and added that he sincerely hoped this one would do the same.

He urged upon all the manufacturers the necessity of working together, to have confidence in each other and determine upon some line of policy in the business which would be beneficial to all. He felt confident that as manufacturers came to know each other better they would become more willing to assist each other in such ways as was possible without injury to themselves. And he urged all manufacturers further to exert themselves, as far as possible, to build up the business in every legitimate way.

During his remarks he uttered a word of warning regarding the increasing use of concrete and cement in building construction in New York. He said that they had long used

it for foundations, which did not worry the manufacturers of brick very much, but the past year they had begun to use it in superstructures, and that was a serious menace. He pointed out that the principal reason for this use was the reduced labor cost. He asserted that most builders and most owners object to concrete in building construction, but the labor cost is so much less than that of brick that the use of cement and concrete is increasing far too fast for the comfort of the brick trade. He declared, however, that it hadn't injured the brick industry very much as yet, but that it would do so if the development of its use was not stopped.

In reply to a question, he said that his company was working upon some plans for benefiting the brick trade and that this menace would be adequately dealt with in the arrangements which would be proposed later. He thought the proposition would meet with the endorsement of manufacturers and that it would be effective.

At the close of his remarks the manufacturers were invited to go upstairs and join the consumers, where a luncheon was served, which was thoroughly enjoyed by the crowd of five hundred or more.

Every man when he entered the foyer was given a button, which read: "1907. Hot Air. No Lemon. John B. Rose Company." This was about two inches in diameter and was



John B. Rose, Roseton, N. Y.

mounted upon an American flag. A pretty girl pinned a rose upon every man's label as he came up from the coat room.

In the lunch room an orchestra discoursed all the popular airs of the day, in which the company was supposed to join in, singing as vociferously as they chose. Mr. Rose himself made an admirable leader, and when he began singing, "There will be a hot time," it really meant that the entire company was making the roof ring with the sound of their voices. Later came vaudeville and merry making until dark.

These gatherings are working great benefit to the trade in the vicinity of New York and will result in time in the establishment of the most cordial relations among all manufacturers. But like manufacturers in this line elsewhere, and other lines as well, they are more or less conservative and disposed to look upon another manufacturer as a competitor rather than as a man who is in the same line of business to make a living, and is entitled to consideration in any trade agreement that may be made. Acquaintanceship does much to modify undesirable and frequently expensive influences in any trade, and in the brick trade which centers in New York, these influences set in motion by the John B. Rose Company are gradually welding the component parts into one harmonious whole, which shall act as a unit in such

matters as affect all the members of the trade alike. This accomplishment ought to be glory enough for one firm. It is certainly something which should be considered at its true value in this direction, at least.

BURTON.

THE NEW HOME OF THE "HOOSIER" BRICK AND TILE MACHINE.

WE ARE pleased to afford the readers of THE CLAY-WORKER a glimpse of the new home of the "Hoosier" brick and tile machine, which has made Rushville, Ind., famous. Having outgrown their old quarters, Messrs. Madden & Co. have built a new factory, machine shop and foundry, where henceforth will be produced that well-known and time-tried machine, together with a full line of "Hoosier" clayworking machinery, including disintegrators, clay crushers and pug mills, and all manner of brick and tile yard supplies.

The factory is prepossessing in appearance and is constructed of building block, manufactured by the Arbuckle & Son Tile Company, of Homer, Ind., a neighboring village. The new factory is located on the Big Four, L. E. & W. and Pennsylvania railroads, near the Rushville depot, so the shipping facilities are exceptionally good. The main structure consists of a well-lighted room 50x150 feet, in which all the



Madden & Co.'s New Factory, Rushville, Ind.

foundry work is done. There is another room of the same dimensions used as a machine shop, and which is being equipped with the most approved machinery and appliances for the purpose desired. The machine shop has a second story, where lighter work will be carried on. Here a cozy office will be fitted up, where it is anticipated many clayworkers from all sections of the country will be made welcome.

The company is at the present time moving the machinery from the old factory, which will be abandoned, and installing it with much modern apparatus. One notable feature of the new plant is an immense cupola furnace and crane. When the foundry is completed they will be able to produce castings weighing several tons. Evidently Messrs. Madden & Co. have taken on a new lease of life, and while "Hoosier" machinery has always been noted for its excellence, they propose to demonstrate that they are progressive and up-to-date, by turning out a line of brick and tile machinery, cutting tables, etc., second to none. Their new model stiff mud machine, which is pictured on page 249 of this issue, is now made in three sizes, for capacities ranging from 10,000 to 100,000 brick per day. Their upright tile machine, which has proven exceptionally efficient in the manufacture of large tile, will be one of their leaders. It turns out high grade tile

of any desired size from 3 to 30 inches in diameter. Their tile cutting tables and clay crushers will be fully illustrated and described in a new catalogue which they will have ready for distribution in a short time. In the meanwhile, they will be more than pleased to have any reader of THE CLAY-WORKER pay them a visit and inspect their new plant. A real Hoosier welcome awaits every visitor. The present officers of the company are: President, James W. Arbuckle; secretary, Wallace Morgan; superintendent, Stephen Kelly.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



PREDICTIONS FOR building activity in Chicago for the coming year vary at present writing. There are those who look for an even better year than that of 1906, although nearly all agree that such a year as that will be hard to beat even in a golden future, and there are a few who are crying "Breakers ahead."

These last are fortunately decidedly in the minority. By far the majority of the men in the building material business look for another exceedingly popular year.

From the point of view of the building situation alone, the year of 1907 ought to make a great showing. The close of 1906 brought well developed plans for buildings to be constructed within the next few months, and the definite plans for a number of these structures are either completed or well advanced. The new building for Montgomery, Ward & Co. is one of these. This building is to be situated on the North branch of the Chicago river, and will cover an immense amount of territory. A still larger project, which now has permission from the City Council to be carried forward, is the proposed gigantic railroad station for the Chicago & Northwestern Railroad Company, along Canal street and the river, south of Kinzie street. These projects and a few others like them will doubtless be put through, anyway.

But it is "money that makes the mare go," and if money remains as tight as it is at present very long, the "mare" will give every evidence of being tied to the hitching post. This is the reason there is difference of opinion regarding the outlook. It is generally believed that money rates will be much easier very shortly, and then things are expected to start with a boom. There is a lot of capital being held back on account of the present stringency, which, it is understood on good authority, will be put into buildings of various descriptions so soon as the present situation is relieved. The actual cause of the trouble is not known, but those with legitimate propositions in the way of safe investment to finance lay the blame quite without reserve at the door of stock speculation. This has now gone beyond even the wildest extremes of listed stock gambling, in the opinions of many, and the many so-called "wild cat" concerns are flooding the country with paper of, at best, doubtful worth, and taking in return hundreds of thousands of dollars of good money from people who could better employ their savings in building modest homes or buying them from some one of the many reputable building contractors on the installment plan. The one best bet of the present day is that a dollar invested in a well built brick house is worth to the man who works for his money a thousand times the amount put into cheap stock speculation, or indeed than money put into any stock speculation.

Aside from the money situation everything appears to be favorable to another record breaking year. The usual cloud of labor trouble for a change does not brood upon the horizon—at least not so far as is likely to affect the building trades. The grooves of trade, well oiled by two of the busiest kind of seasons, offer every facility for disposing of materials at short notice and in large quantities.

One of the latest building projects mentioned is that of

the Leander McCormick estate for replacing the Victoria Hotel building at the northwest corner of Michigan avenue and Van Buren street, with a twelve-story commercial structure to cost between \$800,000 and \$1,000,000. The lease of the Victoria Hotel Company expires May 1, and tentative plans for the proposed building to replace it are in the hands of Holabird & Roche, architects. The ground floor will be devoted to stores, and the upper floors to shops and large offices. Among the larger buildings planned are a number of school structures, while permits for smaller apartment buildings are being taken out at the building commissioner's office every day.

Remarkably attractive wall effects are shown in a Masonic hall being erected at Forty-seventh street and Langley avenue. Louis H. Sullivan, the architect who designed the Auditorium, has used the Oriental brick with their soft tapestry effects to obtain his results. The brick are furnished by Bonner, Marshall & Co, who handle the entire output of the plant at Crawfordsville, which turns out these brick.

The use of the green, bronze terra cotta in the window sections of the new county building is exciting enthusiastic comment among all who stop to note the progress of the beautiful new building.

The uninitiated generally calls it bronze, but in wearing qualities and cost it has that durable metal beaten, while

PROGRESS.

PERHAPS no class of manufacture has made more rapid progress within the last decade than that devoted to the manufacture of building brick and kindred products. It can safely be said that the advance has been largely due to the designing and perfecting of machinery especially adapted for this purpose.

The pioneers in the clayworking machinery business, and a concern which has done much to aid the clayworker in the problem of handling the clay or raw materials direct from the bank to the finished product, is the Henry Martin Brick Machine Manufacturing Company (Incorporated), of Lancaster, Pa. An enterprise founded on honest commercialism is bound to advance, and the "Martins" are no exception to this one.

This business has extended greatly during the past few years and many improvements have been made to the factory, which is thoroughly up-to-date in its equipment. We illustrate here a portion of the plant. The building in the foreground is the machine shop, where only the latest improved machinery is installed to turn out the various parts; the center building is the woodworking department, and to the right are the erecting shops, where the clayworking machinery is erected and fully tested before making any shipments.

The plant covers several acres and its equipment includes



A Partial View of the Factory of the Henry Martin Brick Machine Co., Lancaster, Pa.

its appearance is every bit as pleasing. The Northwestern Terra Cotta Company has the contract for this building.

SCRIP.

Will Build a Second Yard.

Editor THE CLAY-WORKER:

Enclosed find check for \$2.00, for which please continue our subscription for another year. We find THE CLAY-WORKER a great help to us in many ways. Intend putting in another yard here this year.

A. SNYDER & Co.

Portage la Prairie, Manitoba, Jan. 1.

Twentieth Yearly Renewal.

Editor THE CLAY-WORKER:

Enclosed you will find money order for another year's subscription to THE CLAY-WORKER. This is about the twentieth renewal for me, isn't it? I doubt if you have many subscribers on your list who have taken THE CLAY-WORKER longer than I have. Well, we have had a fine season for making brick and also a good demand. I have sold all the brick made at \$6.00 per thousand. Paid for skilled labor \$2.25 per day, common labor \$1.50 and for coal \$2.37½ per ton. We brickmakers found it rather difficult to get laborers the past season, as the C., B. & Q. Railway Company changed their tracks south of town and paid \$1.75 to \$2.00 for common labor.

J. H. HORNER.

Astoria, Ill., Dec. 28.

the most advanced machinery procurable for the manufacture of clay appliances in all branches. It would not be out of place to mention that their designing and engineering department is in capable hands and will furnish detail working drawings of any size brick plant to be erected, as the company equips brick and tile making plants complete, including molding machinery, artificial dryers, engines, boilers, etc. Any clayworkers visiting in the East should not fail to visit the plant and have a social chat with the "Martins."

FEAT IN BRICKLAYING.

In the erection of the House of Representatives office building, adjacent to the United States capitol at Washington, an interesting fact has developed in connection with the brick masonry work. The first brick was laid at the site on the afternoon of July 5, 1905, and on July 3, 1906, there had been laid in the walls 11,000,000 brick. This is believed to be the greatest number of brick laid on any building in one year in the United States, and probably in the world. One of the causes conducing to this record breaking feat was the remarkably "open" winter of 1905-06. In those winter months the work continued almost without interruption from either snow or cold, and not more than twelve or fifteen days were lost during the entire winter by reason of weather conditions. —Scientific American.

Written for THE CLAY-WORKER.

BRICK NEWS FROM NORTHWESTERN OHIO.



BRICK BUSINESS is dull. Cold weather has put a damper on the building operations, so that little is now being done outside of finishing up the jobs that have been started. There is only one of the dozen plants in the city now in operation, and that is the plant of the Collingwood Brick Company, which has a modern dryer. The plants of the Hydraulic-Press Brick Company, which closed down a few days ago, and the Ohio Brick Company, which was closed down last month, both being equipped with Standard dryers, are undergoing repairs.

As to the trade for December, the delivery of brick for the month was only about one-half what it was for the month of December, 1905, which proved to have the best delivery of brick of any December in the history of the trade. The next month, January, 1906, also proved to show the largest delivery of brick of any January in the history of the local trade. The winter of a year ago, being open, permitted of building operations continuing unabated, thus making the deliveries of brick for the two months the largest. Cold weather, this winter, has had a telling effect on the local situation, so that little is expected before spring. There is a half score of pretty good sized jobs "on tap" now, but cold weather will prevent their materializing before spring. Of course, if there is any positive assurance that there is to be mild weather, the aspect will be changed and the trowel will again get busy. Local brick men are not expecting anything but a light delivery of brick for this month. If the prospective jobs are started a little later, it will be the first of the month, or later, before there will be a call for any great amount of brick.

In further review of the trade for 1906, it may be said that it proved to be a good average year, ahead of 1905, which was a dull year for the local brick men. During the past year, the local plants made about 50,000,000 brick, also counting the two independent and Toledo Workhouse plants. The production for 1905 was about 42,000,000, while the production for 1904 was about the same as 1906, or a little less. The stock on hand New Year's, 1906, was about 20,000,000, while last New Year's the left-over stock totaled about 17,000,000 bricks.

The report for the year at the office of the city building inspector shows that 1,302 permits, with a total valuation of \$4,679,970, were issued, an increase of about 50 per cent. over the valuation of building done during 1905. While the brick business for the year does not come anywhere near to showing such an increase, it must be mentioned in a way of explanation that the concrete and cement products and the use of steel in big structures cut a big figure during the past year.

The Toledo Brick Supply Company, at the annual meeting held a few weeks ago, re-elected the same officers for the ensuing year. Only one change was made, and that was in the board of directors, H. C. Ellis, who died during the year, being succeeded by his son, H. J. Ellis.

The Northern Brick Company also held its annual meeting the latter part of December, the same officers being re-elected, one change being made in the directorate of the concern, W. H. Tucker succeeding E. H. Potter.

In view of the consolidation recently, the Findlay Hydraulic-Press Brick Company will hereafter be known as the Hydraulic-Press Brick Company, the Toledo plant to be termed a Findlay branch.

The plant of the Defiance Tile Mills Company, at Defiance, Ohio, is to be considerably enlarged. A recent fire destroyed a portion of the plant, which is to be rebuilt on a much larger scale, a three-story structure, 40x200 feet in size, to be erected, while several new kilns will also be constructed.

T. O. D.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.

THE totals for the past year show that there was slightly less building done than in previous years, the figures for last year for building permits being \$10,765,480, as compared with \$10,917,024, in 1905. This shows a decrease of but \$151,544, and that is considered to be a remarkably good showing by local builders, in view of the fact that there has been so many things to hamper building in 1906, that were not factors in the business of the previous year. The high price of all building material prevented a good deal of building, as investors decided the investment would not be good unless the good times continued for a very long time. Competent help to carry on the building operations contracted for in the year was very hard to get, and along in the summer there was a fight inaugurated between rival trade unions which had a considerable effect. The greatest trouble of the entire year, however, was the inability to get building material, and that was the fault of the railroads. The lack of cars has been a very expensive thing to the builders of Kansas City in 1906, and there is no immediate prospect of relief, although much is hoped for in the future. One brick company which has lost a good deal is reporting a pretty good receipt of cars now, and the officers feel quite encouraged.

The month of December showed that building permits amounting to \$1,250,775 had been issued, or a gain of nearly \$500,000 over the corresponding month of the previous year. This increase was caused by taking out the permit for the new Bank of Commerce, which was valued at \$800,000, so there would have been a considerable shortage in the comparison if this one big permit had not been taken out. April, June and December were the only months of the year in which the building permits amounted to over a million dollars.

There has never been such a prospect for good business in the building line as there is at the present time, in spite of the fact that building material, labor, and everything that goes into a building is so high. It now looks like it was going to be a year of big buildings in the business center.

There has been a little revival in brick paving in the last month, a couple of streets being ordered paved with brick, but this is no fault of the brick men trying to make their paving material more popular.

The Kansas City Hydraulic Pressed Brick Company is reporting that trade is dropping off now, and only about half the plants will be run regularly for a while. At the present time the three plants located in the city are not running, and will probably not be started until spring.

Kansas gas-burned brick is becoming more plentiful in this market, and coming in at this season is having a rather bearish effect upon the market price of common brick, although it is stated that no cut has yet been made. Little building is done in the country in the winter, so brick manufacturers naturally turn their attention to this city for a market.

Mr. Wiley, who has been traveling for the American Machine Company, is reported to have succeeded J. W. Taylor as manager of the Union Brick Company, in Iola, Kan. Mr. Taylor resigned for the purpose of engaging in the contracting business in this city.

The plants of the Lyle Brick Company and Flanagan Bros. are still in steady operation, and have a good bunch of orders on hand for their product.

The Western Terra Cotta Company has established offices in the Gumbel building, and is putting in kilns on a tract of ground purchased for that purpose in Kansas City, Kan., near the Missouri Pacific tracks.

The Stukenberg Pressed Brick Company is in the hands of a receiver, with liabilities of \$12,650.

K. A. W.

SEEING IS BELIEVING.

St. Louis appears in large letters in several places in this issue. It looms up conspicuously on page 20. Turn to it and you will be reminded that St. Louis and Success both begin with the same letter, and also that the Fernholtz Brick Machinery Company extends a cordial invitation to every brickhaker who visits that city to visit their factory, and tells how to get there.

Written for THE CLAY-WORKER.

WESTERN PENNSYLVANIA BRICK AND BUILDING NEWS.



CONTRARY to the general expectation, the month of December was a remarkably good one in the brick and clayworking lines in Pittsburg, and in almost all of Western Pennsylvania. The month was comparatively open, and warm, thus being particularly favorable for late building, and a large number of builders and contractors took advantage of the unusual opportunity to advance their late work. Contractors from the towns in the vicinity of Pittsburg state that there has been more brick paving done during December, 1906, than in the same month of any year they can remember. Brick is rapidly growing in favor in this part of the country as a street paving material, and several of the manufacturers of vitrified paving brick are of the opinion that they will be unable to fill the orders given them during the coming spring and summer.

Nearly all of the brickmaking plants of all kinds are running at the present time to their capacity, in order that the largest possible stock may be on hand in the spring. Fire brick is a feature in the local field, and plants have more orders on hand than they can fill for the next three months. The blast furnaces continue to make a heavy demand on the manufacturer of this class of material, and complete relinings for the furnaces and stoves are being ordered now, so that they can be delivered and in readiness to reline and repair the stacks with the least possible loss of time.

Sewer pipe plants are turning out their product to the capacity, and will continue to do so all winter, laying in stocks for a banner year in 1907. Country towns in the vicinity of Pittsburg are prosperous, and a large number of them will install complete sewer systems during the coming summer.

Common red and building brick continue in good demand, with the general conditions unchanged since our last issue.

Fireproofing materials are strong, and there are no indications that the demand will show much of a decline throughout the winter. The outlook for the coming year is particularly good, and unless labor troubles should interfere with building operations, there is every prospect that 1907 will be a banner year, both in production and sales of clay fireproofing.

Paul Stewart, of Pittsburg, has been granted a patent for an adjustable brick clamp, a device whereby a variable number of brick may be gripped and handled with ease. It will be manufactured in this city and placed on the market as soon as possible.

Dr. E. M. Thompson, of Curwensville, Pa., while prospecting on a large tract of coal land he had recently purchased, a short distance from Curwensville, discovered a vein of an excellent quality of fire clay. Steps are already being taken to organize a company to build a fine modern fire brick plant on the site. There is plenty of capital behind the movement, and it is practically assured that the plant will be built this spring and be placed in full operation by July or August.

The Mill Hall Brick Works, Mill Hall, Pa., will be materially enlarged during the next few months, and the capacity increased about 25 per cent. Several news kilns will be built, all of which will be of the round down draft style, and another large pan will be put in. The floor room of the plant will likewise be considerably increased, and a large amount of new machinery installed. A. C. Tevling and W. H. Fulton will have charge of the improvements. The company manufactures red brick.

Extensive improvements are also being made at the big Harbison-Walker Refractories Company's plant, known as the American works, about a mile east of Mill Hall. Here new machinery is being placed in position and the capacity otherwise increased, and a private electric light plant installed, which will furnish ample light when the plant is forced to run

double turn, as it had to do a large part of the past summer.

The Stowe-Fuller Company is making some important extensions and improvements at the various works operated by that concern. At the National works, Strasburg, Ohio, the capacity is being increased about 25 per cent. A new three-story building, 60x100 feet, is being built, new machinery is replacing that worn or in bad condition, and a 500 horsepower boiler will be added to the power plant.

F. A. C.

Written for THE CLAY-WORKER.

AMONG THE PHILADELPHIA BRICKYARDS.

VISITS among the brick manufacturers permit us to hope for a good delegation from the Quaker City to the St. Louis convention. The brick business in general is quiet just now; most of the yards have quit manufacturing and are just delivering the last of their operations for 1906, making space for the brick to be manufactured in the spring. The Equitable Brick Company "knocked" off some three weeks since, but are still delivering brick that were ordered earlier in the season, and have on hand many prospective operations calling for nearly 5,000,000 brick. Kimball Brothers, proprietors, state that they will start up the yard again the latter part of February. Last year the yard did not shut down until the latter part of February, but usually they cease manufacturing earlier than they have done this year. They have many contracts for early spring in their immediate vicinity. All of the Philadelphia orders of the Pennsylvania railroad are secured by the Equitable Company.

This company sold recently one block of the valuable land on which the brick plant is located, and they will sell more before long. The building boom is moving their way, and some of the land out there is valued at \$10,000 an acre.

The Samuel Huhn Estate,

Whose brickyard is situated at Thirty-third and Dickinson, loomed up before us like an oasis in the desert. Everything about it looked so distinctly civilized and the office, with its spick and span cleanliness, cheered us so much after our plunge through mud and against the wind that we gladly sank into a chair to talk on business and the general outlook.

This has been a good year for all brick manufacturers, but not as good as 1905. Such a building boom as Philadelphia has had for the past three years must naturally have a slump later. There is no indication at present of any cessation, but on the principle that "everything that goes up must come down" we have a certainty that it will be applied to bricks and brick manufacture.

This yard turns out from 6,000,000 to 7,000,000 brick per annum; possesses five kilns with a capacity of 200,000 each, stacking them 38 high.

They have furnished in the past year brick for many important buildings. Mr. Huhn hopes to attend the convention at St. Louis.

M. E. LOCKINGTON.

AN INTERESTING LETTER.

That is an interesting letter published on page 18, and tells of a machine which has made St. Louis famous. The inventor declares that he will live up to tradition, as all good Missourians do, and "show" all comers why the Williams pulverizer is unsurpassed for capacity. If you want to pulverize anything, no matter what, ask Williams; or better, visit his factory, 2707 North Broadway, and be "shown." Any Broadway car will take you to his door.

THE DUKE OF WELLINGTON.

That blood will tell is as true as it is trite. We are proud to introduce to the clayworkers a machine bearing the distinguished name above quoted. The "Duke of Wellington" comes of a fine family, and it is predicted that it will be a history maker in the brick business as has its illustrious predecessors, the "Monarch" and the "Quaker." The counter presentment of the "Duke" is shown on page 224 of this issue, to which the readers are referred for further particulars.

Written for THE CLAY-WORKER.

A NEW BRICK PLANT IN GEORGIA.

THE NEW brick plant being built for the Muscogee Brick and Terra Cotta Company is located at Columbus, Georgia, Muscogee County. There is an unlimited supply of good clay surrounding the plant; it can be had within two inches of the surface and the bank can be worked to a depth of eight feet. A steam shovel will be used for the purpose of digging clay and loading cars, which will be drawn up to the granulator by means of a friction hoist.

All of the buildings will be constructed of concrete below the floor line and of brick above the floor line. The boiler room is 50 x 56 and will have a concrete floor; there will be a narrow gauge car system leading from the coal pocket into the boiler room where the coal will be weighed automatically before dumping. The boilers which are placed in a battery of two and will be fitted up with automatic stokers, will be of the tubular type representing 300 horse power. The engine room is 56 x 72, large and roomy. There will be two engines of the four-valve type, one heavy duty engine 17 x 22 for the purpose of driving the clayworking machinery and one high speed engine 11 x 16 for driving a 60 k. w. generator.

The entire plant will be lighted with electric lights and water mains will be run in all departments for use in case of fire. Ventilators will be placed on the engine and boiler rooms and care has been taken to have all buildings well lighted. The line shaft is mounted on concrete piers with adjustable oil ring bearings. There will be a granulator, friction hoist, disintegrator, pug mill, and brick machine with automatic side cutter. The plant will have a capacity of 100,000 building brick per day. The brick will be taken from the machine, placed on cars and then transferred to a Chambers waste heat dryer. This dryer has twenty tunnels, and is constructed of steel and reinforced concrete, making it entirely fireproof. Blowers and fans will all have motor drives. The brick will be burned in fifteen down draft kilns built by the well-known kiln builder, W. A. Eudaly, of Cincinnati, Ohio.

The plant was designed and equipped by Chambers Bros. Company, of Philadelphia, Pa., the erection being in charge of the constructing engineer, Mr. Wm. H. Merkel. The president of the company is John T. Fletcher, John P. Illges, vice-president, and J. M. Fagan, secretary and treasurer.

M. E. R.

BEST BELTS AND BEST BRICKS.

Under the above caption, the Main Belting Company tells a story of deep interest to all clayworkers, which is illustrated with a picture of a Leviathan running under a full load. This is a difficult task, as those who have attended conventions in the past know, from observation. The representatives of the Leviathan will be at St. Louis, and while not from Missouri, will be prepared to "show" samples of Leviathan belting of varying grades suitable for loads of any sort or character that a belt is supposed to carry. If you are not going to the convention, samples will be sent you on request.

THE RELIANCE BRICK PRESS AT HOME.

Convention week, and at all times for that matter, the Reliance dry press brick machine is at home to visiting brick-makers at the factory and machine shops of the Reliance Machine and Tool Works, which are situated at the corner of Channing and Franklin avenues, St. Louis. It is but a few minutes ride on the Green car, suburban line, which passes the main entrance of the Planters Hotel, to the home of the Reliance. A four-mold machine will be shown in full operation, exactly as it would be on a brick plant.

FROST DRY PANS IN DEMAND.

A recent visit to the immense plant of the Frost Manufacturing Company, at Galesburg, Ill., found them running full-handed in every department. Andrew Harrington, the indefatigable secretary and treasurer of the company, was found on duty, and stated that while the business of the past year was tremendous, he had hopes of making a still higher record during 1907. As will be seen by their ads on pages 253-254, they manufacture engines and boilers as well as dry pans, and readers of THE CLAY-WORKER who want the best that money can buy in that line should get in touch with them.

A NEW FIRE BRICK PLANT.

The most important announcement that has been made in brick circles in the Pittsburg district for some time was made a few days ago. It means the building and establishing of the largest brick plant in the State, and work will be started during the present month. This immense plant will be built by the Bickford Fire Brick Company, and will be located at Du Bois, Pa., practically in the center of the brick-making industry of Western Pennsylvania. The company, which is a newly incorporated one, is capitalized at \$500,000, and has a bond issue of \$350,000. The officers are J. Calvin Meyer, of Bellefonte, president; J. A. Bickford, Lock Haven, treasurer and general manager, and S. M. Bickford, Lock Haven, secretary and general sales agent. The two latter gentlemen have for many years been residents of Lock Haven, having been prominently identified with the Queens Run Fire Brick Company, and recently with the Pennsylvania Fire Brick Company, of Beech Creek. Both are thoroughly experienced in the manufacture and marketing of high grade fire brick.

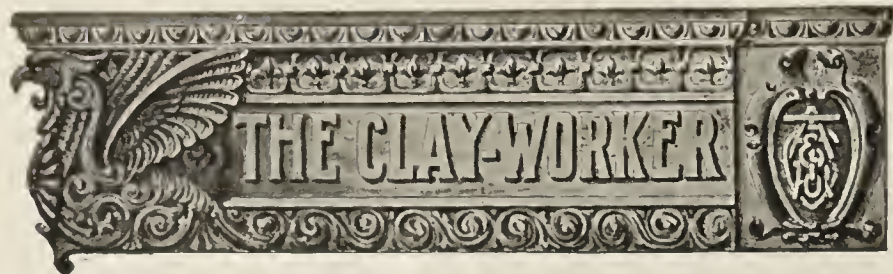
The plant at Du Bois will be 100x600 feet, and will have six pans and thirty-two modern round down draft kilns of the most approved design. The brick will be hand pressed, and the plant will have a daily capacity of 110,000, or over 33,000,000 brick per year. It will be rushed to completion as rapidly as possible, and the company expects to be making brick by the early fall. J. A. Bickford will personally superintend the construction of the big works.

The company will mine its own clay, having for some time been negotiating with owners of rich clay beds in Clearfield county, and having secured a large acreage of the finest grade of fire and silica clay. These clay beds are about ten miles from the site of the proposed plant, and the company will build a narrow-gauge railroad, which will give direct connection of the field of material with the works. The mines and the plant will be equipped with the most modern machinery that is on the market, and will give employment to several hundred men and boys.

SOMETHING NEW IN DRYER CARS.

Beginning with the "Guilder," a new elevating and lowering brick car for open air drying, the "Premier" family of brick and tile machines is well and fully illustrated in the handsome insert of Messrs. J. D. Fate & Co. Every one of the eight pages, from 229 to 236, contains something of interest to brick and tile manufacturers. Look over the "Premier" illustrations and if you don't see what you want, ask for it, but please direct your query to the J. D. Fate Company.

W. P. Grath, president of the Illinois Supply and Construction Company, St. Louis, Mo., writes that his company has recently secured an order from the Alberta Portland Cement Company, Alberta, Canada, for one Grath 4-mold special hand power press and two clay mixers, and that the order was placed after they had inspected many other presses. Mr. Grath says that the outlook in their line was never better than at the present time.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	\$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " " " " " "	10.00
Ten copies, " " " " " "	15.00

Foreign subscriptions 65 cents additional.

Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVII.

JANUARY, 1907.

No. 1.

CURRENT COMMENT.

St. Louis awaits N. B. M. A. delegates with outstretched hands, determined to make every visitor happier and better for the sojourn within her gates.

* * *

You will find it all in the program. If you are uncertain as to any detail of the arrangements for the coming National Convention, read the announcement on pages 83 and 84.

* * *

Do you want to know something about manipulating clays, drying brick, burning or handling clay ware of any sort? Then do not miss the meeting at St. Louis, February 4 to 9.

* * *

It is said railway magnates are now pleading for fair play. This is refreshing in a way, and reminds us of several things, and among them a saying that you should give if you expect to receive.

* * *

"Is the time at hand for mankind to fly?" inquires a paragrapher. We guess it ain't time to fly just yet, but it's done come time for plunderers to flee to the tall uncut timber and dig for new bait with which to catch suckers.

* * *

It is said that Secretary Bonaparte is an advocate of boss rule. Well, that name of his is pretty closely linked in history to an inclination to boss things. But, history in this connection contains a note of warning that too much bossing may lead to trouble.

* * *

There may be a few gold mines in the stray sand piles of the country, but it is a well-known fact that all mines, including even gold mines, do not always turn out on development

to be paying propositions, and the best of them generally look better in the prospectus than they do on closer personal investigation.

* * *

The chances are that in figuring up at the end of the season many a man has found out things that he did not expect, and does not care to talk about.

* * *

Unopened trade papers on a man's desk may indicate an extremely busy life, but they more generally represent neglected opportunities for intellectual improvement.

* * *

Dr. Thomas W. Salmon, of the U. S. Marine Hospital service, has been discovering a significant relation between immigration to this country and an increase in mental disorders. Well now, without wishing to argue the matter at all, it is in order to mention the fact that when a man in some other country concludes to immigrate to Uncle Sam's domain, this of itself is pretty good evidence of at least one sensible thought.

* * *

Some writers are gravely discussing the question of whether flat dwelling is a social menace. We have always held that the home builder is the mainstay of a nation, so what's the use to magnify the flat into a menace when the record in home building for the year is the greatest ever. And, any way, doesn't the principal menace of flat dwelling emanate from the janitor, and remain local in compass?

* * *

In looking over the program for the St. Louis convention, given in full on page 84, you may not find scheduled the particular thing or subject upon which you may be seeking information. E'en so, be not discouraged, but go to the convention just the same, and you will obtain the information if you will but ask for it. The button-hole talks between sessions are the most fruitful sources of practical information open to the clayworkers of today.

* * *

Some political speakers and reformers have been raving a little over the spirit of unrest that pervades this land. Please keep your shirts on, gentlemen, and do not get unduly excited. There are some excesses and some things that ought not to be, and some wrong movements made now and then, but all this does not alter the great fact that the spirit of unrest, by that name or any other, is the thing that makes us get up and hustle and do things. We may do some things wrong because of it, but we could not do without it, and deliver us from the time that the spirit of content shall so possess the earth that people won't care to strive for other and better things, because that would be indeed the beginning of the end.

THE GATE OF HOPE.

A CLAY-WORKER subscriber writes: "If I were to offer a suggestion for the consideration of the editor, it would be to encourage trade schools in every way possible." There are very many of our readers who are deeply interested in the trade school idea, and to them all we commend the feature article on page 50, under the above caption. "The Gate of Hope" pictured is the entrance to the Winona Technical Institute, or Trade School, of Indianapolis, and here the American boy who wants to learn a trade and become a skilled workman can do so, and will have the best facilities for carrying on the work that modern educational methods have developed, with trained workmen to guide and direct him. The head of this great institution, Dr. S. C. Dickey, will deliver an address before the coming National Convention on "The Importance of Trade Schools for the American Boy," and

that he will be given a most attentive audience is assured, for the subject is one of peculiar interest to brick manufacturers. It is patent to all that the cost of brick structures is due to the high wages demanded by bricklayers, not to the cost of the brick, and any movement which promises relief from this menace is directly in the interest of brick manufacturers.

BIRMINGHAM BRICKMAKERS BUSY.

The brickmakers of the Birmingham district have had a busy and prosperous time in 1906. The brick industry is making steady progress there. Ten years ago Birmingham had but two plants, turning out about 1,000,000 building brick a year. Now there are nearly a dozen plants in and about Birmingham making high grade building brick at the rate of 40,000,000 brick per annum. In addition to this, there are a number of plants manufacturing fire brick and pavers. The price of building brick has averaged \$7.00 per thousand the past year, and more could have been sold if the manufacturers had been able to make more.

ON TO ST. LOUIS.

Those who have attended N. B. M. A. conventions in the past know from actual experience that it pays in dollars and cents to participate in these meetings. Everybody admits that the social pleasures are great, but those who know of the deliberative features only by hearsay, and the reports of the sessions in the trade press, can have little or no conception of the material benefits that come from these gatherings, for they know nothing at all of the confidential chats or button-hole talks, as we are wont to call them. To those who are looking for information, and who is there even among the most successful clayworkers who has nothing to learn, these interchanges of personal experiences and trade confidences are of inestimable value, for, be it remembered, these unpublished proceedings are of the sort that touch the purse strings more surely than do the formal offerings on the floor of the convention. The advantages of the social features are not wholly imaginary. They are real and tangible, and pay a big investment on the cost of attendance. Some modern philosopher has noted that the Egyptian mummies have had no fun for thousands of years. Considering this, is it not just as well to live while we are alive. Those who heed the call and gather at St. Louis February 4 to 9 will take home with them memories that will be a source of pleasure the balance of their days. Come to the convention and enjoy yourself, for you are going to be dead a long time.

LOUISIANA BRICKMAKERS.

The second annual meeting of the brickmakers of Louisiana was held at the St. Charles Hotel, in New Orleans, January 16. There was a gratifying increase in attendance, and the reports of the officers demonstrated the advantage of such an association, for within the year a majority of the manufacturers of that section have adopted the standard size brick, a matter of importance, both to the manufacturer and the consumer. A number of interesting addresses were presented, touching on the importance of the industry and better and more improved methods of manufacture, etc. The treasurer's report showed a substantial balance on hand.

The election of officers resulted as follows: President, C. N. Adams, Alexandria; first vice-president, C. G. Gondran; second vice-president, R. A. Kent, Fluker; secretary-treasurer, Frank Bethune, New Orleans. Retiring President Fritz Salmen was tendered a vote of thanks for the efficient service rendered, and a similar mark of esteem was paid Mr. Adams for services rendered as vice-president.

The following committee was appointed to attend the Na-

tional convention at St. Louis: C. D. Gondran, Gus Gedelhaux, E. M. Leeb, Fritz Salmen, J. R. Ables, E. H. Randolph, C. N. Adams, Thomas Bedin and Mr. Downey.

THE 1907 CALENDAR CROP.

Never before has THE CLAY-WORKER been so embarrassed with riches in the calendar line as this year, evidently a manifestation of prosperity. They are mostly large and lovely, though there are a few of the small and dainty variety. Of the latter sort, the tiniest comes from C. B. Chase, the kiln builder, of Suffolk, Va.

The Roessler and Hasslacher Chemical Company, 100 Williams street, New York, presents a beautiful photo-gravure of a demure maiden with a water jug. A dauntless youth is whispering into the maiden's ear sweet nothings, or perhaps is telling her that glazing and decorating materials of all sorts with which modern pottery is ornamented can be had from the R. H. C. Co.

The most unique of all the calendars received is one which bears the compliments of the Sibley-Menge Press Brick Company, manufacturers of high-grade face brick, Birmingham, Ala. It is a handsome desk ornament as well as useful, being a perpetual calendar with a clock attachment, and thus tells as well as records the flight of time.

A. M. & W. H. Wiles Company, Grassy Point, N. Y., manufacturers of brick machinery, molds, trucks, etc., presents a calendar picture combination of rare beauty. "A Virginia Mill at Evening" is portrayed in the rich coloring of autumn. If any of their many friends and patrons have been overlooked in the distribution of this favor, we would advise them to "register a kick" forthwith.

The New York Brick and Paving Company, Syracuse, N. Y., manufacturers of vitrified paving brick, offers a symphony in brown, being a reproduction of the painting, "A Distressed Auditor." The auditor is a small fox terrier, "singing" to the accompaniment of his master's tin whistle. We think it would have been more happily labeled, "A Smile Getter."

James W. Hensley, dealer in brick machinery and clay-working devices, Indianapolis, chose a picture of a little boy and his dog, the former sending his first message by telephone. We suppose the natural inference is that brickyard supplies can be ordered by phone when necessary.

C. K. Williams & Co., Easton, Pa., have favored us with a calendar that is quite utilitarian. It is decorated with views of their four plants where they manufacture dry colors, paint oxides, talc, paper fillers and various dry minerals used in artificial coloring.

The Sibley Brother Coal Company, Birmingham, Ala., selected for their offering the portrait of a beautiful maiden, "Thelma," from a painting by Asti. It is a cinch that this calendar will be carefully preserved by all who are lucky enough to receive one.

The Garden City Sand Company, Chicago, Ill., by their selection show an eye for beauty. A maiden fair to look upon is pictured so exquisitely that the calendar feature is wholly lost sight of.

Other offerings of a similar character come from the Tuttle Brick Company, Middletown, Conn., the Suffolk Clay Company, Suffolk, Va., the Lewisburg Brick Company, Lewisburg, Pa., the Orchard Knob Clay Works, The Winkle Terra Cotta Company, St. Louis, Mo., the Brockway Brick Company, Brockway, N. Y., and H. C. Baird & Son Co., Parkhill, Ont., Canada, and the Robinson Clay Product Company, Akron, Ohio.

DELIVERED MORE THAN THEY MADE.

In the matter of delivery, 1906 was a banner year for the Purington plants at Galesburg. The affable general manager of that company, W. S. Purington, is authority for the statement that the Purington plants manufactured in 1906, 74,610,000 pavers and delivered 78,262,380, about half of which

were nine-pound block and the balance seven-pound brick. The year's delivery is the largest in the company's history, but the number made was cut short some by the delay in getting coal during the coal strike. They are now building some immense down draft kilns, the largest of which is 120 feet long. They are also building one round kiln which is 28 feet in diameter, inside measurement. The prospects for the coming year are all that they could ask for.

OBITUARY.

John Murray, a well-known brick manufacturer, of Paducah, Ky., died at his home in that city, January 15. He had been engaged in the brick business for twenty-two years, first at Moberly, Mo., but for the last eleven years, he in partnership with C. H. Chamblin, had operated the Paducah Brick and Tile Works. He was a member of the N. B. M. A., having attended the association at the last meeting at Philadelphia. He was painstaking and conscientious in all his business dealings, and his death will be mourned by all who knew him personally.

TRADE LITERATURE.

THE ARTHUR KOPPEL COMPANY, 66 Broad street, New York, has issued a 1907 album which contains a series of interesting views of Koppel railway equipment as it may be seen in actual operation in all quarters of the world. Some of the pictures have a very familiar look, as, for instance, scenes in great clay banks, from which the raw material is being hauled in dump cars, which look as if they were built with an eye to long service. Then there are views taken in foreign lands. One shows a Koppel car in use at the excavations near the Pyramids, and others which make one think of the operations at Panama. There is no descriptive text, so one must guess as to where the views are taken. The first illustration in the book is a birdseye view of the new Koppel plant at Koppel, Pa., which is now in course of construction, and which, when completed, will be a model industrial plant, where will be made almost everything in the way of industrial, narrow and standard gauge railway materials, a few specimens of which are shown in their ads on pages 201, 202 and 203.

Written for THE CLAY-WORKER.

"THE CLAY-WORKER."

True to the needs of the workers, it stands
Honoring labor of plain, honest hands,
Earning their living from simple clay lands.

Calling to each as his helper and guide;
Leading him over the clay regions, wide;
Adding, advancing, and aiding with song,
Years of progression, as time speeds along.

Waking to earnest endeavor, each one
Over God's acres of clay, where His sun
Rises, and washes the land with his light.
Knowing that clay is a power of might,
Ever THE CLAY-WORKER's strenuous zest
Reaches to help toward the highest and best.

—Margaret Andrews Oldham.

It is better to borrow money to buy a new machine than to lose money trying to operate an old one. Then, too, you can find a buyer for your old one by running an ad in THE CLAY-WORKER "For Sale" column.

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DRYING AND BURNING reduced
to a reliable and economical system.
See Parts IV and V of our catalog of
Testing and Controlling Apparatus.

The Richardson-Lovejoy
(See page 221.) Engineering Co.

WANTED, FOR SALE, ETC.

WANTED—Position by a young man, experienced, and a practical brickmaker, as superintendent or manager of stiff mud plant. Face brick preferred. Can give good references. Address R. E. A., 12 1 lm care Clay-Worker.

FOR SALE—At a bargain, small brick plant. Henry Martin soft mud machine. Good town on railroad, central southern Illinois coal field. No opposition. Reason for selling, other business. Address A. J. BINKLEY, 1 1 dm Marion, Ills.

For Sale, Wanted, Etc., Ads Continued on
Pages 174, 175 and 176.

Resolved

that this year we will make the best bricks we know how and use the most perfect brick machinery obtainable.

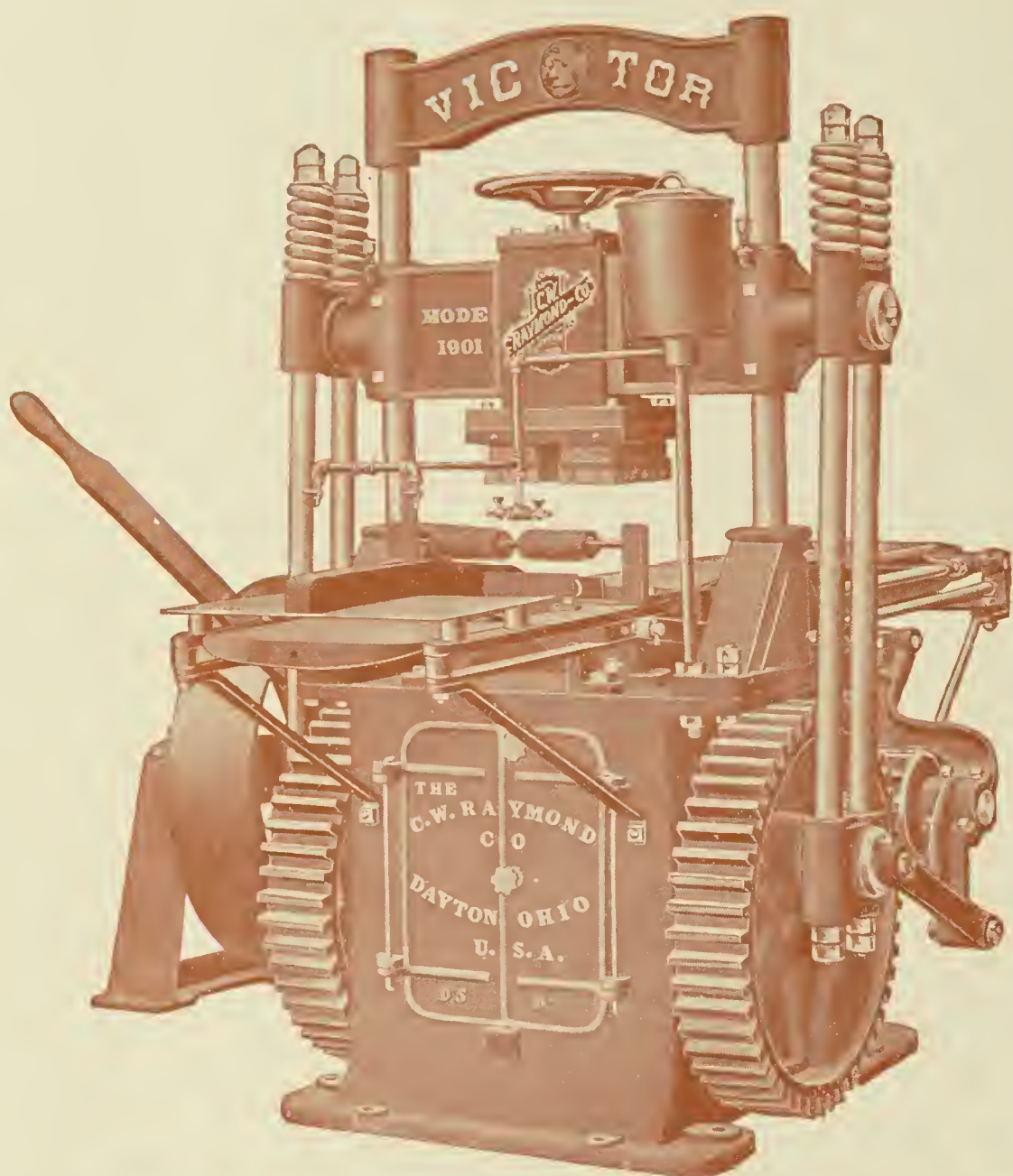
Machinery made by The C. W. Raymond Company is heavier, less liable to break down, and produces superior results at a lower operating expense than any machinery in the world.

THE C. W. RAYMOND CO.
DAYTON, OHIO, U. S. A.

Catalog
Free

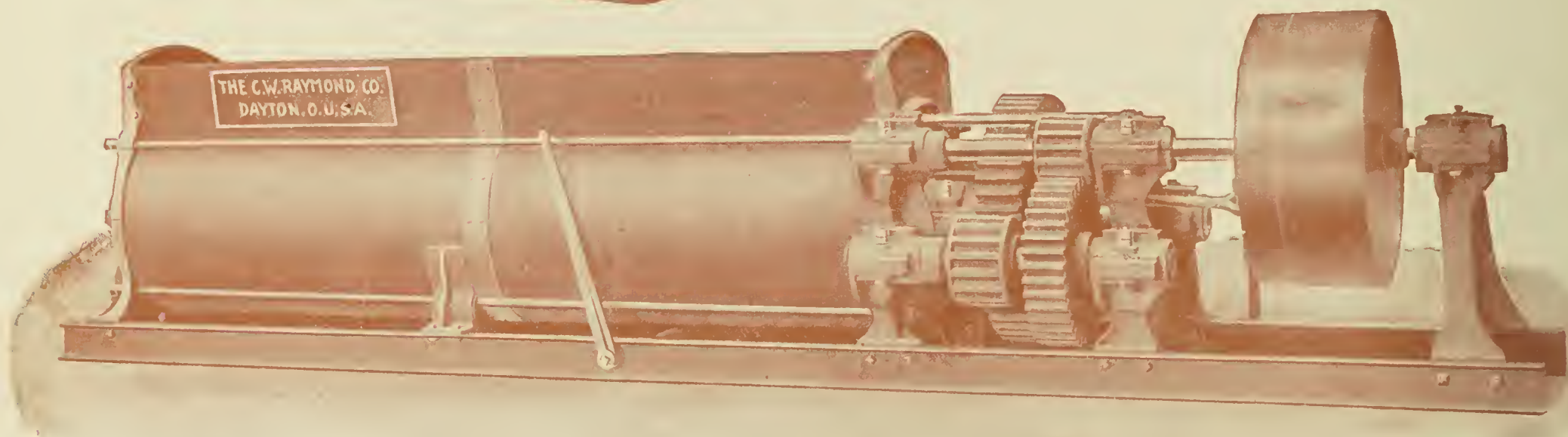


Yesterday, Today and Forever.



The Victor is still victorious in the field of Modern Represses. Its simplicity and strength make it THE Re-press which costs the least for repairs and operation. Its correct construction and smooth running qualities make its production the most nearly perfect.

Write now for information.



Raymond Pug Mills have always been successful in the past, are successful now and will continue to be successful because every detail in their manufacture is so carefully taken care of that the life of the machine is lengthened two-fold, with less cost for repairs and upkeep.

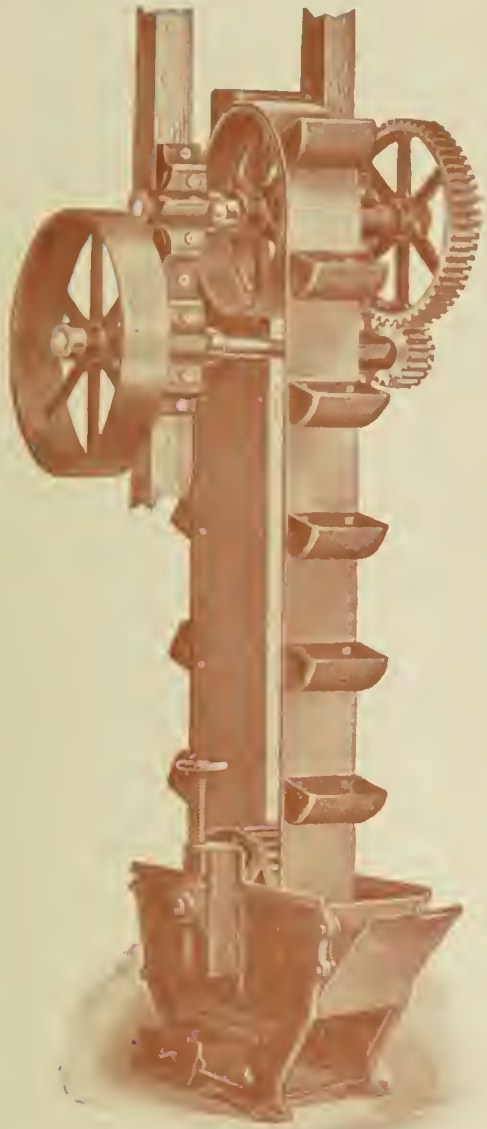
CATALOGUE FOR THE ASKING.

The C. W. Raymond Co.,

Dayton, Ohio, U. S. A.

Some of 'em.

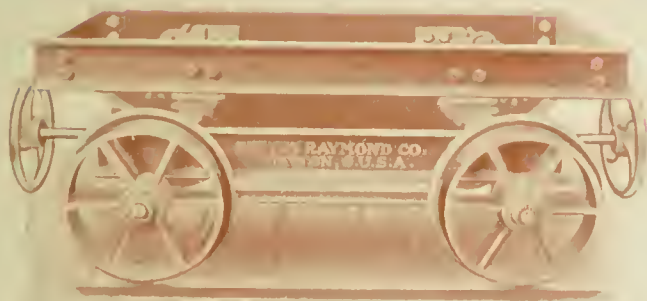
Just a Few of the Smaller Items.



The Raymond Cup Elevator, with open boot. This boot has gates on both sides, large enough to use an ordinary size shovel. The entire end lifts out—it's easy to clean. We make it any height, and for various size buckets.



Raymond Winding Drum, with iron drum and friction drive. We also make a gear and friction hoist for handling all kinds of cars up an incline.



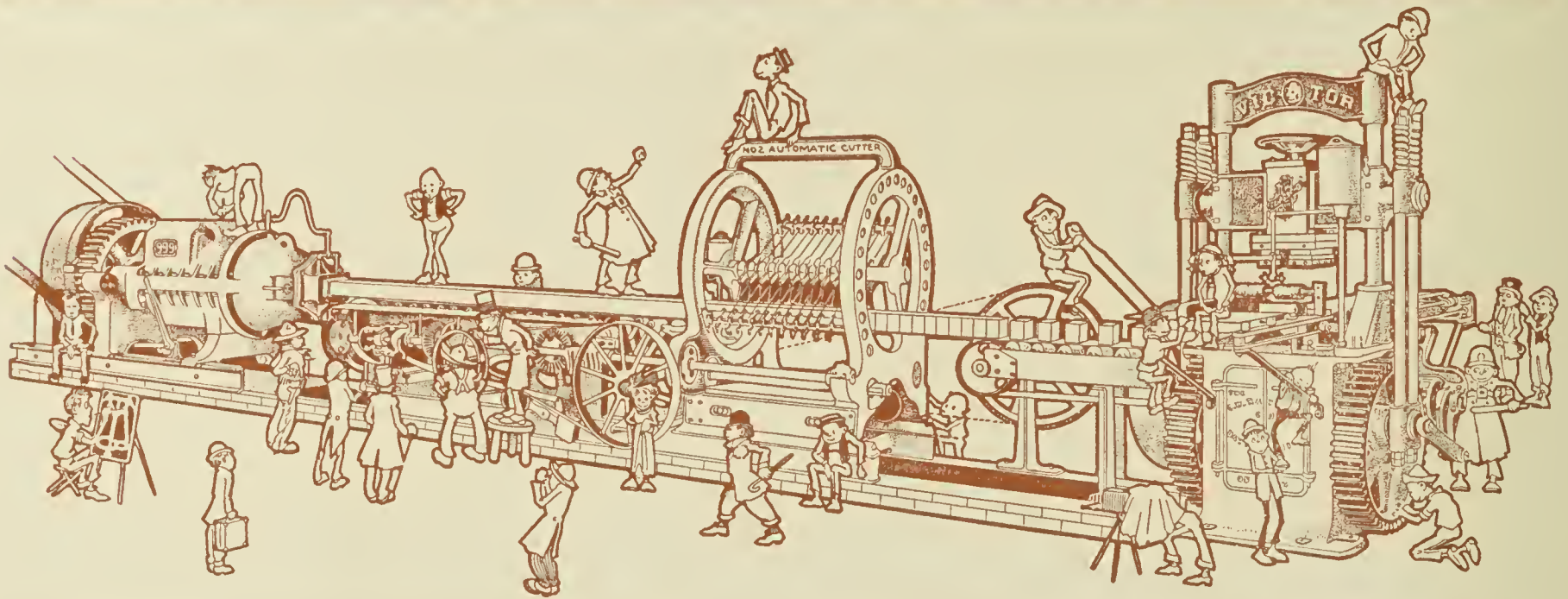
The Raymond System of Open Air Drying saves labor and enables you to make your cost of production less.

And many more supplies. Write for our general catalogue or just tell us what you want.

The C. W. Raymond Co.,

Dayton, Ohio, U. S. A.

On Top, Underneath, Sidewise, Endwise, and Crosswise



Raymond Machinery is Right any way you look at it.
It looks good, is good, and makes good.

Brick Machines
Pug Mills
Represses
Dry Pans
Elevators
Screens
Crushers

Soft Mud Machines
Mold Sanders
Barrows
Trucks
Dump Tables
Disintegrators
Molds

Four Mold Dry Press
Two Mold Dry Press
Pulverizers
Steamers
Dry Press Trucks
Hand Dry Presses
For Shapes and Ornamentals

— also —

The Raymond Radiated Heat Dryer
The Raymond Waste Heat Dryer
The Raymond System of Open Air Drying



The C.W. Raymond Company

Catalogue for the Asking

Dayton, Ohio, U. S. A.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO

Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untying knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

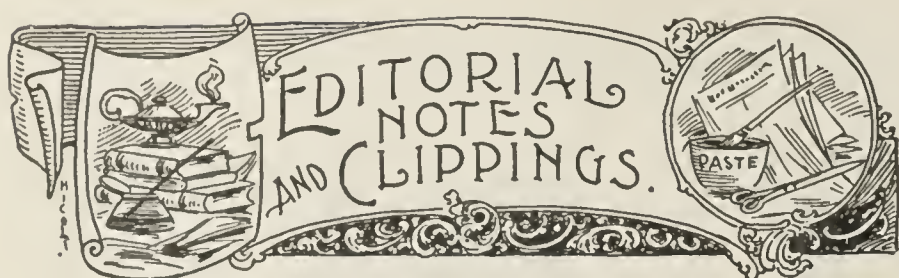
beginning with the issue. Enclosed find \$.

Name

Postoffice

Street and Number

County State



James Baker has started a new brick plant at Berea, Ky.

A brickyard, of which E. J. Joseph is proprietor, has just been started at Underwood, N. D.

The Ennis-Crisp Brick Company has been incorporated at Crisp, Texas, with \$125,000 capital stock.

Thomas Jones, formerly of Monmouth, Ill., has charge of the establishment of a drain tile factory at Rockville, Ind.

Fred Clevenger will install a new dryer at his plant at Rushville, Ind., this winter, and otherwise improve the plant.

H. E. Francisco contemplates the erection of a brick and tile manufacturing plant at Fertile, Iowa, where he has options on some fine clay land.

A charter has been granted the Piedmont Brick Company, of Pilot Mountain, Tenn. G. O. Key is at the head of the company, which is capitalized for \$50,000.

Leroy, Minn., wants a drain tile factory, and George Daily is having tests made of the clay on his farm with a view of establishing a small factory for the manufacture of tile.

A number of improvements will be made in the plant of the E. A. Poe Brick Company, Fayetteville, N. C., including the installation of a steam dryer. When completed the plant will have a capacity of 40,000 brick per day.

At the annual meeting of the Loveland (Colo.) Paving and Pressed Brick Company, the following officers were elected: President, J. L. Johnson; vice-president, R. R. Fountain; secretary, S. H. Briggs; treasurer, J. C. Johnson.

Henry C. Hayt, one of the pioneer brick manufacturers of Chicago, died in that city last month in his seventy-sixth year. He was a former member of the firm of Hayt & Alsip, having engaged in the business shortly after the great Chicago fire.

The Pittsburg (Kan.) Vitrified Brick Company has landed a big contract to supply paving brick for the city of Lake Charles, La. The contract will require sixty to seventy cars of paving brick and will keep the works busy at full capacity for some time.

H. F. Zartman, manager of the Scandia Brick and Tile Company, of Scandia, Iowa, died at the Methodist Hospital, at Des Moines, Iowa, December 22. Mr. Zartman had been ill for several weeks, and an operation was decided on as a last hope, but proved unavailing.

D. L. Joynt and R. L. Ingram, of Gonzales, Texas, will organize a company to develop a valuable clay deposit at Waxahachie, Texas, in which they are interested. They expect to manufacture both dry pressed and paving brick, and to begin the erection of the plant at an early date.

At the annual meeting of the Boone Brick, Tile and Paving Company, Boone, Iowa, it was decided to make a number of improvements in the plant in order to enable them to meet the increased demand for their product. The following officers were elected: President, Judge J. L. Stevens; secretary, T. L. Ashford; treasurer and manager, B. M. Huntley.

The sheriff's sale of the plant of the Champion Clay Company's works, just east of Wellsville, Ohio, and the chattels in Liverpool township, in the foreclosure case brought by Thomas H. Silver, a wealthy banker of Wellsville, has just been confirmed in common pleas court. Mr. Silver was the purchaser of the property and paid \$25,000 for the same. He also gave \$2,000 for the chattels. The plant was appraised at \$30,000.

The United States Brick Corporation of Michigan City, Ind., closed the contract for furnishing millions of brick to the Chicago, Lake Shore & South Bend Railway Company, to be used at points between South Bend and Kensington, in the construction of all power houses, shops and car barns between the terminal points. All the brick is to be made in natural color. The manufacturers are required to begin de-

livery at the present time and to furnish before the end of the year 1907 all the brick required by the railway people.

D. W. Carle is at the head of a company that is being organized at Richmond, Va., to erect an immense brick manufacturing plant at that point.

The Memphis (Tenn.) Brick Supply Company is capitalized at \$40,000, and incorporated by G. W. McRae, O. H. P. Piper, R. A. Speed, Frank H. Reid and J. J. Bishop.

Henry Hawbacker, of Illinois, will establish a brick and tile plant on his farm near Butterfield, Minn. The plant will be a modest one to start, but if the venture proves a success, the capacity will be enlarged.

The Pella Drain Tile and Brick Company has been incorporated to manufacture drain tile and brick at Pella, Iowa, by W. Rietveld, H. Reitveld, O. L. Tietveld and L. P. and J. Grundman. Capital stock, \$20,000, all paid in.

H. C. Carroll & Sons, of Philadelphia, Pa., have begun the erection of a new brickmaking plant on Madison avenue, between Sixty-sixth and Sixty-seventh streets. The plant will be equipped throughout with modern machinery and appliances.

R. G. Mess, W. S. Phelps and B. K. Davis have filed articles of incorporation for the Oregon Brick and Tile Company, which will engage in the manufacture of various kinds of brick, tile and pottery, with headquarters in Portland, Ore. The concern is capitalized at \$50,000.

The Southern Clay Company, of Todd County, Kentucky, has been incorporated with \$100,000 capital stock. The incorporators are Hywel Davies, of Louisville, and James M. Robinson and G. Howard Robinson, of Guthrie, Ky. The offices of the company will be at Guthrie.

Dover, N. H., is to have a new industry, the Dover Brick and Pottery Company, which has absorbed the R. R. Morris Brick Company. A plant to cost \$75,000 will be erected for the manufacture of flower pots. It will have a capacity of 500,000 such pots a month. The company was recently organized in Kittery, Maine, with a capital stock of \$300,000.

The firm of Andy & Frerichs, Grundy Center, Iowa, manufacturers of brick and tile, are arranging to incorporate the company with a capital stock of \$30,000. The firm has been doing a big business and last year was the best of all. The firm has just bought about nine acres of clay ground and they now have enough material to supply them for thirty-five years.

The Crescent brickyard, near Eatontown, N. J., owned by the Crescent Brick Company, was completely destroyed by fire last Wednesday night. The business was established two years ago, and besides manufacturing brick, the company turned out fancy tile. Most of the machinery destroyed was made especially for the business. The loss amounts to several thousand dollars.

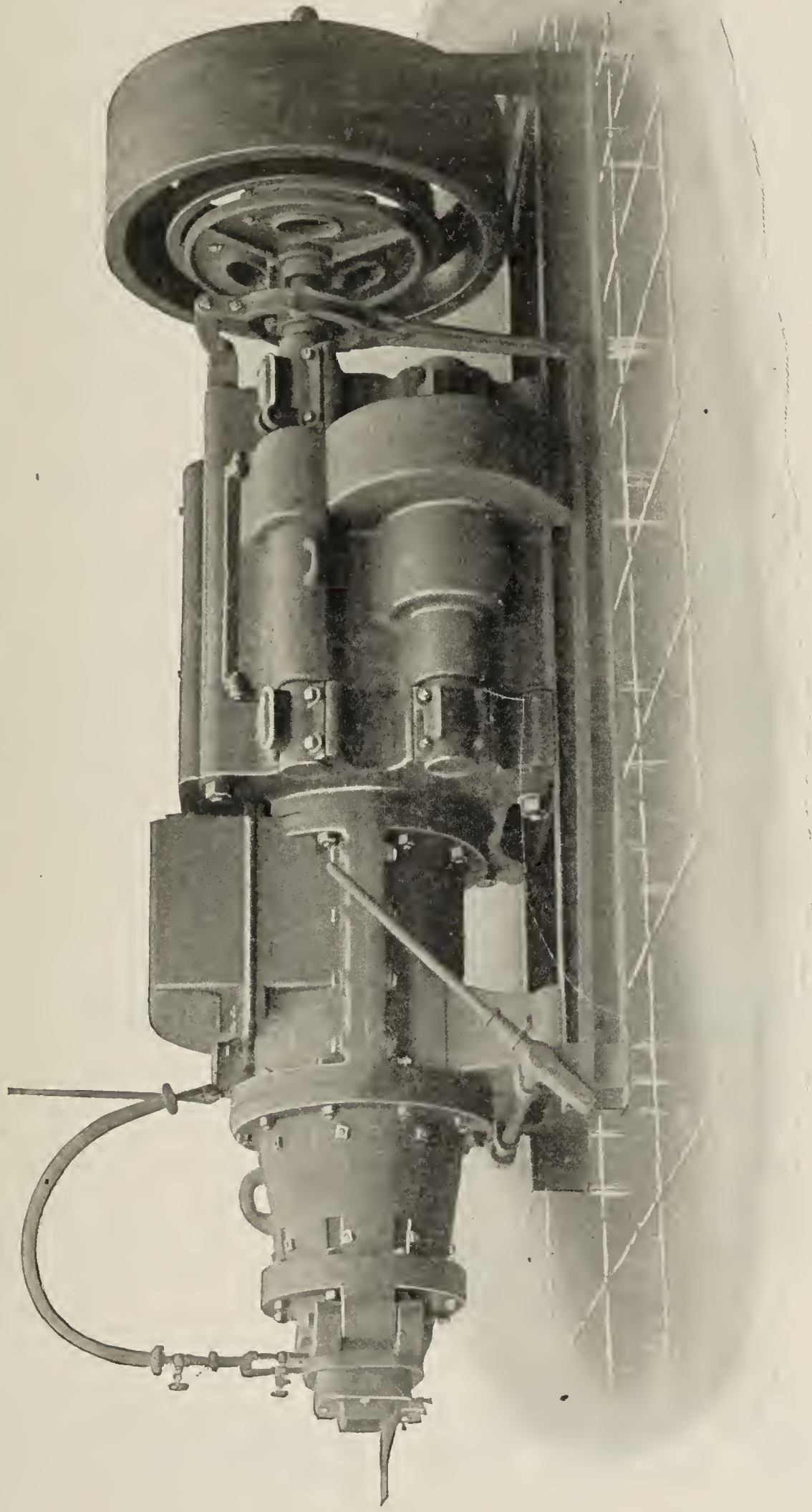
The Brooks Brick Company has been organized in Bangor, Maine, to carry on the business formerly conducted by Brooks & Co., in Brewer, with \$30,000 capital stock, all of which is paid in. George E. Tibetts, of Orrington, is president, and John E. Littlefield, of Brewer, treasurer, and these officers, with Harrison N. Brooks, of Brewer, are the directors. The plant manufactures common and face bricks.

In a recent letter, J. C. Steele & Sons, of Statesville, N. C., manufacturers of the New South brick machinery, say the past was the best in their history, having sold everything they could build. The prospects for 1907 are even better, and they have now booked orders for eight large outfits, besides a number of smaller ones. They make it a practice to continually improve their machinery wherever possible to do so, and their machines for 1907 have been improved in several important details giving greater strength and wearing qualities.

The Sunbury Brick Company has been organized at Sunbury, Pa., and the following officers elected: President, Hon. C. R. Savidge, Sunbury; vice-president, Hon. Ellis Orvis, Bellefonte; treasurer, George Schoch, Selinsgrove; secretary, A. W. Duy, Bloomsburg; general manager, W. I. Harvey, Orvis, Pa., and assistant manager, W. W. Swengel, Sunbury, who will, with A. C. Savidge, constitute the board of directors. The company has acquired a large tract of valuable red shale and clay lands in Snyder county, along the line of the Pennsylvania railroad, and will erect a plant of 50,000

(Continued on page 168.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

SIMPLIFIED SPELLING.

Hī-drōl'-īk, *a*—A word used to designate the highest grade of building brick in the world. These are made exclusively by The Hydraulic-Press Brick Company, which operates a number of yards in various parts of the country, and are daily supplying their bricks to all markets.

See Opposite Page 

HYDRAULIC-PRESS BRICK CO.,

MISSOURI TRUST BLDG., ST. LOUIS.

WE MANUFACTURE
All Kinds of Brick Known to Modern Brickmaking

IN COLORS

Red, Gray, Buff, Mottled, Pink, Brown, Flashed and Iron Spot
In Standard Roman and Norman Sizes.



IMPERVIOUS BRICKS

Light Gray, Buff, Dark Iron Spot. Also Gray and Buff Iron Spot.



ENAMELED BRICK.

We fully guarantee our enamel product.

We manufacture all the desirable colors.

American, English, Roman, Norman sizes, together with special shapes.

HYDRAULIC-PRESS BRICK CO.,

MISSOURI TRUST BLDG., ST. LOUIS.

EDITORIAL NOTES AND CLIPPINGS—Continued.

daily capacity. They will make a high grade dry press and wire cut building brick and vitrified paving brick.

The Consolidated Brick and Tile Company, of Winston-Salem, N. C., has been incorporated by J. L. and George A. Hanes and others, with \$125,000 capital stock.

The Kirkville Clay Products Company, of Syracuse, N. Y., has been incorporated to manufacture brick and other building material, by I. Putziger, Solvay, N. Y.; H. B. Myron and William Ryan, of Syracuse, N. Y.

The Dover Brick Company has been incorporated with \$200,000 capital stock to manufacture brick at Dover Plains, N. Y. William S. Ketcham, of Dover Plains, and C. Wisner and H. B. King, of Chicago, Ill., are interested.

J. E. Murphy, of Salem, Ore., proprietor of the Salem tile factory, turned out 800,000 feet of drain tile last year, and is now making a number of improvements at the plant that will enable him to increase the output the coming season.

Sol Rosenbaum, vice-president and general manager of the Powhattan Clay Manufacturing Company's Manhattan works at Richmond, Va., died at his home in Brooklyn, N. Y., January 7. Mr. Rosenbaum was sixty-one years old, and is survived by his wife, three sons and three daughters.

F. W. Dennis, of Norfolk, Va., has just finished building one of his double kilns for the York (Pa.) Shale Pressed Brick Company, and will build three more for different brick companies in York. He says he will be at St. Louis convention week, ready to talk kilns to any one interested in the subject.

Moore & Anderson Bros., of Dayton, Ore., are planning to start a large brick factory at West Dayton. They claim that after digging a little distance they found the finest kind of clay. They intend to put in the latest brickmaking machinery. Slabwood from the Dayton and Newberg mills will be used for fuel.

The Randall Clay Mining and Manufacturing Company is the name of a new firm incorporated to mine clay and manufacture clay products at Carrollton, Ga. The capital stock of the corporation is \$10,000, and the incorporators are L. K. Smith, E. M. Bass and R. J. Gailbreath, of Carrollton, Ga., and T. A. Dolan, of Aragon, Ga.

The Imperial Coal Company, operating at Beersville, N. B., are planning to establish a brickmaking plant with a capacity of 20,000 brick a day. The brick will be of buff color and the promoters say they expect to sell the greater portion of the output in Montreal. Henry O'Neil, of New York, is the president of the company.

The Hillsboro Clay Manufacturing Company, of Hillsboro, N. C., has been incorporated under the laws of North Carolina, with \$100,000 capital stock, of which \$20,000 has been paid in. S. S. Strudwick is president and treasurer of the company, and H. N. Brown, general manager. They are now putting up a stiff mud brick plant of 30,000 to 50,000 daily capacity, and expect to be ready to deliver brick by May 1.

The Plymouth Gypsum Company, of Fort Dodge, Iowa, is party to an organization of a company with \$150,000 capital, to manufacture sewer pipe and a new plant will be built in the spring. The finest of clay is secured beneath the strata of gypsum rock taken out of the company's mine, and will be used in the manufacture of vitrified sewer pipe. The company will employ seventy-five men at the start and expect to increase the number to 150.

The name of the Ayer-McCarel Clay Company, Brazil, Ind., has been changed, and in the future will be known as the Brazil branch of the Hydraulic-Press Brick Company. This plant was purchased by the Hydraulic company last spring and has been greatly improved since then, and now has an annual capacity of 20,000,000 front brick. H. A. Walters, formerly manager of the Washington (D. C.) Hydraulic Brick Company, is manager of the plant.

The first of the year the Dow Brick Company, which was recently incorporated with a capitalization of \$40,000, took over the brick manufacturing business which has been conducted by E. W. Dow & Co., of Columbus, Ohio. The officers of the new company are: D. W. Dow, president; E. D. Dow, vice-president, and J. A. McDonald, secretary and treasurer. The officers of the company are in the New First National

Bank Building and it does a business of manufacturing and selling all kinds of brick.

Incorporation papers have been granted the Arvada Brick Company, of Denver, Colo. Oscar D. Gass, J. D. and W. G. Maitland and Samuel H. Thompson, Jr., are interested.

H. B. Moore, son-in-law of the late John Doyle, of Utica, N. Y., has sold his jewelry manufactory, and will devote his entire attention to the management of the Doyle brick plant.

The Aberdeen Brick Company, of Aberdeen, S. D., will add a dryer to their plant. This will enable them to begin work earlier and continue later than they have been able to do heretofore.

The Big Horn Brick Company, Cody, Wyo., had a very successful year in 1906, and the prospects for the coming year are even more promising, as they now have on hand orders calling for over a million brick.

The Follansbee Brick and Tile Company has been incorporated by Virgil L. McClusky, of Cameron, W. Va., and H. A. Irwin, of Pittsburg, Pa. The plant will be erected at Follansbee, W. Va., where they have a fine deposit of fire clay.

The Mitchell Brick Company, which has been operating at Delhi, Ohio, for many years, has recently been incorporated with \$45,000 capital stock, by Selwyn Mitchell, William Mitchell, Florence B. Mitchell, Louisa Mitchell and W. B. Stier.

Kafer & Ivins, brick manufacturers of Trenton, N. J., have announced that with the expiration of their lease on their present site, April 1, they will discontinue the manufacture of brick, after nineteen years in the business. The plant is now being dismantled and the ground will probably be sold for building lots.

H. C. Adams has purchased the interest of R. B. Holmes in the Danville (Ill.) Brick Company. W. P. Whitney, formerly of Veedersburg, Ind., has also acquired an interest in the plant, and has been appointed manager. Mr. Whitney was for many years with the Wabash Clay Company, of Veedersburg, Ind., and has an experience that will stand him in good stead in his new location. We wish him much success.



**MOST
DIRECT
ROUTE,
BEST
SERVICE
TO**

ST. LOUIS

From

NEW YORK, PHILADELPHIA, BALTIMORE,
WASHINGTON, PITTSBURG,
WHEELING, ZANESVILLE,
NEWARK, COLUMBUS,
CINCINNATI AND LOUISVILLE.

Solid Vestibule Trains, High Back Seat Coaches,
Pullman Drawing Room Sleeping Cars,
Parlor Cars and

Company's Own Dining Cars.

8-HOUR TRAINS FROM CINCINNATI.

For rates, sleeping car reservations, time of trains and other particulars apply to your nearest ticket agent or address

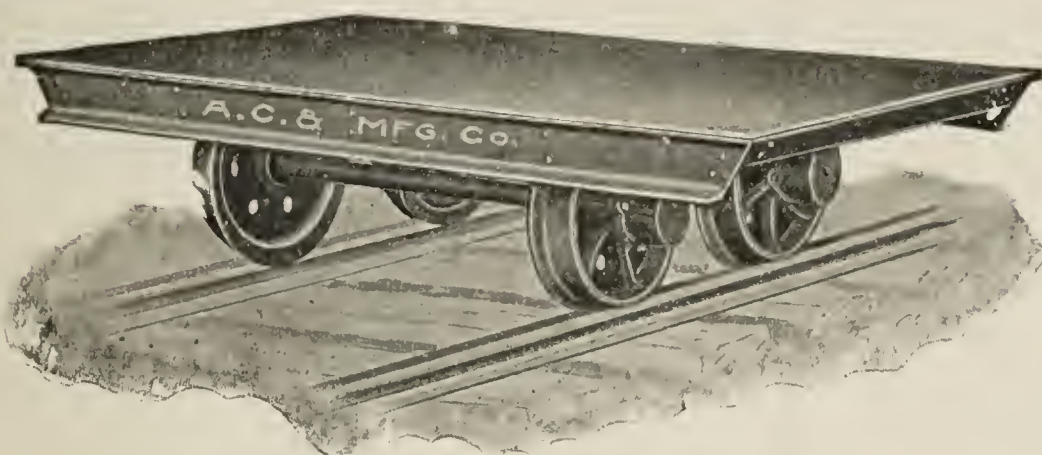
O. P. McCARTY,

General Passenger Agent,

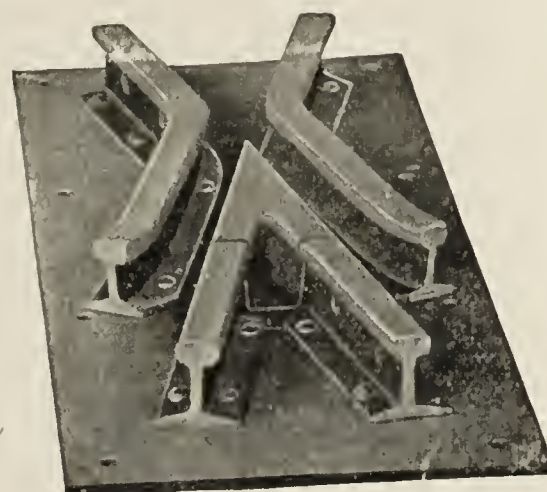
CINCINNATI, OHIO.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

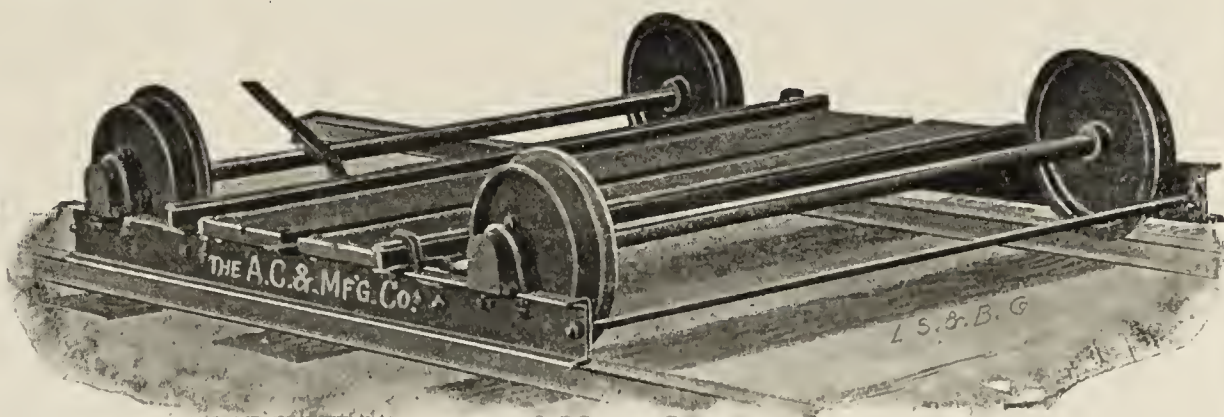
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.



HERE IS a continuance of good business reported by the brick manufacturers. Pleasant weather recently has been most advantageous to not only building operations, but for the manufacture of brick as well. While many of the brick plants shut down Christmas in order to make necessary repairs, the demand for brick is too great to cause them to be idle any longer than it was absolutely necessary. Every indication points to continued prosperity among the brick manufacturers.

The building operations of 1906 far exceeded those of any other year in the history of St. Louis. The extent of the building operations may be better understood when it is said that packed together in one solid and unbroken line, it would extend for a distance of almost forty-three miles. The cost of these buildings taken from the total permits granted is in round numbers \$30,000,000.

The building record of 1905, which was considered great, is much less than the result of building operations in 1906. In 1905 the total amount of building operations amounted to \$23,434,734 as compared with \$29,933,693. It must be remembered, too, that the actual cost of the building exceeds by about 20 per cent. the cost indicated in the permit. This would bring the building operations of 1906 up to \$33,000,000 in round numbers.

The year preceding and the year of the World's Fair, when the building industry seemed at its height throughout the city, compare badly with the record for 1906. Then it must be remembered that in many cases the buildings of the World's Fair year were but temporary buildings, and were torn down with the close of the fair and so represented nothing lasting. The year 1906 and 1905 represents buildings that are lasting and are well built and durable. During 1906 the contractors were greatly hampered by the scarcity of material and labor and the high prices of both.

It is predicted this year's building operations will have a greater showing than in 1906, and the contractors are looking forward to a great boom and for an unprecedented demand for office building, factories, houses and mercantile houses.

In 1905 the feature of building operations was the number of flats erected. In 1906 the feature was in the great number of office buildings being put up. The city still lacks progress in the erection of mercantile and manufacturing structures. The indications are for a material growth this year and it would not be surprising if last year's figures will be excelled by several millions.

There was an enormous increase in the number of dwellings erected last year over the figures of 1905. The flats had the stage in 1905, but in 1906 dwellings were in the fore in residence property. Outside of the office buildings the growth was shown in vacant spaces in the south and west sections of the city particularly. Last year the contractors had trouble because of the scarcity and high price of building materials and labor. Had this not been the case, the record would have been much greater than it was.

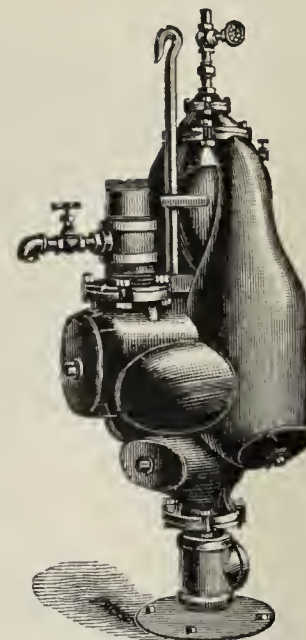
Somewhat of a change took place in the river front last year, especially north of Franklin avenue. The old tenement and lodging houses that once occupied that district have been torn down and their places taken by railway freight offices and sheds and manufacturing plants.

The mercantile and manufacturing places seem to be following the line of the railways, especially the terminal belt line in the northern part of St. Louis. It is predicted by the railroads that they will occupy the district east of Ninth street and north of Franklin avenue before many years.

The greater number of the frame buildings erected during

Drain Your Clay Pits

**with a pump
that gritty, muddy
water cannot
injure.**



The Pulsometer Steam Pump

**is built for hard work. Has
no easily deranged inside
or outside mechanism.**

**It is simple, handy, effi-
cient and durable.**

**Requires neither engine,
belt, oil, packing, nor
special foundation; merely
a steam pipe from the
boiler. It will operate as
well suspended as placed
stationary.**

**The fact that more than
25,000 of them are in use,
is evidence of their utility.**

**You are welcome to our cata-
logue, which will tell you more
about them.**

**Pulsometer Steam
Pump Co.,
14 Battery Place, New York.**

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Table Rock, Neb. Nov. 19, 1904.

Mr. John C. Boss, Elkhart, Ind.

Dear Sir—After using the BOSS METHOD of burning brick one year, we can say that we are well pleased, not having any cracked brick during the season and our brick being more uniform in size. We have not burned out one single fire-bag in our twelve kilns this year.

Very truly,

Cotton Brick Co.,
Per Geo. F. Cotton.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

ELKHART, IND.

1906 represented homes in a majority of cases, while many of the new brick structures were also residences.

The north and south ends of the city are building up rapidly in cheap property, that of the west end, being too expensive for men of moderate means.

Already plans have been made for buildings on which work is likely to begin in the early part of this year. Surveys have begun for the addition to the National Bank of Commerce, which addition it is estimated will cost \$2,500,000.

The following number of permits were issued last year:

Month	Number	Amount
January.....	575.....	\$ 1,743,553
February.....	535.....	1,636,263
March.....	669.....	1,933,339
April.....	829.....	4,459,715
May.....	904.....	2,163,255
June.....	830.....	3,010,668
July.....	876.....	3,358,779
August.....	948.....	2,233,900
September.....	912.....	2,031,069
October.....	834.....	2,853,976
November.....	660.....	2,351,071
December.....	398.....	2,163,105

Total..... 8,988.....\$29,938,693

The total number of permits issued in 1905 were 8,265.

The total number of permits issued in 1906 were 8,988.

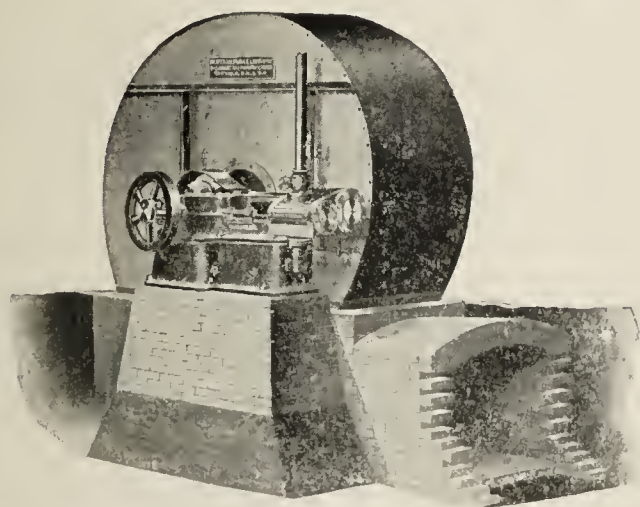
Increase for 1906..... 623

Amount in 1905 was \$23,434, 564 against \$29,781,967, an increase of \$6,503,959.

The Hydraulic-Press Brick Company filed suit recently in the circuit court against the Evens & Howard Fire Brick Company, and the St. Louis & San Francisco Railroad Company, to restrain the building of a switch between property of the Evens & Howard Company and the Frisco tracks, across property of the plaintiff at Kingshighway and the River des Peres.

A. SAINT.

BUFFALO WASTE HEAT DRYER.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"BUFFALO" WASTE HEAT FANS take the WASTE HEAT from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" FANS have water-cooled bearings where necessary.

**APPLICABLE TO BRICK, TILE AND
TERRA COTTA PLANTS.**

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

FOR SALE.

One Lion brick machine, in first-class condition. For full particulars, address
PROGRESS PRESS BRICK & M. CO.,
13 c St. Louis Mo.

FOR SALE—Brickyard located in Southern Ohio; a good proposition. Immediate sale for all brick manufactured. Address
P. W. S., care Clay-Worker.
12 c

FOR SALE—Eight thousand new all steel foot pallets, 34x10 inches. In good order. Can be had at a bargain. Address
THE CLEVELAND CAR CO.,
1 tf L West Park, Ohio.

FOR SALE—A well equipped brickyard, located in Mississippi. Capacity 40,000 per day; well located; good clay, and up-to-date machinery. Will sell at a bargain. Address
J. S. LOVE,
193 c Lumberton, Miss.

WANTED—A first-class shale brick burner for common building and paving brick in round down draft kilns. Applicant must be sober, industrious and well recommended. State salary wanted. Address
12 tf d L. S. S., care Clay-Worker.

FOR SALE—Will sacrifice for \$5,000 cash medium sized stiff mud plant; Freese machinery; 100 horsepower boiler. Good prices from local market. Address
JOHN B. THOMAS,
12 c Lakewood, N. J.

WANTED—An intelligent foreman for a lime bond, silica brickyard. Must be capable of taking full charge of yard from quarrying of the stone to the burning and loading of the brick. Apply to X. Y. Z., care Clay-Worker.
13 c

WANTED—A foreman for a fire brick plant. Must understand the mixing of clays, making, burning and setting, and thoroughly competent to manage the men. Give references and wages required. Address
GAY HEAD FIRE BRICK CO.,
11 c Somerset, Mass.

NO SCUM. NO WHITEWASH.

No More Trouble from Scum or Whitewash. Scum or whitewash eliminated in burning without the use of chemicals. No change in kiln or furnaces. Compensation when results are obtained. Full particulars on request. Address
JOHN MCALISTER,
123 d 50 E. Third Ave., Columbus, Ohio.

WANTED—A thoroughly reliable superintendent to take entire charge of a vitrified paving brick plant in Eastern Pennsylvania, using stiff mud process. Must be sober, willing to work, and be able to handle men. Address
E. H. G.,
11 d 2032 Land Title Building, Philadelphia, Pa.

FOR SALE.

Money-making soft mud brickyard. Great opportunity for practical man. Good profit and can't supply demand; 30,000 capacity. Will sell at a bargain on easy terms, as owner has larger interests. Write at once.
TERRE HAUTE P. BRICK CO.,
11 d Terre Haute, Ind.

ENGINES AND BOILERS.

Engines, 12x36, 16x42, 18x36 and 20x48, Corliss; also, 40 other sizes; all styles in stock.
Boilers, 84x18, 78x16, 72x18, tubular; also, 60 other sizes; all styles in stock.
Let us know what you need and we will make you a proposition that will interest you.
THE RANDLE MACHINERY CO.,
1735 Powers St., Cincinnati, Ohio.
1 tf d

WANTED—Position as superintendent. Front brick, high grade. Capable of taking entire management. All references. Address NEW YEAR, care Clay-Worker.
11 c

WANTED—Thoroughly competent superintendent for common brickyard in Central California. Will pay good price for right man. Address
11 c SAN, care Clay-Worker.

WANTED—Second-hand steam shovel, good condition; a "Thew" or something similar preferred. Very light clay to work in. Write full particulars. Address
11 c P. W. R., care Clay-Worker.

WANTED—Position as superintendent or head burner of clay plant; twenty years' experience with stiff clay, shale brick and drain tile plants. Address
H. H. McHOSE,
11 c Grinnell, Iowa.

FOR SALE—Brickyard property, 70 miles from New York city. Good local demand for products. Excellent shipping facilities. Address
Z. H. BOAK,
11 c 28 California avenue, Middletown, N. Y.

FOR SALE—Neat little brick and tile plant; capacity, 1,000,000 brick per year. Or will sell interest to some one to run it. Will take but little cash. Address
TERPENING BRICK & TILE CO.,
13 c Farmington, Ark.

WANTED—At once, a first-class, practical superintendent for our vitrified paving brick plant. Must be well qualified, and to the right man will pay a good salary. Address
BRICK & TILE,
11 d Care Clay-Worker.

FOR SALE—One Letter A Martin brick machine and pug mill, used but little. First-class condition. Good reason for selling. Cheap. Address
STANDARD BRICK MFG. CO.,
11 c Evansville, Ind.

FOR SALE OR TRADE.

560 acres of good Illinois land, for a first-class brickyard. Owner of land is a brick manufacturer and does not wish to farm the land. Address
505 West Charles Street,
11 d Muncie, Ind.

FOR SALE.

Well established brickyard near South Atlantic port, sixty thousand population. Chambers end-cut machine, 45,000 daily capacity; Success drying system; track to clay hole. A bargain. Satisfactory terms to good party. Address
J. C. HAGLER, Augusta, Ga.
13 d

FOR SALE—One Premier brick machine; one Bensing automatic brick cutter; one Hummer brick and tile machine, with vertical attachment; automatic tile and block cutters; hollow brick and block dies, all of the J. D. Fate Company make; all complete and in good condition. For particulars, address
C. C. COMPANY,
13 c Care Clay-Worker.

TO SELL OR LEASE.

To a good potter, a good newly built pottery brick building, 40x50 feet; two foot-power wheels, one 14-foot down draft kiln. Clay the best. Will cost \$1.30 per ton. Trade good, but little ware on hand. Am no potter, but a brickmaker. Will sell cheap or lease on good terms. Write if interested to
R. F. ECHOLS,
13 c Longview, Texas.

FOR SALE

High grade brick plant at a special offer. An exceptional opportunity. Good reasons for selling. Business established. Large orders for next season's delivery. Only working capital required. One of the best plants in the country for the manufacture of high grade vitrified white brick. Only parties of experience and meaning business need apply. Address,
12 d P. O. Box 595, Harrisburg, Pa.

FOR SALE—One iron brick machine, Ideal Horton make, nearly new, in good condition, with molds, trucks, barrows, 5,000 pallets, at a bargain. Address
12 c A. W. HALL, Houghton, N. Y.

FOR SALE.

At a bargain, a complete soft mud outfit, consisting of one brick machine, pug mill, crusher, sanding machine, grinder and sifter. Also 42,000 pallets. Everything in good working order. Reason for selling, going to make by the dry press process. Address
INDUSTRIAL BRICK CO.,
11 c Mt. Vernon, Ind.

WANTED.

A first-class foreman for a new paving and building brick plant, present capacity, 30,000 to 50,000 daily. Will double capacity this year. Location central Western Pennsylvania. Quality of product unquestioned. We want a live and energetic worker. State fully, age, experience, references, etc. Address
BOX 356,
12 d Care Clay-Worker.

FOR SALE.

One Chambers end-cut brick machine and pug mill, line shaft, pulleys and boxes, capacity 30,000 brick per day; also six steel trucks and pallets and covers to hold 400,000 brick. This machinery is as good as new, having been run one season only. It is being taken out to install a plant of 100,000 per day, on account of increased demand. Address
THE ALTAMAHA BRICK & TILE CO.,
1 tf d Theo, Ga.

FOR SALE.

One Chambers style "B" brick machine, with Chambers' latest patent automatic cut-off, 110 feet of off-bearing frame, pulleys, shafting, etc. One 100 horsepower Westinghouse 13½x12 automatic standard engine. Also tempering machinery, consisting of three overhead-gear, steam-driven Carnell tempering wheels, with necessary shafting, etc., complete. All in good condition. Price moderate for quick sale. Address
WM. CONWAY,
12 c 5800 Walnut street, Philadelphia, Pa.

APPROACHING OLD AGE.

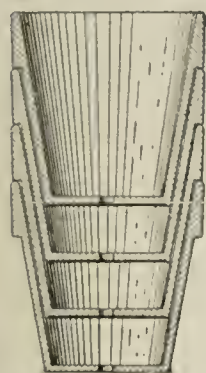
On this account, the owner offers for sale a first-class, modern, stiff mud brick plant, in active operation, well organized and making money; 30,000 brick per day; good boilers; Corliss engine; Thew steam shovel; good machinery and dryer; down draft kilns. Plenty of good clay, water and labor; also, nice store and stock of goods. Good freight rates on coal and brick, and a market for all that can be produced, at good and growing prices. This is neither a "gold brick" nor a "hard-up" sale, but a proposition to turn loose a live, prosperous business for its value. A good thing for some man who is tired of severe winters and labor troubles. Address
BRICK YARD,
11 c P. O. Box 101, Montgomery, Ala.

Philadelphia **LINK-BELT COMPANY** Indianapolis
New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY

COX'S Special Drawn Coil Wire is
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires For End-Cut, Slide-Cut
and Automatic Tables.

GEO. S. COX, East Liverpool, Ohio. Satisfaction guaranteed.
Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.

The Rockwood Mfg. Co.,

1801 English Ave.

INDIANAPOLIS, IND.



The Kiln of Kilns is the
"IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY
chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, lime-
stone, etc., with ONE-THIRD the fuel used in intermittent kilns.
No fuel comes in contact with the goods and an oxidizing or reducing atmos-
phere can be produced at will.
All progressive brick manufacturers must have this kiln.
For full particulars please apply to

J. OSMAN & CO., Ltd.,
Cable Address: Dampening, London. Arundel St., Strand, London, W. C.

THE
WEBB WIRE WORKS

MANUFACTURERS OF
MUSIC WIRE NEEDLE WIRE
NEW BRUNSWICK, N. J.

We manufacture **BRICK AND TILE**
CUTTING WIRE, drawn especially
to withstand abrasion.

Send for prices of wire in coils.



CANADIAN TRADE.
Wooden Brick Pallets.
WRITE US
BARCHARD & Co., Limited, 135-151 Duke St.,
TORONTO, CANADA.

FOR SALE—Jeffrey Swing Hammer Pul-
verizer; practically new. Price \$700.
MILTON PRESSED BRICK CO. (Ltd.),
13 c Milton, Ont.

WANTED—To buy or lease a brick plant
having shale or fire clay raw material
and round down draft kilns. Address
12 tf d E. & E., care Clay-Worker.

WANTED—In a good Southern Pennsyl-
vania town, a suitable man for superin-
tendent of brick works. Address, giving
references, "GETTYS,"
1 1 c Care Clay-Worker.

FOR SALE.
Brickyard site, 12 acres; good shale; 12-
room house; railroad siding, machinery,
etc. Address PENNA,
12 2 d care Clay-Worker.

FOR SALE—About 20,000 pallets, 5/8x10x34. Good
condition. Price \$30.00 per thousand f. o. b.
Also good second-hand Atlas steam engine,
9x15. Address
11 c SCHMITT BRICK CO.
Columbus, Ohio.

WANTED—Position as superintendent of tile
factory by young man who has had 10 years'
experience. Can handle either shale or surface
clays. Would prefer position in Iowa. Best of
references. Address
11 cm MISS., care Clay-Worker.

FOR SALE—A going coal mine, with 24-
in. fire clay bottom. Utilization of the
fire clay would make this a highly profit-
able proposition. For particulars, address
11 5 cm JEROME A. TUCKER,
Birmingham, Ala.

FOR SALE—Dry presses, 2-mold U. S.
dry press, 3-mold Boyd dry press, 4-mold
U. S. dry press; 500-horsepower Ailis Cor-
liss engine. Address
11 d B-K BRICK CO.,
Denver, Col.

WANTED—Copies of Davis's Bricks, Tiles
and Terra Cotta. Good price will be paid
if same is in a good presentable condition,
and free from mutilation. Address
10 1 L APPRENTICE,
Care Clay-Worker.

SUPERINTENDENT WANTED—One who can
take charge of modern stiff mud face brick
plant and take small interest in same. Plant
located in Southern Ohio, about ready to com-
mence operation. Good permanent position to
right party. Address
111 BOX 22, care Clay-Worker.

WANTED.
EASTERN FACE BRICK PLANT working
plastic fire clay by dry clay process desires
operating superintendent. Exceptional oppor-
tunity for able man well qualified to produce
results without assistance. Address
12 d NEW YORK, Care Clay-Worker.

FOR SALE—One American Clay Machin-
ery Co. stock brick machine, four trucks,
dumping table, one lot of six brick molds.
For \$100 machine can be made as good as
new. Price for lot, \$250.
11 3 d E. W. FACE & CO.,
Norfolk, Va.

FOR SALE—At a bargain. A complete
brick plant in good condition, with 40
acres good clay and a 3/4-yd. steam shovel
in pit. Reasons for selling, death of my
husband, F. J. Campbell.
12 2 cm MRS. F. J. CAMPBELL,
Ponchatoula, La.

FOR SALE.
Either whole or half interest and man-
agement of best stoneware plant in Texas.
In constant operation (summer and win-
ter) since 1882. Clay, abundant and per-
fect, labor reasonable, facilities ample,
prices good, demand greater than output,
climate best in United States. Mining in-
terests exact owner's attention. Cash prop-
osition only considered. Address
12 3 cm "TEXAS,"
care Clay-Worker

[Continued on Next Page.]

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND
CONTRACTING COMPANY,
Zanesville, Ohio.

1 tf d

FOR SALE—A well equipped brickyard located in Northern Minnesota. Capacity 50M per day. Good reason for selling.
Address, MINN,
11 tf d Care Clay-Worker.

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States.
WESTERN CLAY DEVELOPMENT CO.,
6 tf d Van Meter, Iowa.

WANTED.

Intelligent young man with experience in farm drainage and engineering skill necessary to make levels, locate outlets and determine sizes and quantities of drain tile required to properly and economically underdrain any given area of land. Engagement for three months sure and possibly permanent. State salary expected, also give experience and references.
1 2 dm Address "POST," care Clay-Worker.

FOR SALE.

Grand opportunity to buy a brick, tile and hollow block plant; 10 acres shale; electric power; railway switch to kilns.

Close to the best manufacturing cities in Canada; big demand; now running. Good orders being received daily. Good reason for selling. Apply to W. G. E. BOYD,
1 1 cm Hamilton, Ont.

FOR SALE—DRY PRESSES.

1 4-mold U. S. Brick Press; overhauled and in perfect working order.

1 Model "B" 4-mold press, made at Bucyrus, Ohio; thoroughly overhauled and guaranteed in first-class shape.

1 4-mold Berg press; overhauled and in excellent condition.

Address H. S. H.,
1 1 L Care Clay-Worker.

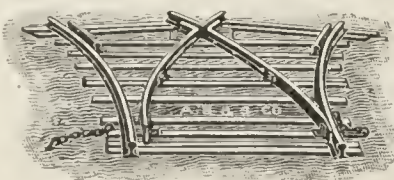
WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH,
5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE

Soft mud plant, capacity 25 thousand. Rack and Pallet system. C. & A. Potts all iron machinery new, 3 up draft kilns, 865 thousand capacity. Twenty acres of land located on two railroads, also suburban line. Within half mile of center of city of 10,000. Cheap fuel and labor. Good local trade, fine shipping point. For further particulars address

WM. READ,
1 1 c Princeton, Ind.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
tf d Cleveland, Ohio.

26-foot vein, covering 200 acres. Located on Chicago & Alton R.R., 70 miles north St. Louis. Miners and shippers of red, white mottled and yellow buff clays for all varieties of manufacture of front, face, enameled brick and terra cotta work, including the encaustic tile, semi-porcelain, pottery and fire brick, fire clays; also red mineral paint clay.

Hicks Clay Co.

Grand Prize and Gold Medal,
St. Louis World's Fair, 1904.

Prices and samples free upon request.

Correspondence solicited.

CHARLES T. HICKS, Pres., Drake, Ill.

H. C. WORCESTER Sec'y, Roodhouse, Ill.

Warwood Kiln Co.

SEMI-CONTINUOUS, ROUND AND SQUARE DOWN-DRAFT KILNS

MUFFLE KILNS and

DIRECT AND WASTE HEAT DRYERS.

Warwood's Semi-Continuous Kiln, the cheapest, simplest and most effective first-class kiln on the market. It combines all the advantages of the best type of single down-draft kilns with the fuel saving features of the continuous kilns.

It can be built either round or square and each kiln can be used individual or continuous, as desired.

Your present kiln, now constructed, can be easily and cheaply changed to Warwood's Semi-Continuous System, and in most cases your own style of kiln bottom can be used, and without any perceptible difference to its working features.

Warwood's Semi-Continuous System can be successfully applied to all kilns for burning all grades of Brick, Sewer Pipe or Fireproofing. In fact, anywhere a single down-draft kiln is now used.

In a correctly weighed test in a 100,000 capacity round down-draft kiln, we have burned all hard brick with 300 lbs. of coal per M, a saving of more than 60% of the fuel formerly used, and will guarantee to burn 95% hard brick.

Warwood's Kiln will burn any kind of fuel that any ordinary down-draft kiln, either coal, oil or gas. Address:

WARWOOD KILN CO.,

Southern Address,
Augusta, Ga.

BEAVER FALLS, PA.

We Manufacture

These Buckets

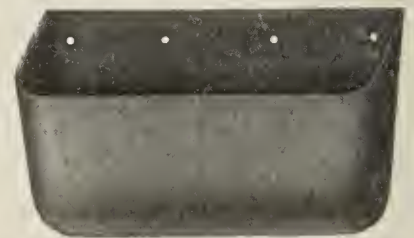
In All Styles, Sizes and Gauges.

Orders Shipped Promptly.

COLD ROLLED

SPIRAL STEEL CONVEYOR.

SALEM BUCKETS



We Also Make Shafting,
Pulleys, Friction Clutches,
Sprocket Wheels, etc.

WEARS BEST, Costs No More.
WE MAKE this Conveyor in All Styles
and Gauges.

SKILLIN & RICHARDS MFG. CO., CHICAGO.

"Latest Improved Wonder of the Age."



I now propose to give all a chance to try "The Swift System" by remodeling one kiln or building one new one. Write for particulars to "The Kiln Doctor."

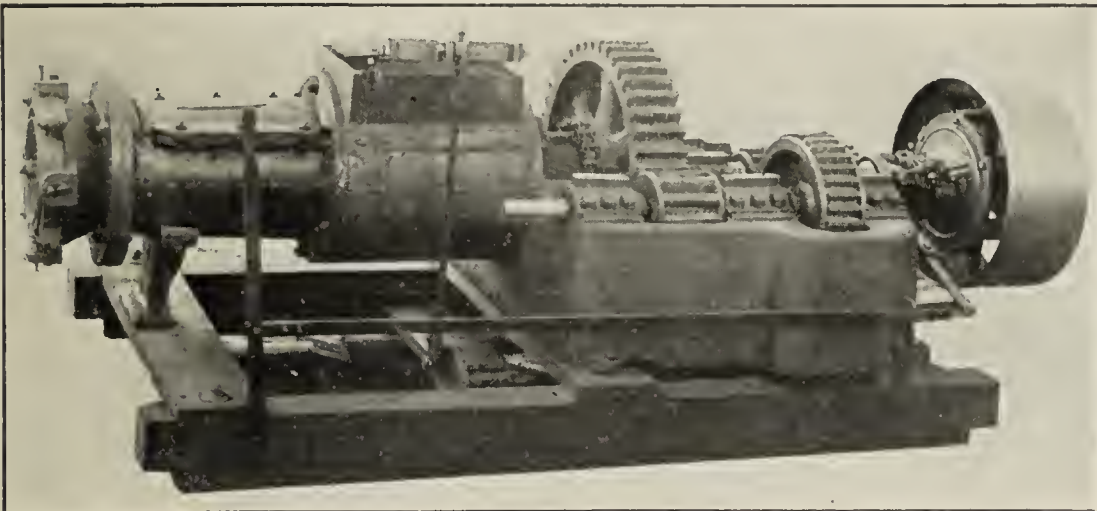
F. E. SWIFT,

514 West Fourth St., Dayton, Ohio.

MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers of Brick and Tile Machines.



No. 5 Auger Tile and Brick Machine with our New Endless Belt Cut-off Table, which has no equal for handling tile of all sizes from 3 to 12-inch. This table has carriers which move with the tile, and can be readily and perfectly adjusted to any size tile.

Our Upright Tile Machines are unequalled for large tile, 10 to 24-inch. These machines are all sold on their merits, and warranted to do first-class work. We also manufacture Soft and Stiff Mud Brick Machines.

Full line of Tile and Brickyard Supplies kept constantly on hand. Get our prices.

MADDEN & CO., Rushville, Ind.

[See ads on pages 248 and 249.]

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,

Saginaw, East Side Mich.

FOR SALE—Finely equipped shale clay brick and tile plant of 20,000 capacity, at Boone, Ia., in coal field; 144 car dryer, Corliss engine, freeze mill, dry pan, seven kilns; all in good shape and now running, doing fine business. Will be sold for less than it is worth, as the owner, after seventeen years in the business in this location, is forced to quit on account of loss of eyesight, and must sell.

J. B. McHOSE,

12 4 d

Boone, Ia.

FOR SALE CHEAP.

One iron horsepower soft clay machine.
One steam power soft clay machine.
One hand repress.
One disintegrator.
One second-hand sand grinder and sifter.
One 4-mold Boyd Dry Press, never used.
One 250 horsepower heater.
About 500 feet of one-inch wire cable, never used, one-fourth price.
Second-hand dryer cars for sale cheap.
All in first-class condition.

1 tf L

THE HORTON MFG. CO.,

Painesville, Ohio.

(See additional ads under Table of Contents.)

DRY PRESS BRICK MACHINERY

New or Second-Hand.

Correspondence solicited.

H. S. SIMPSON,

817 Chamber of Commerce,
CHICAGO, ILL.

The Department of Clayworking and Ceramics

Established by the Legislature in 1902 at the

New Jersey State College,

RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

C. W. PARMELEE, B. Sc., Director.

W. H. S. DEMAREST, D.D., Acting President.

OHIO STATE UNIVERSITY

Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture.

Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

For information or catalogue address,

Prof. EDWARD ORTON, JR.,

Department of Ceramics.

DR. W. O. THOMSON, President.

Columbus, Ohio.

MANGANESE
FOR ALL USES.
LUMP, GRAIN AND GROUND
60-70% 70-80% 80-90% OXIDE.
CLAY WORKERS GOODS A SPECIALTY.
SAMPLES AND PRICES ON INQUIRY.
KENDALL & FLICK
WASHINGTON, D.C.

C. K. WILLIAMS & CO.,
EASTON, PA.

Largest Manufacturers in
United States of

Brick and Mortar COLORING.

Correspondence solicited.

Samples and estimates cheerfully furnished
on application.

GABRIEL & SCHALL

P. O. Box 1712. 205 Pearl Street.
NEW YORK.

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Precipitated  Carbonate
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The only preventative for scum and discolor-
ation on Facing Brick and Terra Cotta, neu-
tralizing the Sulphate of Lime in the Clay and
Water

Circulars and Particulars on Application.

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Manufacturers of

**Red Oxides for Brick-
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**Eclipse
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See Clay-Worker
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The only perfect spiral conveyor. Continuous flight—no laps or rivets.
A Complete Line of the Best Supplies.

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Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air
Brick Dryers show many new features that make them superior to all others.
Economical, durable and strong in construction and operation. having many points of ad-
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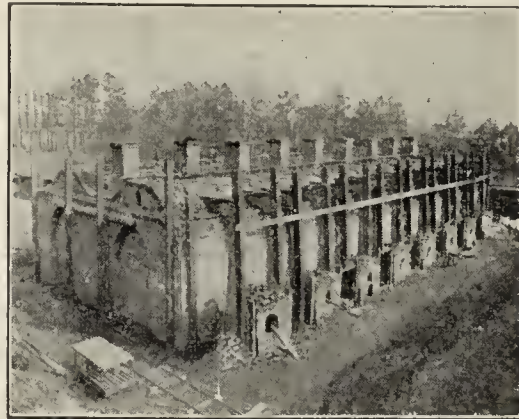
Salisbury, Md., August 11, 1906.

Mr. F. W. Dennis, Norfolk, Va.:

Dear Sir—I must congratulate you on your
kiln, for I have had lots of experience with
other down draft kilns, but I made the best
burn that I have ever seen this time, in this
kiln. We burnt part of one chamber of tile,
and they are all O. K. The kiln holds about
400,000 brick when set right. Wishing you lots
of success with your kiln.

Yours respectfully,

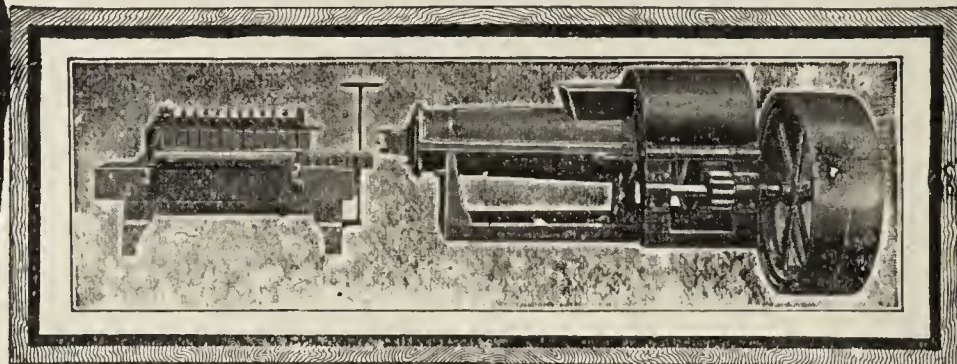
C. LANO.



Double Up and Down Draft Kiln.

Brick plants installed and put in operation.
Write for booklet. Correspondence solicited.

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has been the synonym of excellence in the Brick and Clay-
working industry for the past thirty years.

It has had few rivals and no superiors. Improved from
year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of
the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed informa-
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The Kells Foundry and Machine Co.
ADRIAN, MICH.

Mention the CLAY-WORKER
When writing to Advertisers.

Testing and Controlling Apparatus for Clayworkers.

Draft Gauges, Pyrometers, Cones, Watersmoking and Dryer Thermometers, Test Kilns, Electric Furnaces, Experimental Ball Mills, Automatic Brick Counters, Watchmen's Clocks and other apparatus. All designed to keep a record of your business. Prices on application.

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MANGANESE.

BEST QUALITY MANGANESE, CAREFULLY AND UNIFORMLY PREPARED FOR BRICKMAKING. WRITE US FOR SAMPLES AND PRICES.

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MINERS AND GRINDERS.

Why not wash your clay and eliminate losses caused by Sulphur Balls, Iron Pyrites or Unequal Mixture?

The "CROSSLEY" process will save money for you, as it has for others.

THE CROSSLEY MFG. CO.,

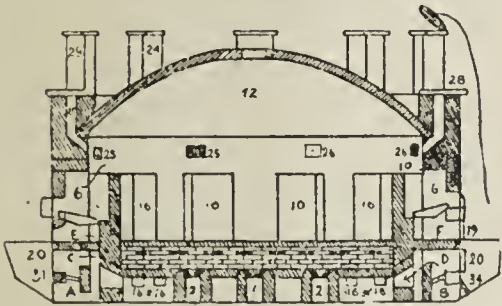
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Waste Heat and Furnace Dryers.



Up and Down-Draft and Continuous System of Kilns for drying and burning brick and fire proofing.

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THE secret of **successful burning** of any clay product lies in the **right application of heat**. To apply heat **where it is needed** it is obvious that **draft control is necessary**.

Positive draft control is provided by our

IMPROVED FLUE SYSTEM

which has **the right principle** and is simple and easy in operation and construction.

Our kilns are profit makers, burning the brick with the **minimum fuel, shortest time; all the same color and all hard**.

We welcome correspondence from those who intend building new kilns, and from those having old kilns that are not giving satisfaction. Address

J. P. BRADLEY & CO., New Cumberland, W. Va.

TAPLIN, RICE & CO., AKRON, OHIO.

Sewer Pipe and Clay-Working Machinery.

ESTABLISHED 1862.

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Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



for sewer pipe plants, paving and pressed brick plants and potteries. Full information furnished upon application. In writing please be specific in your inquiries.

Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

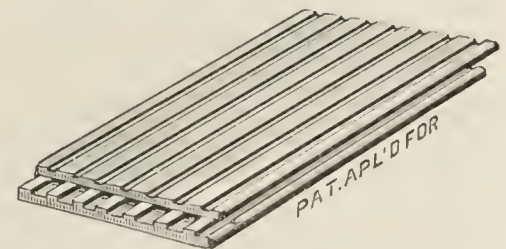
M. SCHULTER,

Industrial Commissioner,

Rock Island-Frisco Lines,

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Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles, Dies for all shapes, Hips, etc., in metal or plaster

Special Roller and Auger Presses for Shingles, Interlocking Spanish Tiles. Automatic Shingle Cutting and Punching Tables. Special Tile Tables

Stiff Mud Machinery for smaller capacity and horse power, stiff mud brick and hollow block dies, dry press liners.

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Deal in Nevada Mining Stocks.

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A Square Deal Guaranteed.

Write us for information.

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Do you want to buy a

Good Clay

Disintegrator

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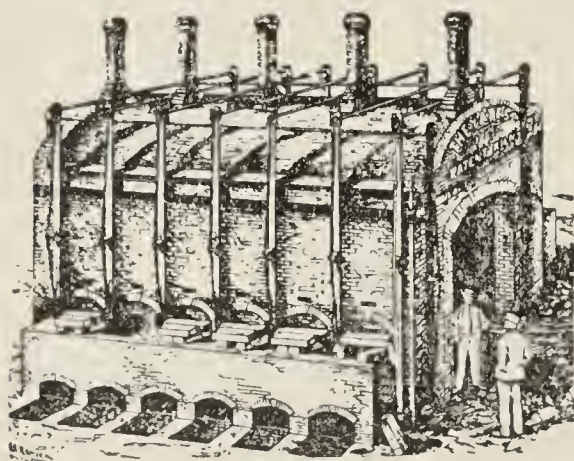
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Good Clay Screen?

If So

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Stedman's Foundry & Mach. Works
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For Economy of Fuel and Percentage of Hard Burned Brick, This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns. Hot air dryer. Continuous and muffle kiln.

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The King Engineering Co.,

Builders of Improved Hot Air Dryers,
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Brickmaking Experts and Consulting Engineers.

Write for information.

914 Walnut St. Philadelphia, Pa.



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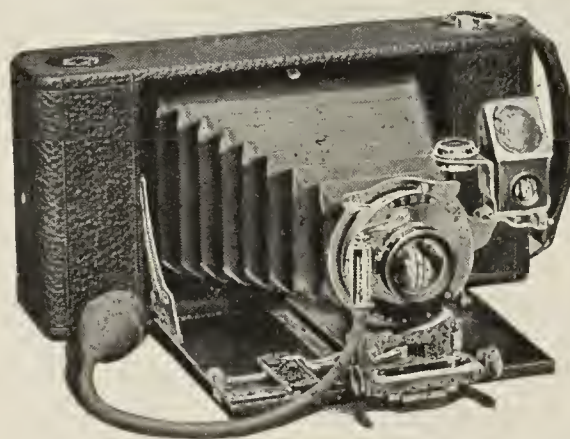
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“OPENS THE CORRECT WAY.”



For Pictures, $3\frac{1}{4} \times 5\frac{1}{2}$.

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Loads in daylight with Blair or Eastman N. C. Film Cartridges. A superb lens; an accurate shutter; every desirable adjustment.

Price, = = \$20.⁰⁰

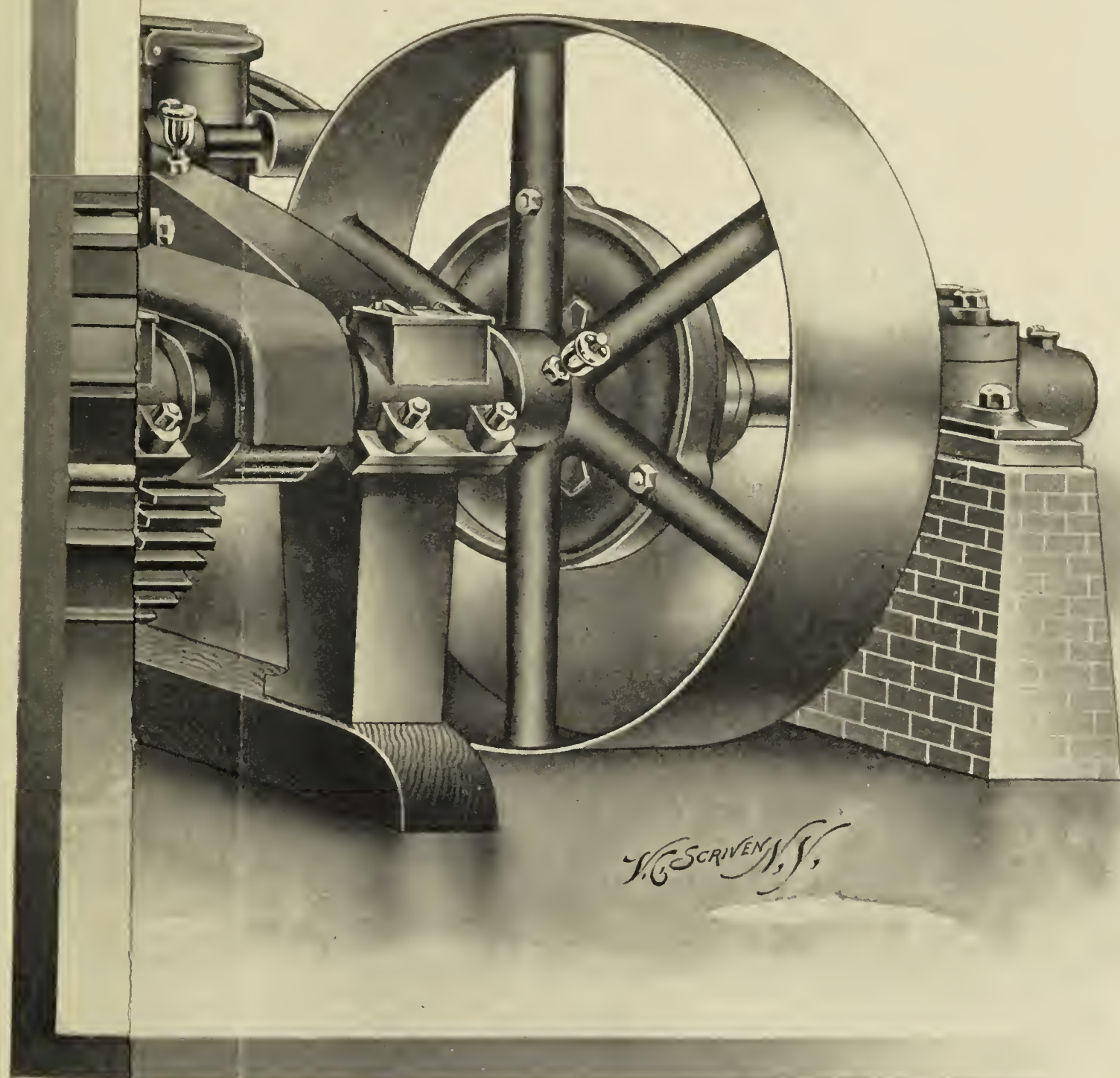
BLAIR CAMERA COMPANY,

Rochester, N. Y.

Send for descriptive catalogue.

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Mention the CLAY-WORKER.



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cut. Constructed with moulded gears for normal speed use,
meter between journals.

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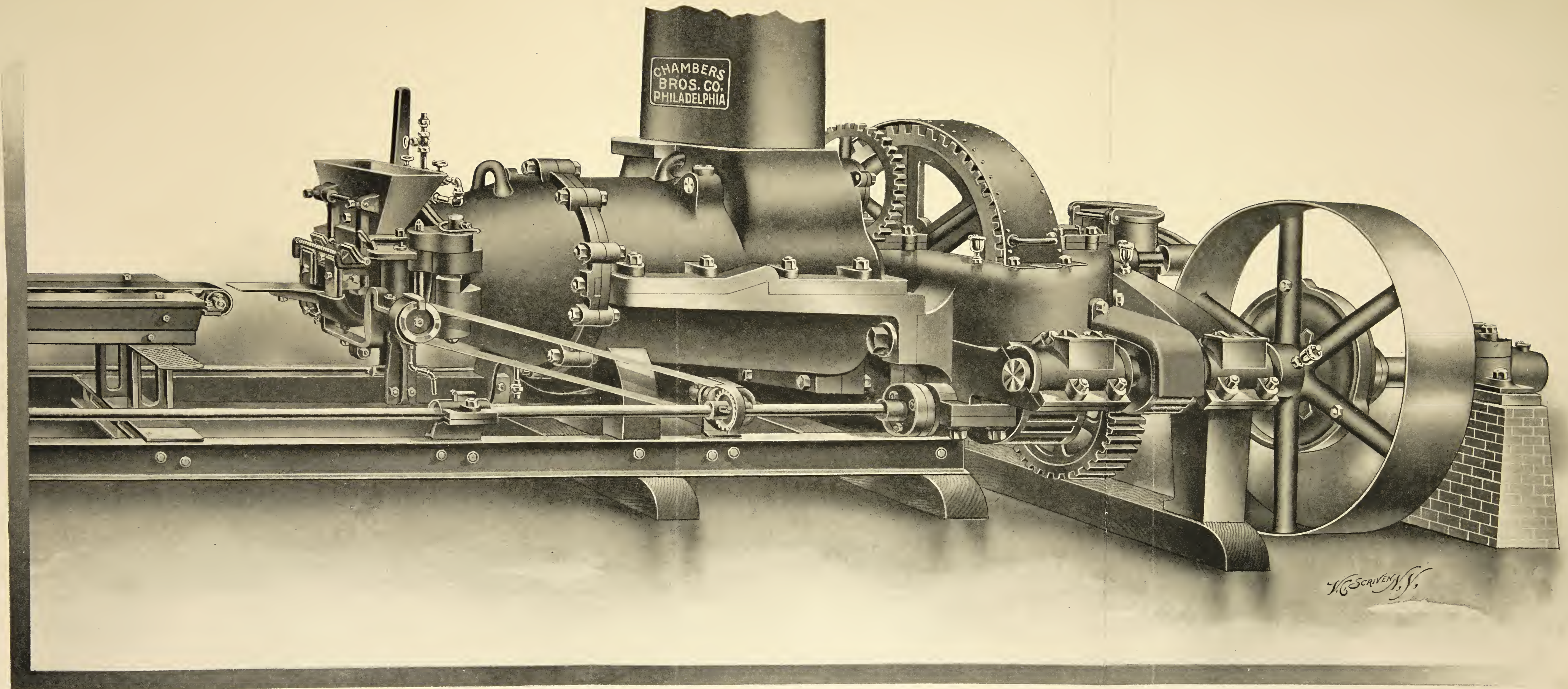


Illustration of the large heavy pattern CHAMBERS' AUGER BRICK MACHINE without cutter. This machine built as either end-cut or side-cut. Constructed with moulded gears for normal speed use, or cut steel driving gears for high speed. Tempering shaft, 9 inches diameter; countershaft, $5\frac{5}{8}$ inches diameter between journals. Weight of complete machine about 24,000 pounds.

We make a full line of Crushers, Disintegrators, Pug-Mills and Mixers.

CHAMBERS BROTHERS COMPANY,
 FIFTY-SECOND STREET, CORNER OF MEDIA STREET, PHILADELPHIA, PA.
 CHICAGO OFFICE: 59 WEST JACKSON BOULEVARD.

The Chambers Brick Machinery

ONE customer using our Auger Brick Machine recently stated that since its installation he had never broken a part save cutting wires, nor had his brick manufacture been stopped or even interrupted for any cause connected with his Chambers Machinery. That during the season just closed he had made on one Chambers Auger Machine 11,600,000 brick without a hitch or breakdown. He was surprised, for when his project was first launched he rejected our propositions. Couldn't read the Commercial Analysis quite correctly then. Now he is so pleased he just has to talk about it.

His Chambers outfit has been one factor in his success and although only one it has performed its part well.

This is gratifying alike to our customer and to us.

CHAMBERS BROTHERS COMPANY

PHILADELPHIA, PA.

Wishing You a Happy New Year

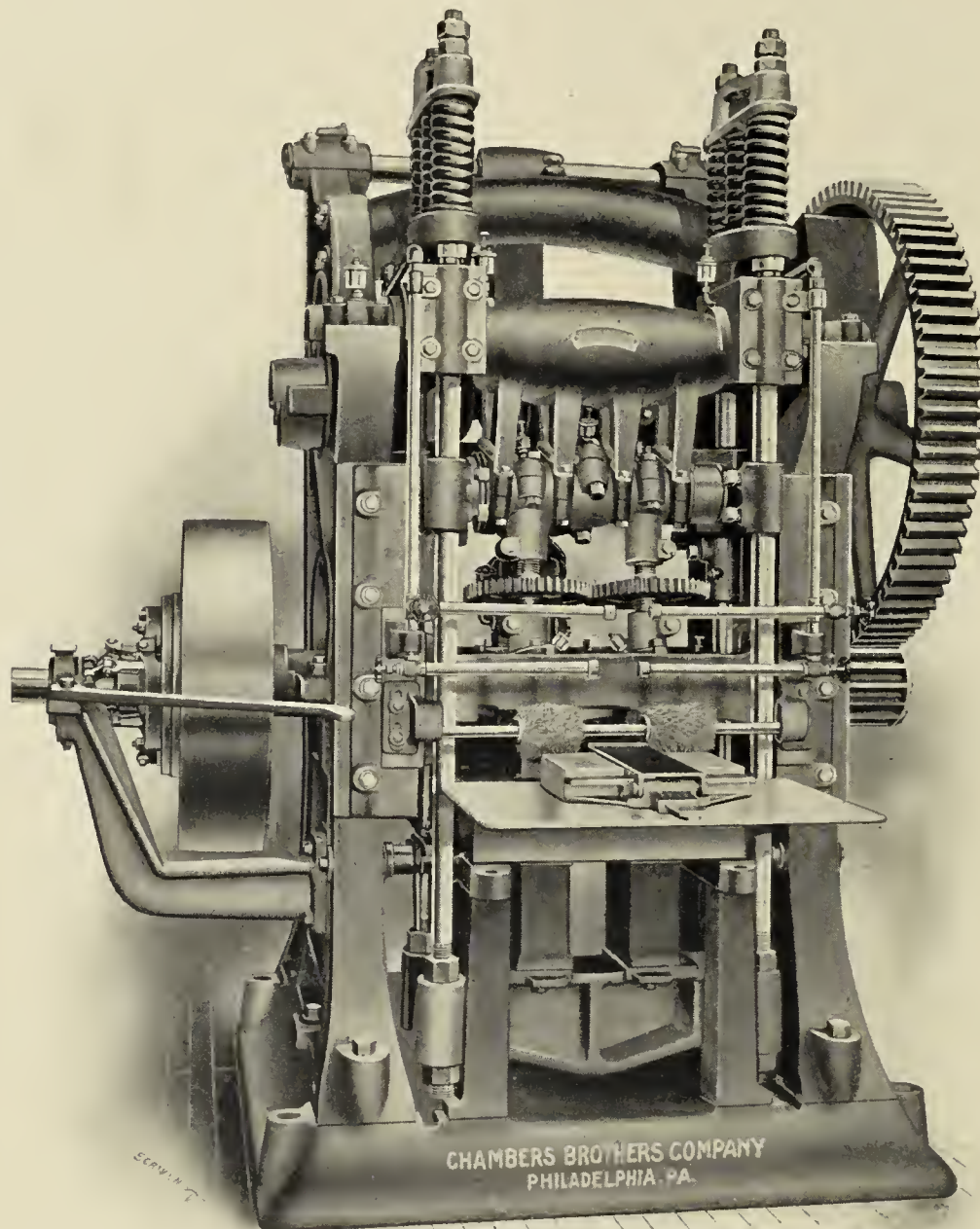
and a prosperous experience in the manufacture of brick. Just good plain everyday hard burned brick of which this great Nation is constantly using millions upon millions in every quarter. Brick from clay or shale or any old silicate of aluminum with or without an analysis, but always with a mixture of good common sense. Grind and mix these well by using

The Chambers Brick Machinery

Made in
PHILADELPHIA, PA., U. S. A.

That's Common Sense.

BRICK REPRESSES



THE PHILADELPHIA REPRESS

Built by

Chambers Brothers Company

Fifty-second and Media Streets

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CHICAGO WAREROOMS
59 West Jackson Blv'd

A New Clay Feeder and Mixer.

Send for full descriptive circular.

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Marion Machine, Foundry and Supply Co., Marion, Ind.



Fans For Waste Heat

Purposes, and for mines, with long, heavy shafts and two or more journals. No wobbly shafts, and no overhung fan wheels. Just plain fan wheels. Large volume at moderate pressure. Experience of more than twenty-five years. Orders come spontaneously and as liberally as ever. Voluntary testimonials from users everywhere.

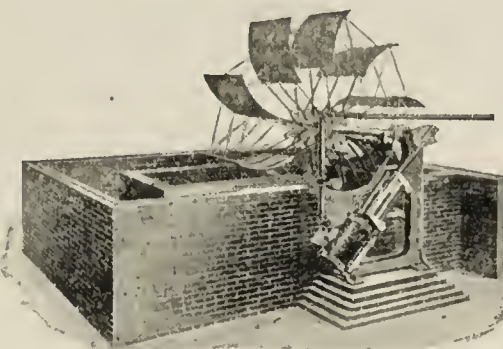
Waste Heat Fans, acknowledged by users to be superior to others working side by side.

Cheap and substantial construction. Original Flexible Braces. Air Cooled Ring Oiler Boxes. Moderate Speed. Brick fan house, most durable of all construction. An efficient Cooler made integral with the machine. Lower price owing to cheaper and better mode of construction. Extensively used.

QUALITY IS ECONOMY—Established 1869.

Crawford & McCrimmon Co., Brazil, Ind., U. S. A.

Manufacturers of Hoisting and Hauling Engines, Ventilating Fans for Mines, Waste Heat Fans for Clay Plants, Roofing Tile Presses, etc.



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You Want
to Sell
or Buy...

Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

If...
You Want
a Man

for any position or a position in any connection with the Clayworking Trades use the

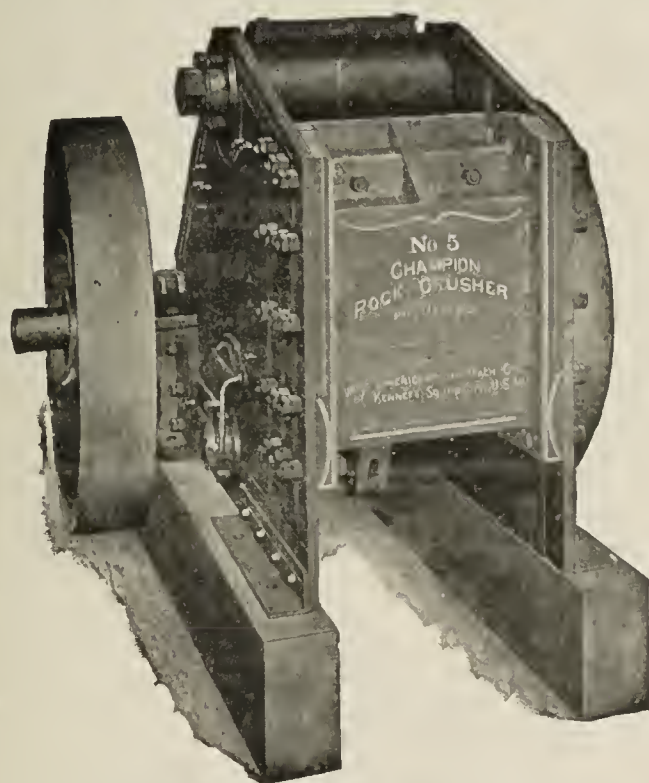
For Sale
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of...

The...
Clay=Worker.

RATES

For all transient advertisements, such as "For Sale," "Wanted," etc., the rate is 25 cents a line per insertion. Average of seven words to line. Head line counts as two lines.

The Best, Quickest, Cheapest Method of Securing Results.



NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good
on paper.

It Looks Better
crushing shale, fire clay,
rock and other hard material.

**THE CHAMPION
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is expensive, *to do without*, because it saves you money.

Catalogue is free on application. Address

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KENNETT SQUARE, PA.

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Mailed, postage free, on receipt of price.

T. A. RANDALL & CO., Publishers, Indianapolis, Ind.



Terms
reasonable.

First-class
references.

If you have trouble with Clay, Machinery
or Kilns, then consult

THE BRICKMAKERS' ADVISOR,

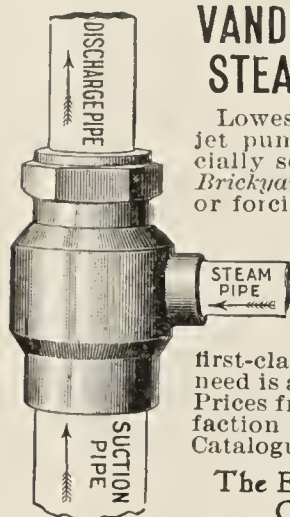
Julius J. Koch,

(25 years practical experience)

3325 Caroline Street, St. Louis, Mo.

Special attention paid to dry clay press
processes and down-draft kilns.

Contracts made contingent upon suc-
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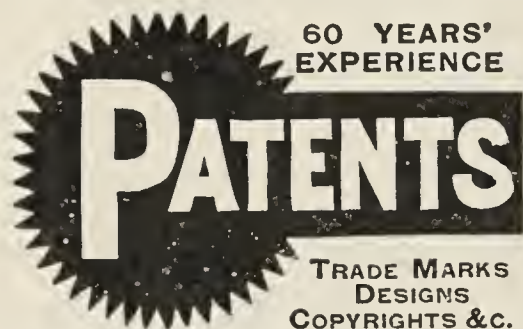


VANDUZEN'S PATENT STEAM JET PUMPS.

Lowest priced reliable steam-
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or forcing water from ponds,
pits, excavations, tube
or driven wells. No
valves to freeze, clog
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Always ready for in-
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need is a little steam. 10 sizes.
Prices from \$7.00 to \$75.00. Satis-
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The E. W. Vanduzen Co.,
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LACLEDE FIRE BRICK

Are the Best for
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Laclede Fire Brick Mfg. Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

**Fire Brick for
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Factories:

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Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

— Made by —

MITCHELL CLAY MFG. CO.,

5627 Manchester Avenue.

ST. LOUIS, MO.

\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

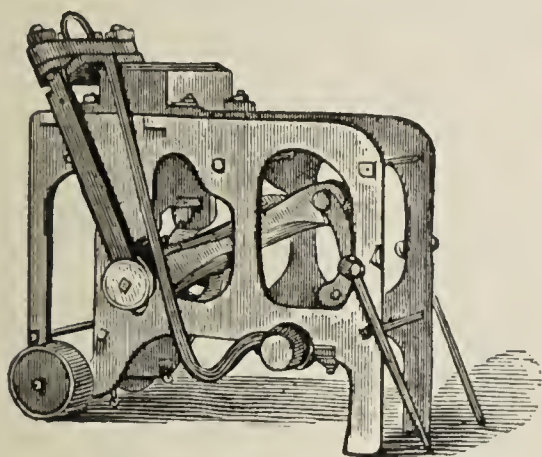
Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

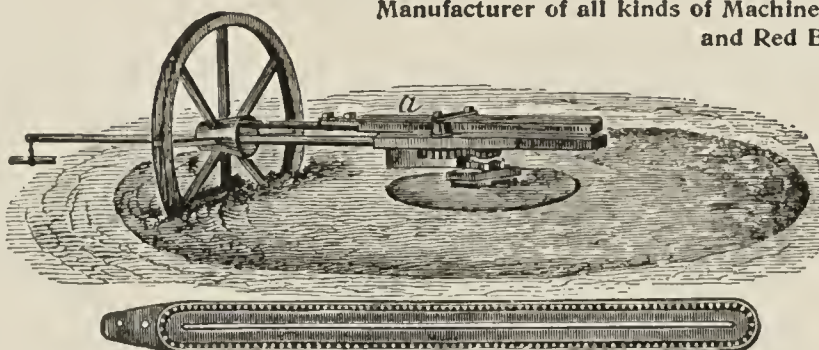


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

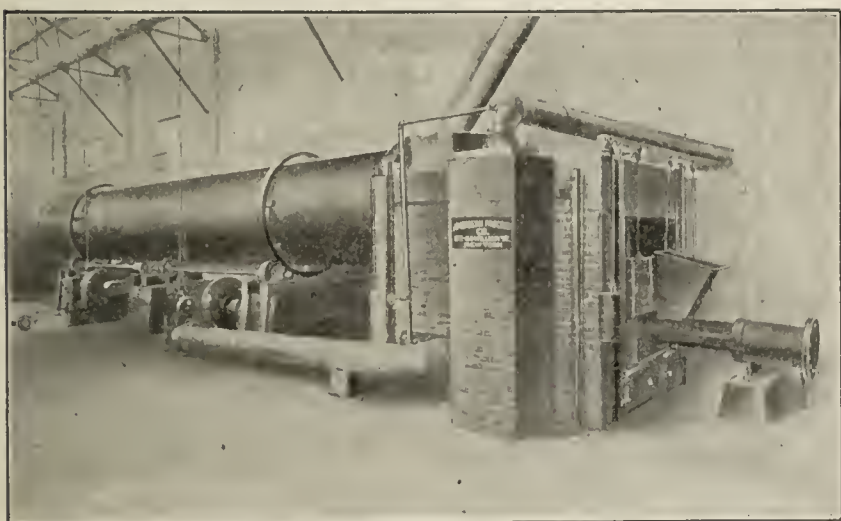
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL. 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

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"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel, Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.

AN OLD-TIME FAVORITE.

Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & COMPANY,

P. O. Box 756.

ROME, GA., U. S. A.

The
**ROESSLER-HASSLACHER
CHEMICAL COMPANY,**

100 William Street,
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As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

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General Sales Office—Chamber of Commerce Bldg., Chicago.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906.

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of 5,000 each,	15,000
2 " 4 "	" 3,000 "	6,000
1 " 5 "	" 2,040 "	2,040
2 " 10 "	" 550 "	1,100
2 " 12 "	" 415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.

The 10 " " 6 ins. and 4 ins.

The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am Yours truly, H. A. YARGER

Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous, or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

HERCULES CONCRETE BLOCK MACHINE.

1907 Catalog Ready.

Don't think of buying a machine till you have seen our beautiful new catalog, describing in detail the superiority of the 1907 model Hercules above all other machines.

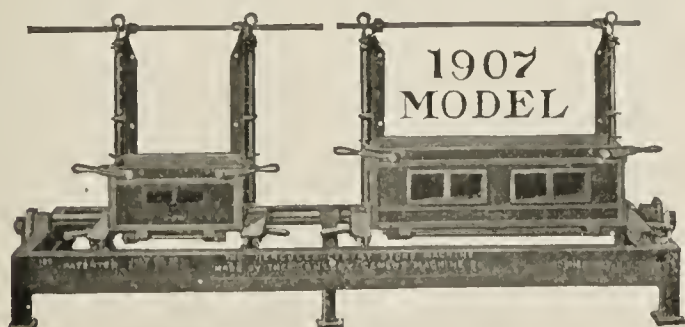
This catalog which is the most elaborate book of its kind ever printed, is handsomely illustrated with high grade half tones of Factories, Apartment Houses, Churches, Dwelling Houses, which were built of stone made on the great Hercules.

The 1907 model Hercules is built stronger than ever before, and has several advanced improvements fully described in the new catalog. Write for the catalog today. Be sure and ask for catalog V.

Century Cement Machine Co.,

288 W. Main St.,

ROCHESTER, N. Y.



Don't Dodge Prosperity

The manufacture of Concrete Building Blocks with an Ideal Concrete Machine is a sure way to prosperity in any locality. Not only are Ideal Blocks adaptable to any building purpose, but they excel all other materials in durability, appearance and fire-proof qualities. One man, without previous experience can make Ideal Blocks so rapidly, and at so little cost, that all other materials may be profitably undersold.

IDEAL CONCRETE MACHINERY

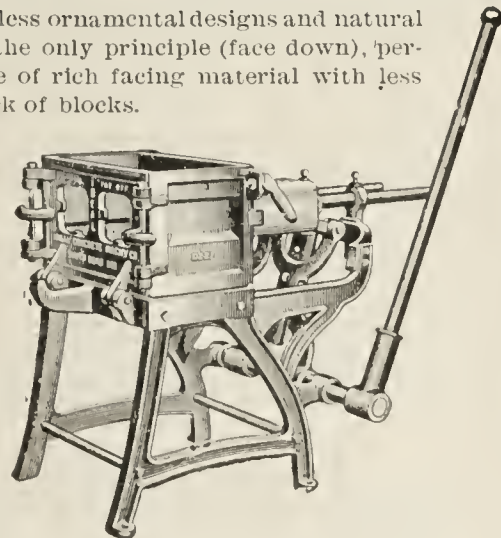
Makes blocks in countless ornamental designs and natural stone effects. Embodies the only principle (face down), permitting the practical use of rich facing material with less expensive material in back of blocks.

Simple in construction. No springs, chains or gears. Practically everlasting and adaptable to any size within capacity.

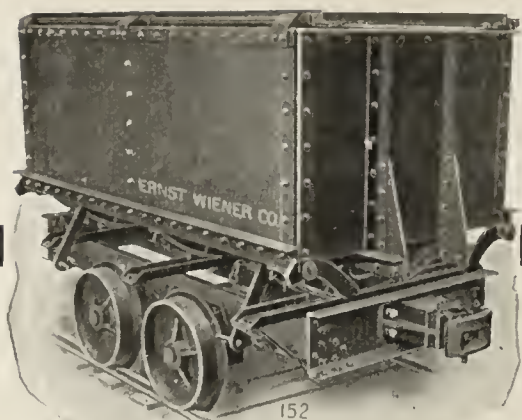
Catalogue and valuable facts on Concrete Block manufacture free on application.

IDEAL CONCRETE MACHINERY CO.,

Dept. V,
South Bend, Ind.



MUSSENS LIMITED, Montreal, Can.,
Sole Agents for Canada.



DOUBLE SIDE DUMP CARS

For Sand and Coal.

Carried in stock with hinged sides, and in capacities up to 40 cubic feet, and of 36-inch gauge.

We carry a **LARGE STOCK** of industrial railway equipments for all kinds and conditions of service. We can therefore render prompt shipment of standard material, such as Rails and their accessories, Steel Ties, Portable Track, Switches, Frogs, Turntables, Steel and Wooden Cars of all gauges, sizes and capacities.

20 YEARS' EXPERIENCE.

Write Our Dept. 13 for Catalog N.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
•COMPANY•

64 Broad St., New York. Works: Youngstown, Ohio
Gazette Bldg., Pittsburgh. 37 Farnsworth St., Boston
Barnaby Bldg., Bisbee, Ariz.

SAVE MONEY BY SAVING HEAT.

Make more brick and save time of burning. Make better colored brick and save coal.

Plans and estimates for the asking.

Write for Catalogue No. 56F.



The New York Blower Co.,

DEPT. 14,

Factory:
BUCYRUS, OHIO.

Office:
Stewart Ave. and 25th Place,
CHICAGO, ILL.



B. E. BECHTEL.

**We Are
PRACTICAL BRICKMAKERS.**

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

The World's Best.



Because of the extent and quality of the line, The American Clay Machinery Company's machines have become a standard of excellence throughout the world. The policy of this company in building a complete line of Clayworking Machinery for the manufacture of Clay Products by **all processes**, places the American company in a position where it can serve any customer without in any way jeopardizing the chances of that customer's success. To facilitate the more prompt delivery of machines we are doubling the size of our plant, though we are already doing about half the business of the country along this line. Wishing the entire trade a realization of the prosperity which seems apparent for 1907 we solicit a continuance of your patronage.



Every machine we build is made under the supervision of our own foremen in our own shops. We are therefore conversant with and responsible for the quality. We know it is right and can so guarantee it. Write for information and prices on any machine or appliance you may need.

Clayworking Machinery.
Sand-Lime Brick Machinery.
Dryers of all kinds.
Complete Plants or Partial Equipments.

**The American Clay
 Machinery Co.,**

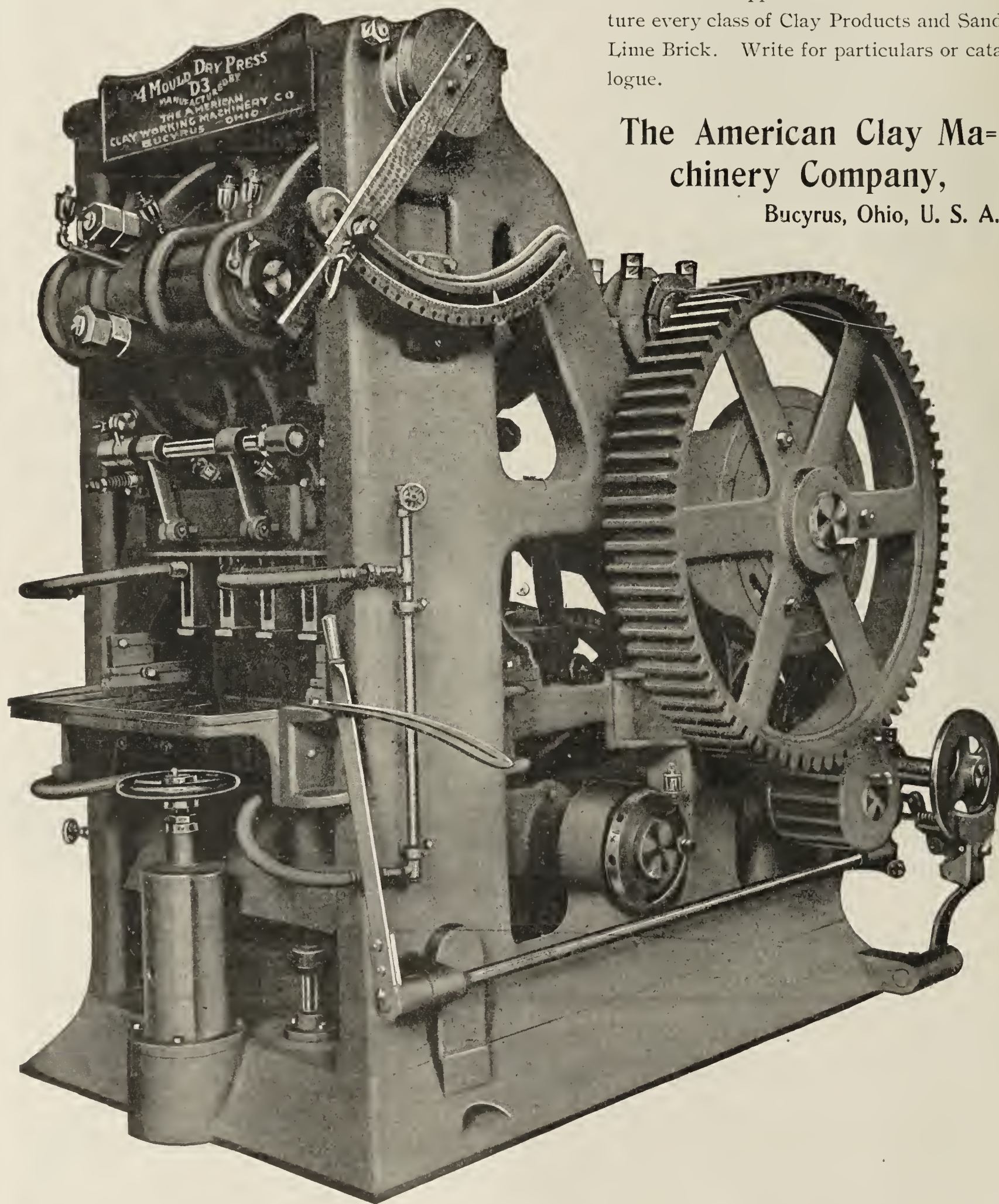
Bucyrus, Ohio.

Presses for Performance Not Promise



From our Six Mould Dry Presses down to our Hand Presses we can guarantee the quality and performance of each machine. Our Press Builders are experts who build nothing but Dry Presses in our own factory under our close supervision. The quality of material, the design and workmanship combine to make our Presses as near Perfect as it is possible to get. All capacities and all sizes. We also build every machine and appliance needed to manufacture every class of Clay Products and Sand-Lime Brick. Write for particulars or catalogue.

The American Clay Machinery Company,
Bucyrus, Ohio, U. S. A.

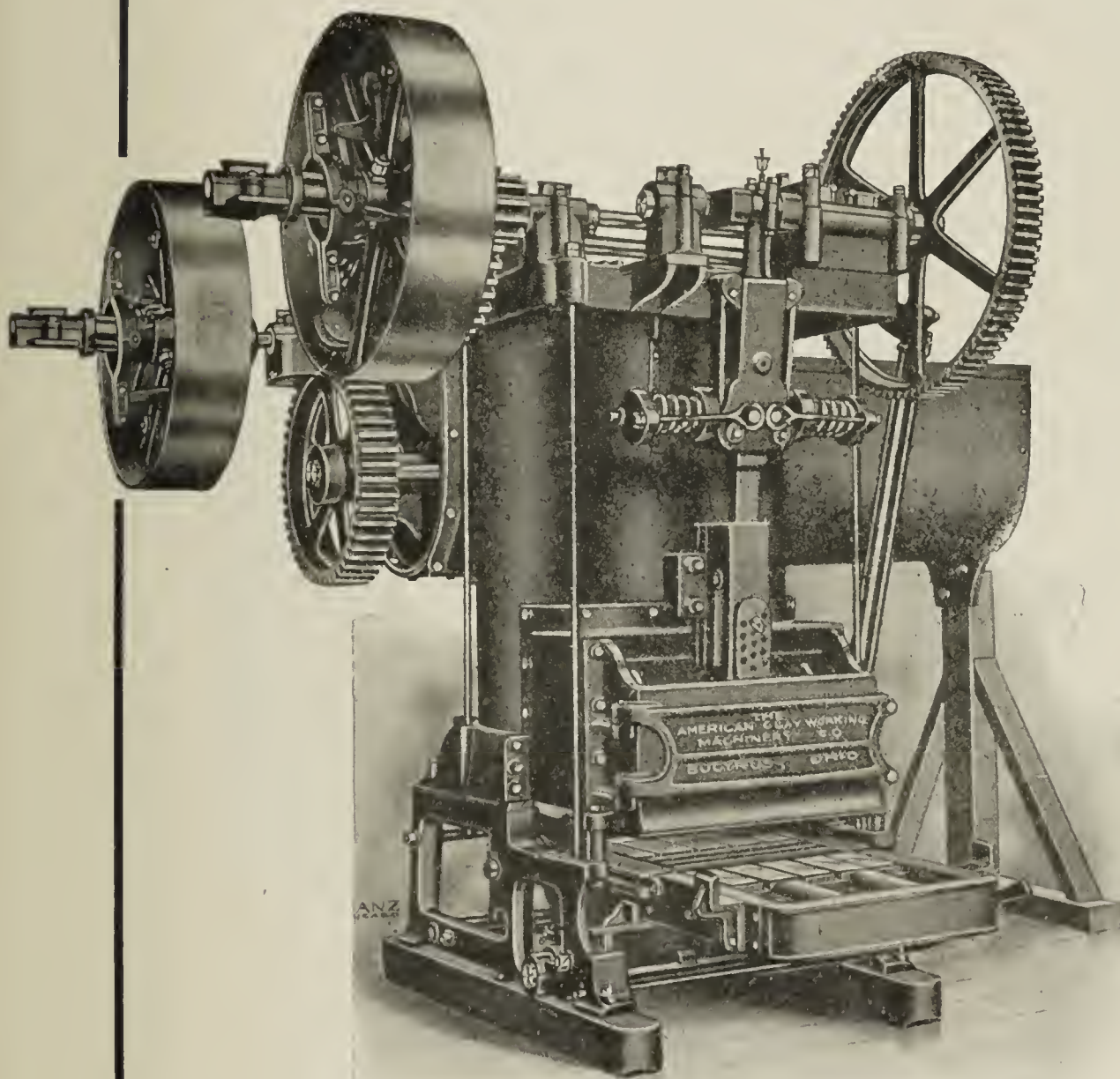


Soft Mud Brick Machinery



There is many a clay which can best be worked on Soft Mud machinery. To handle such clay on Stiff Mud or Dry Press machinery would prove a failure in the long run.

We build a complete line of Soft Mud Brick Machinery and appliances to meet the needs of such clays. We are not interested in selling you machinery which may prove a failure. We have the very machinery you require to make a success of your business, and that is the only machine we will sell you.



Our Upright Stock Brick Machine is built for long and continuous use. It has many satisfied users who will cheerfully recommend it.

Our line of Plunger machines is complete, with a size range to meet your requirements.

Our Eagle Horse Power and Eagle Steam Power Machines are popular favorites in their class.

Every machine we build has a quality behind it attained only by faultless designing, excellent material and superior workmanship.

In buying the "Built Right Run Right" line you buy quality, and that means successful operation.



We build every machine and appliance needed to manufacture Clay Products by any known process. Every machine built in our own factories, so that we are able to guarantee the quality because we know that quality to be all that material and workmanship can attain. Sand-Lime Brick Machinery a specialty.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.



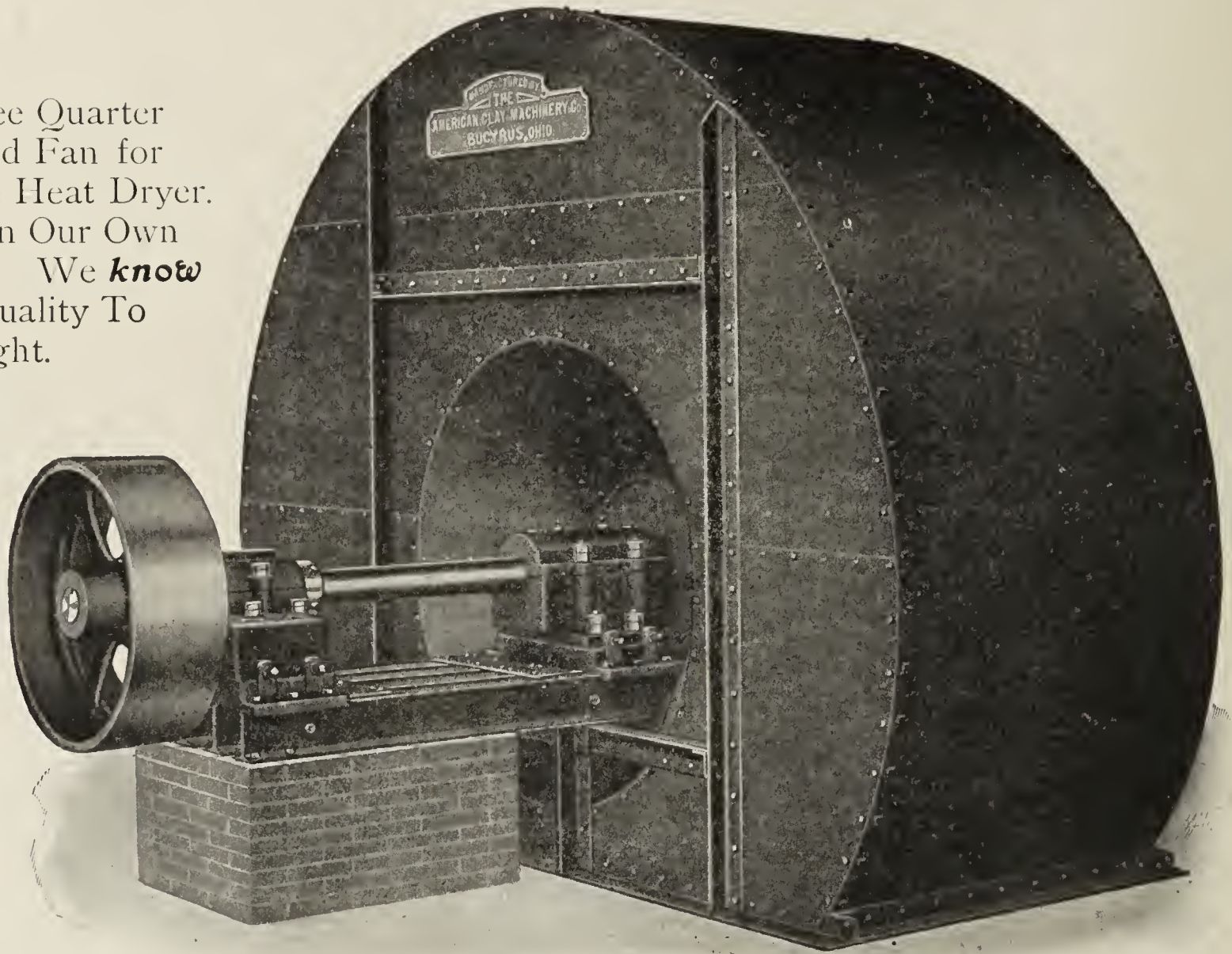
Two Vital Dryer Points

After all there are only two real points to consider about a Dryer. One is Quality and the other Efficiency. In many cases the Efficiency depends upon the Quality.

Even cost is a minor consideration because a cheap and unsuccessful dryer is dear at any cost.

We handle the Dryer question in a way that is most likely to result to your

Three Quarter
Housed Fan for
Waste Heat Dryer.
Built in Our Own
Shops. We **know**
The Quality To
Be Right.



full satisfaction. We make all styles of Dryers and recommend that one best adapted to your clay.

This successfully solves the question of "what style of Dryer" you buy. We have all kinds and have only to consider your own best interests.

In the Quality of our Dryers we are positive, because we build every part of the equipment in our own shops. We depend upon no one else for our quality. The quality is there because we put it there and are able to guarantee it.

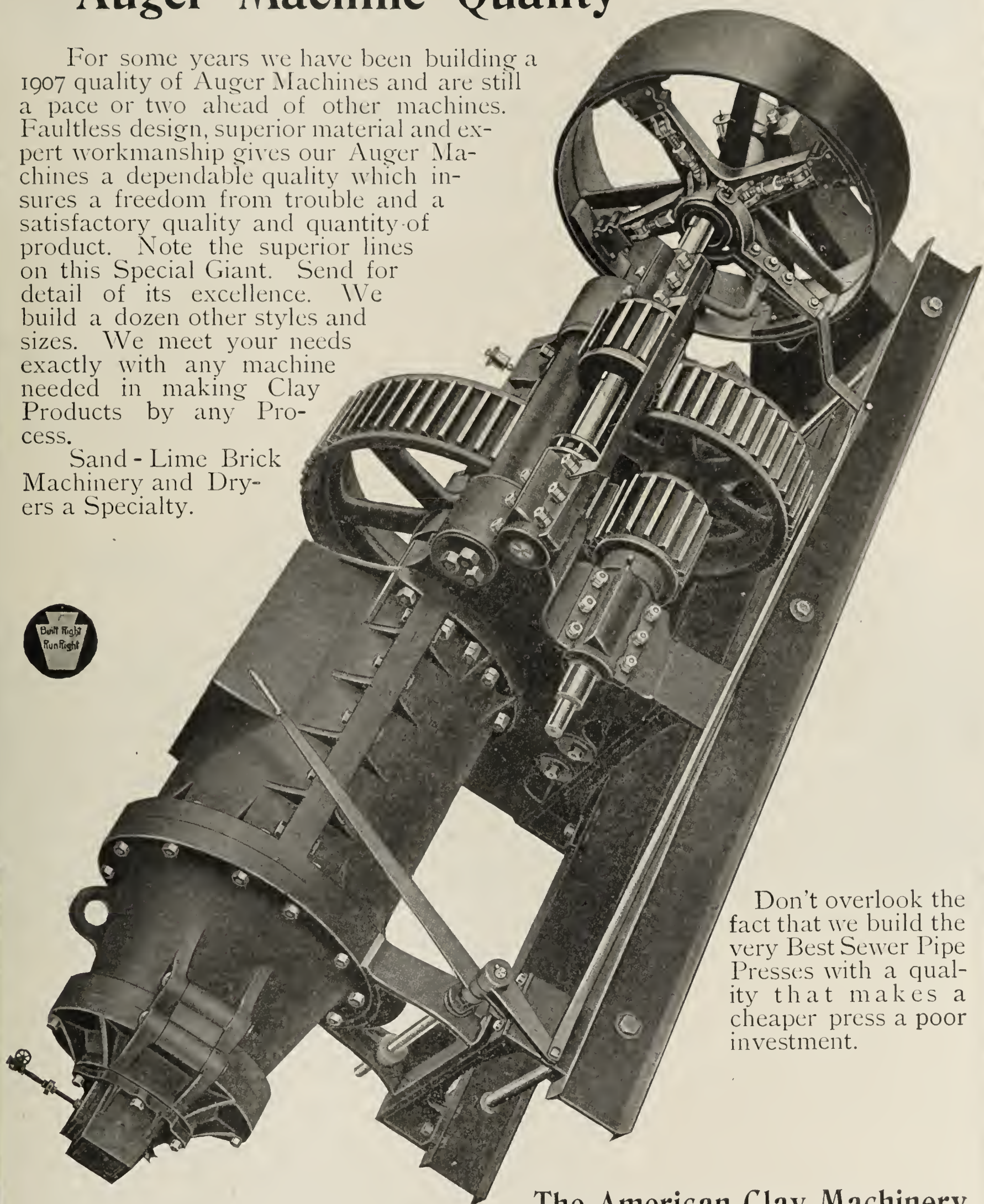
We build every machine and appliance needed to make Clay Products by all processes. Write concerning anything you need.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

Auger Machine Quality

For some years we have been building a 1907 quality of Auger Machines and are still a pace or two ahead of other machines. Faultless design, superior material and expert workmanship gives our Auger Machines a dependable quality which insures a freedom from trouble and a satisfactory quality and quantity of product. Note the superior lines on this Special Giant. Send for detail of its excellence. We build a dozen other styles and sizes. We meet your needs exactly with any machine needed in making Clay Products by any Process.

Sand - Lime Brick Machinery and Dryers a Specialty.



Don't overlook the fact that we build the very Best Sewer Pipe Presses with a quality that makes a cheaper press a poor investment.

The American Clay Machinery Company,

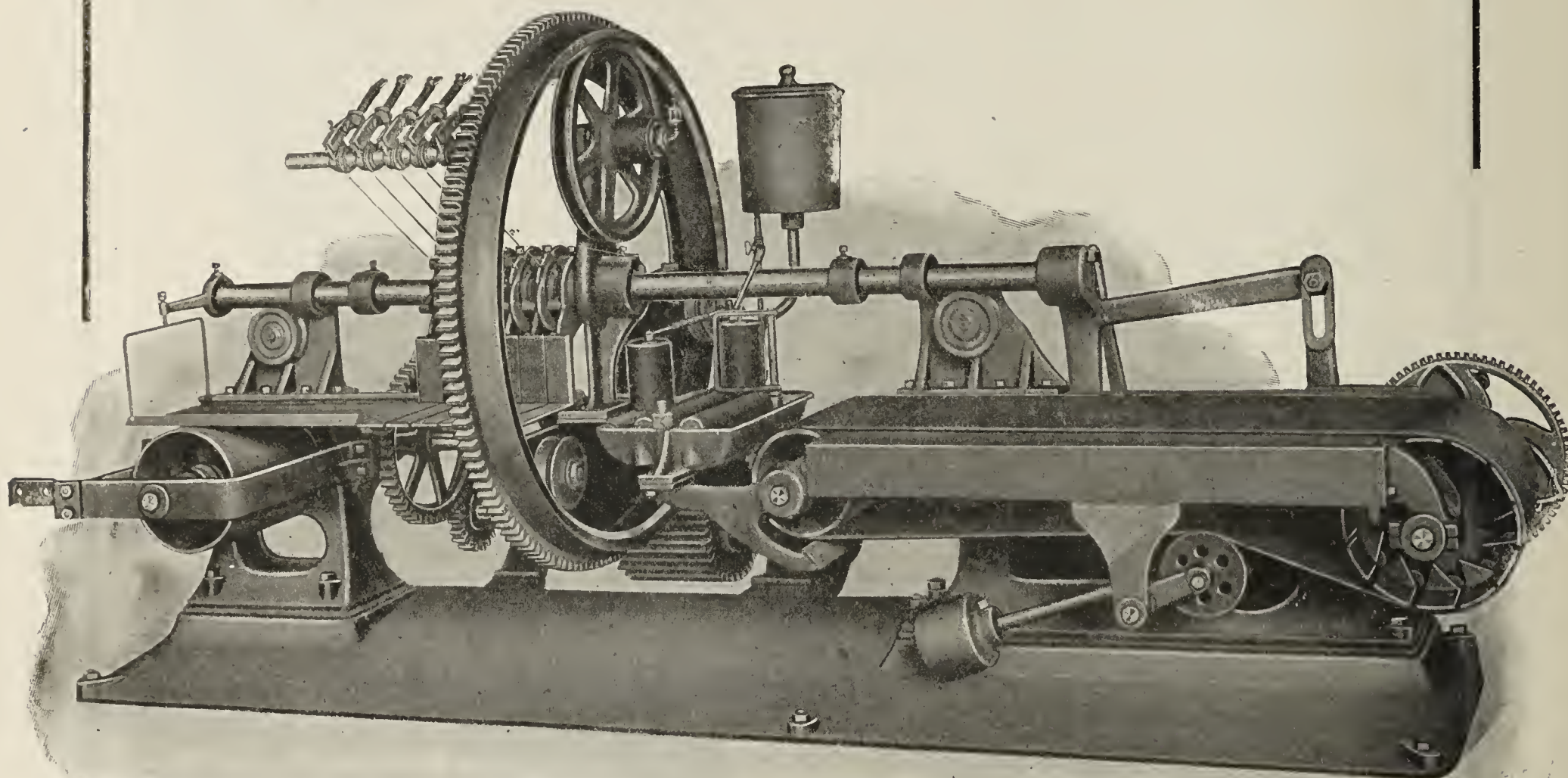
Bucyrus, Ohio, U. S. A.

No. 25 Automatic Cutting Table.



The No. 25 Automatic Cutting Table is a machine in every way entitled to be classed among the mechanical triumphs of the present age. It is at once simple, accurate and efficient. Its own performance is the best evidence of its quality. Its designing has been most careful, its building most excellent.

The result is a Cutter that can not be surpassed. Its few wires and continuous motion are features which insure freedom from care and ease of operation. There are so many points of detailed excellence about the No. 25 Cutter that you should ask for a full description. Its yours upon request.



We build every class of Clayworking Machinery required to manufacture every product made from clay, including Sand-Lime Brick. We can meet your needs exactly no matter how large or small.

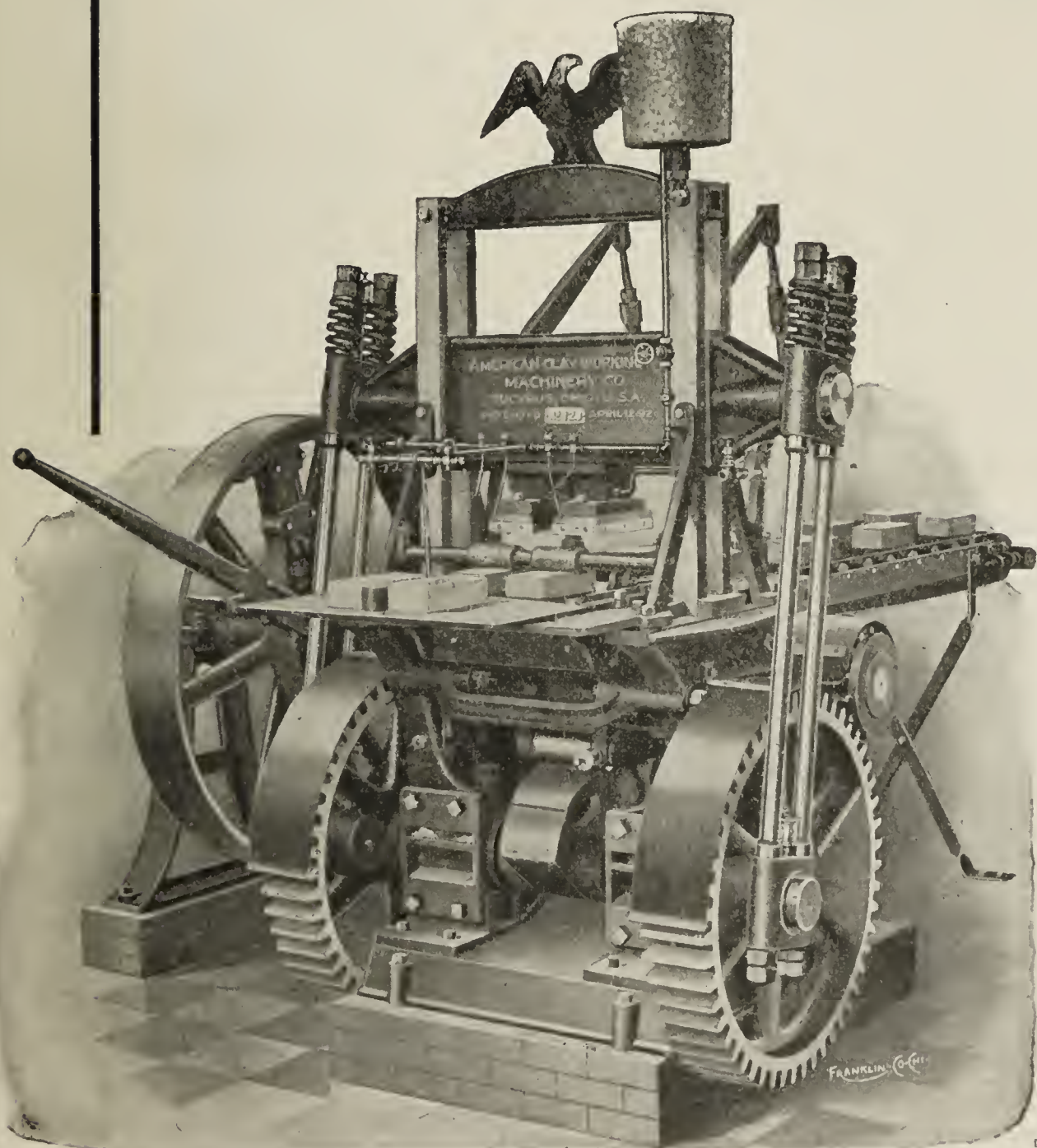
The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

'NUFF SAID.



If your equipment includes an Eagle Reprass your success is assured so far as real quality in a press is able to insure it.

'NUFF SAID.



If you desire further assurance we shall be pleased to furnish detailed information on the excellence of the Eagle Reprass or will let its users speak for it. A list of users on request.

We build every machine and equipment needed to manufacture Clay Products by all processes including Sand-Lime Brick. Each machine has that superior quality which insures long life and satisfactory service.

**The American Clay
Machinery Co.,**
Bucyrus, Ohio, U. S. A.

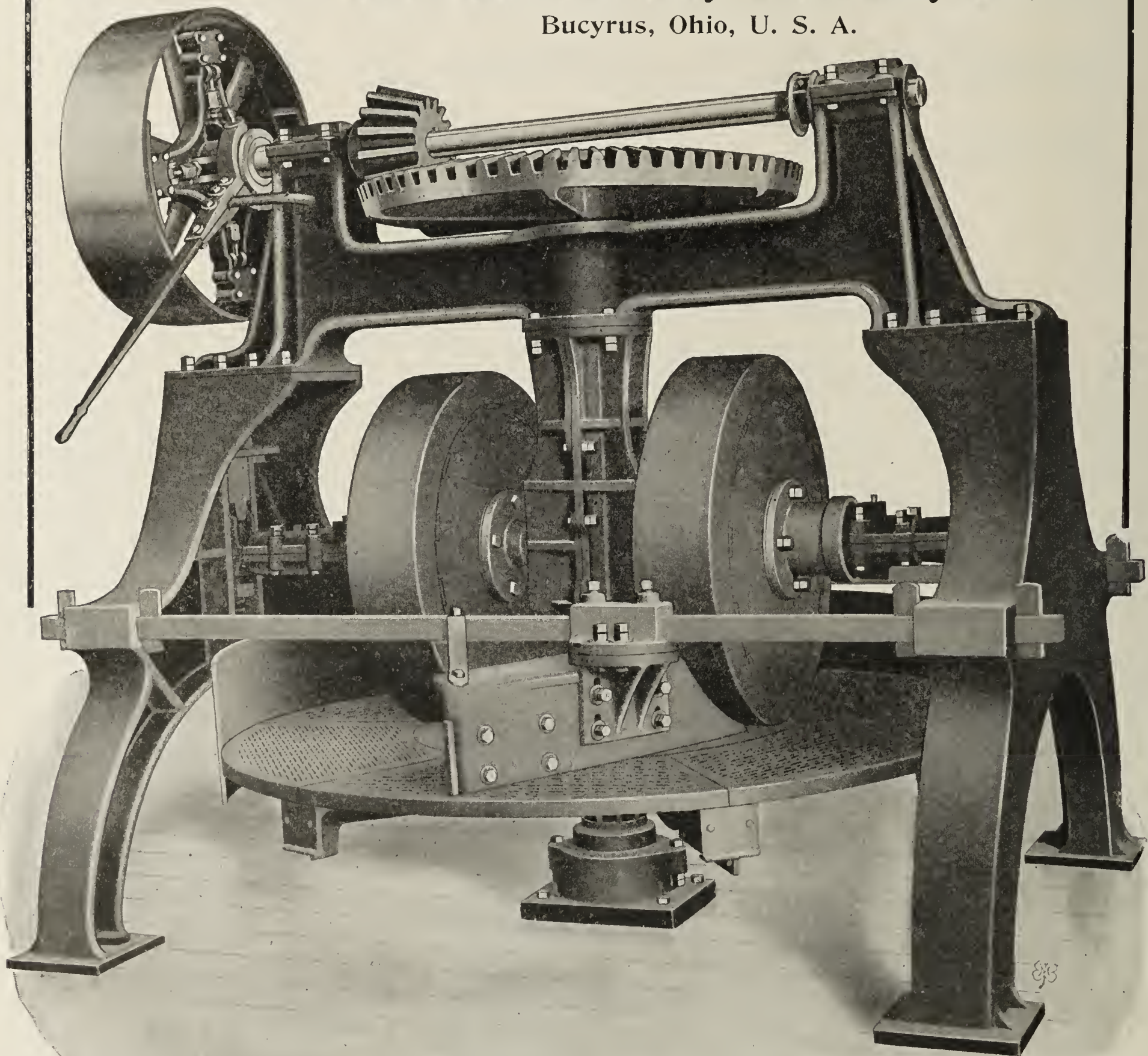
Dependable Dry Pans



We build a line of Dry Pans which can be depended upon, not only on Promise, but Performance. Note the lines of strength embodied in this pan. There is Flawless material and Faultless workmanship. The men who build these pans in our shops are pan builders the year around. They thus become pan specialists. Every pan is erected and thoroughly tested in our factory. We know every pan to be perfect because of the care with which we watch its building. We can guarantee it. We build two dozen sizes and styles of Dry and Wet Pans as well as every machine and appliance used in the manufacture of Clay Products by all processes. Write for catalog.

The American Clay Machinery Co.,

Bucyrus, Ohio, U. S. A.

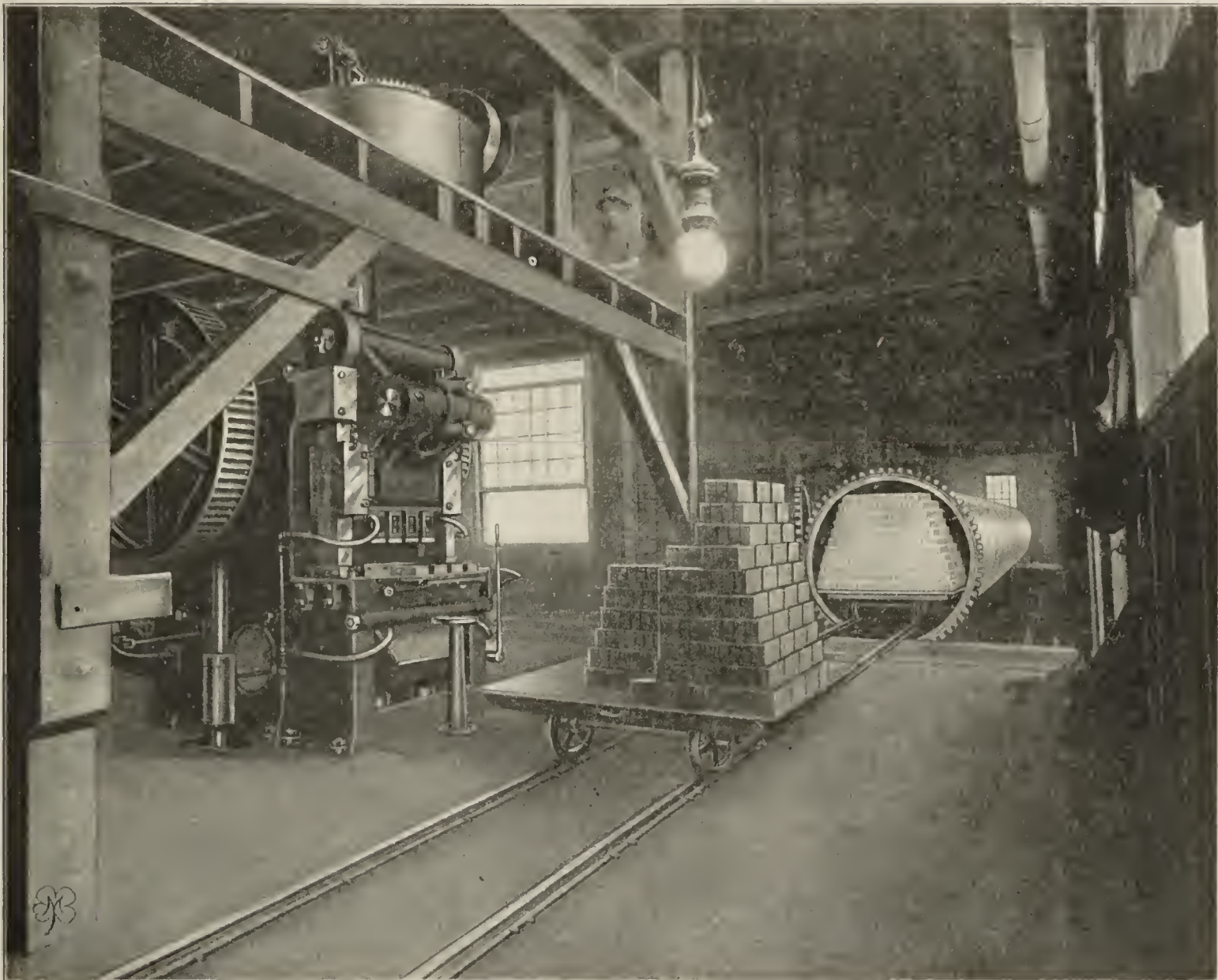


Up to the Minute Plant



Here is a strictly modern, "up to the minute" Sand-Lime Brick Plant equipped throughout with machinery built by The American Clay Machinery Co. Note the detailed excellence and simplicity. Note the proportions of the Press. There is not a plant in the country which is better equipped for profitable operation.

We build complete equipments for Sand-Lime Brick plants. Our testing department will test your material and deliver you samples of the finished prod-



INSTALLATION OF SAND-LIME BRICK MACHINERY

in the plant of The Schenectady Brick Co., Schenectady, N. Y.

Manufactured by The American Clay Machinery Company, Willoughby, Ohio.

uct. Our machine department will build an equipment to make millions of brick equal to the sample. Correspondence solicited.

We also build a complete line of Clay-Working Machinery for the manufacture of Clay Products by all processes. Write for catalog.

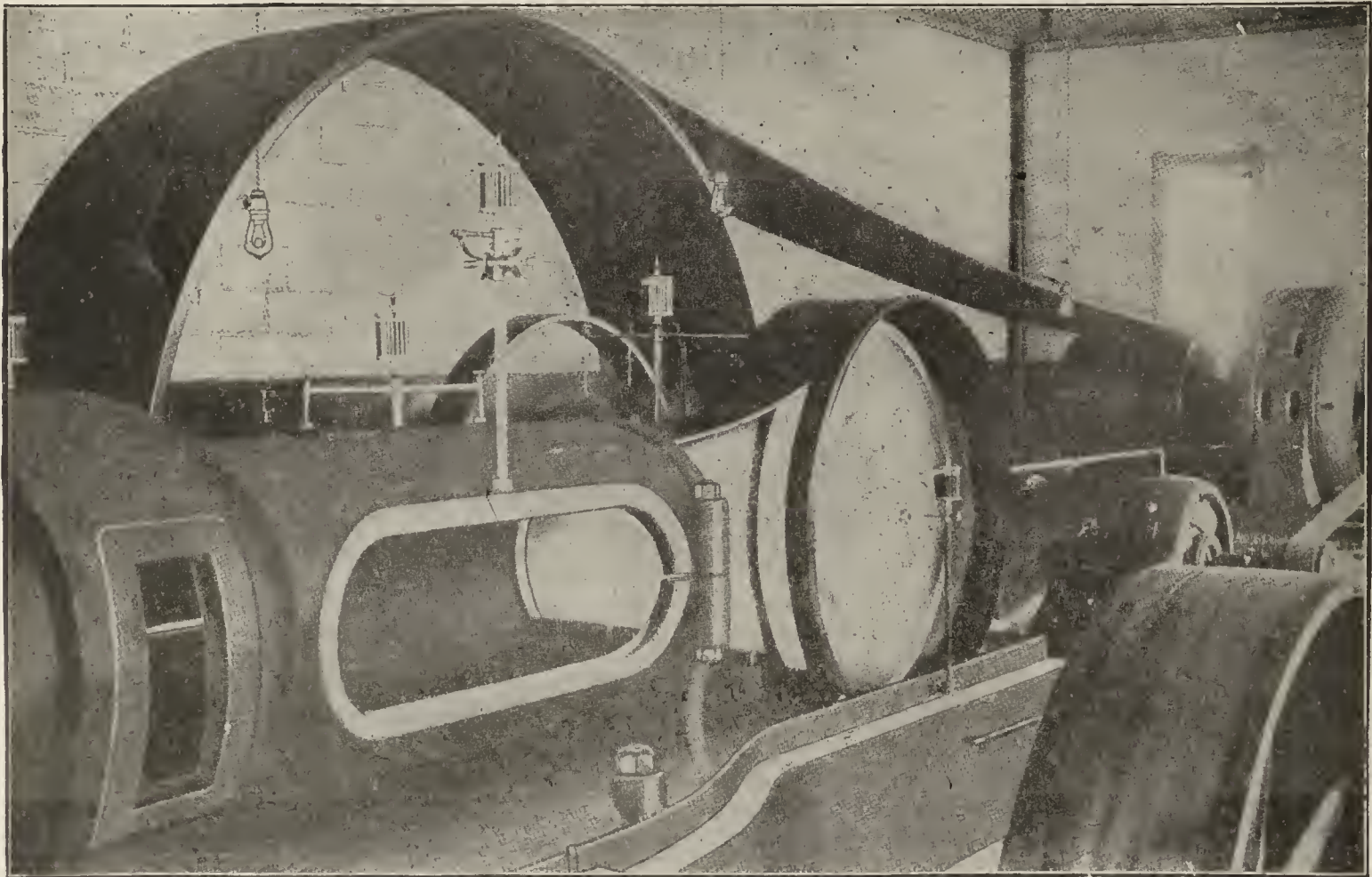
The American Clay Machinery Co.,
Willoughby, Ohio, U. S. A.

BEST BELTS = BEST BRICKS

We make a specialty of belts for the most economical and efficient transmission of power and material—for the Engine, Pans, Pug Mills, Elevators, Clay Conveyors, etc.

LEVIATHAN HARD SERVICE BELTS

Leviathan Belting is famed for its indestructible and wearing qualities. It runs successfully in water, in extreme heat and exposed to the weather. Its long service and reliability under the most severe conditions, and its **tremendous transmitting power**, make it the Most Economical Belt by Absolute Proof.



Illustrated above is an 8-ply "**Leviathan**" Main Driving Belt, 36 inches wide, 73 feet long, **photographed while running under full load**. Running three dry pans, four machines, four pug mills, and a number of elevators, conveyors, etc. Running smoothly, with **easy tension** and **no tightener**. The above "**Leviathan**" was installed at a cost 40 per cent. less than double leather, 60 per cent. less than triple leather belting.

We would like to tell you more about "**Leviathan**" for **Clayworking**, and to submit more evidence.

Our catalogue "Facts" warrants inspection. It is yours for the asking.

MAIN BELTING COMPANY, Sole Manufacturers

1221-1231 Carpenter St., Philadelphia, 55-57 Market St., Chicago

120 PEARL STREET, BOSTON.

309 BROADWAY, NEW YORK.

40 PEARL STREET, BUFFALO.



A NEW TOWN

To be Devoted to the Manufacture of
Industrial Railway Equipment
One of the Greatest Modern Needs
OF INDUSTRY



KOPPEL
BEAVER COUNTY
PENNSYLVANIA

—TURN TO NEXT PAGE—



ARTHUR **KOPPEL** COMPANY

NEW YORK

66-68 Broad Street

CHICAGO

1639 Monadnock Block

BOSTON

53 Oliver Street

PITTSBURG

Machesney Building

SAN FRANCISCO

515 Market Street

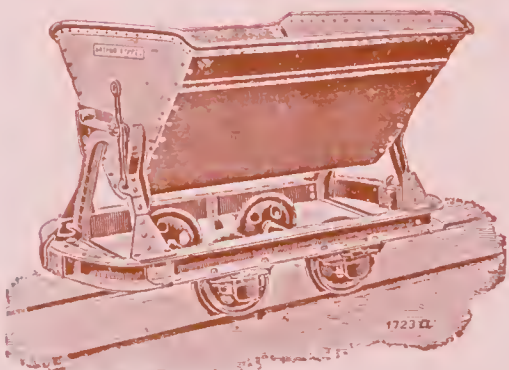
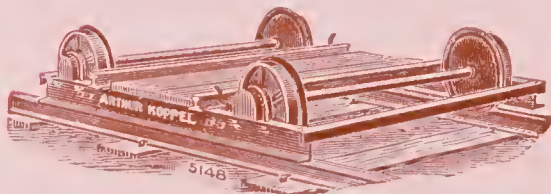
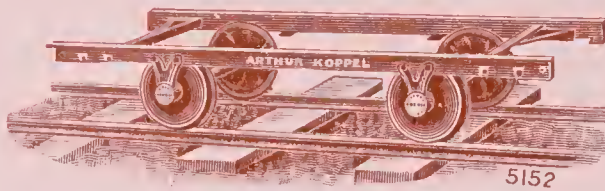
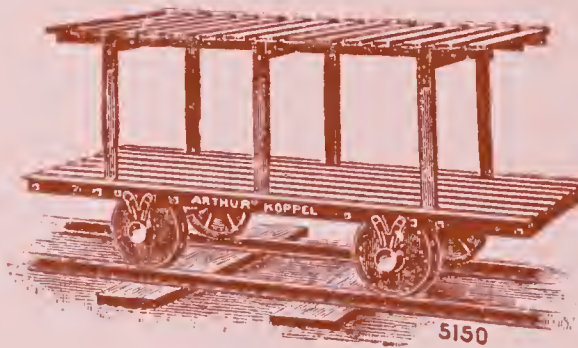
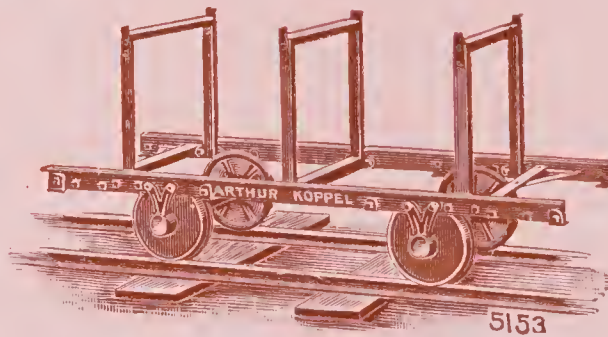
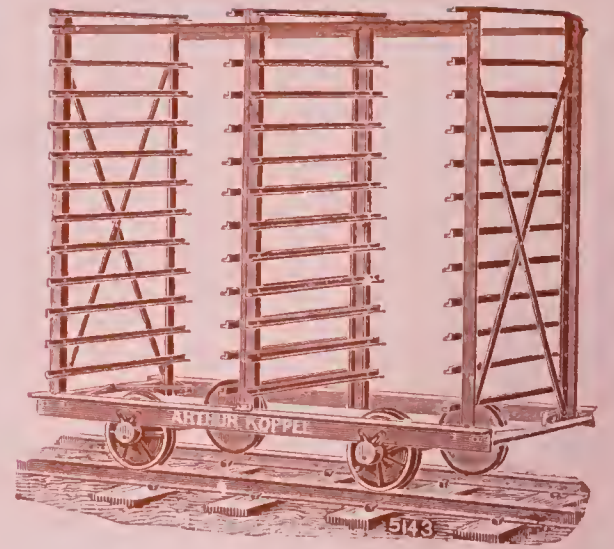


Works at



OUR COMPETE INDUSTRIAL RAILROADS

FOR MINES, QUARRIES AND
BRICKYARDS, INCLUDING
RAILS, STEEL TIES, PORT-
ABLE TRACK, SWITCHES,
FROGS, TURNTABLES,
CROSSINGS, WHEELS,
AXLES, SPARE
PARTS, PLATFORM
CARS, STEEL DUMP
CARS, DRYER
CARS, LOCO-
MOTIVES,
ETC.



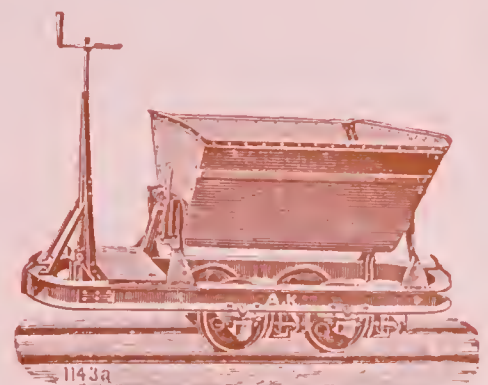
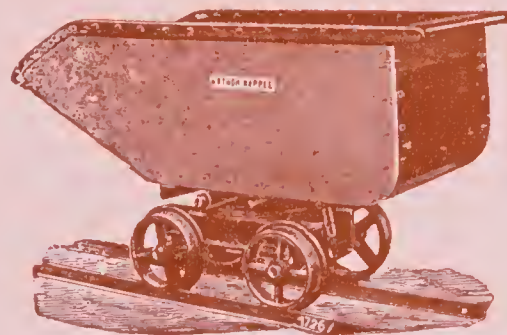
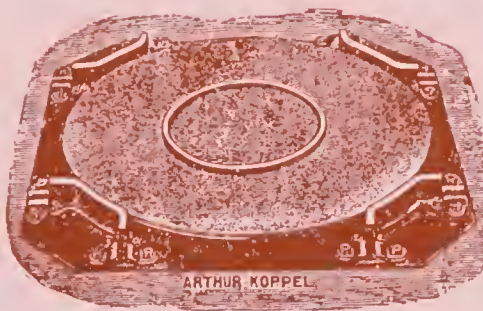
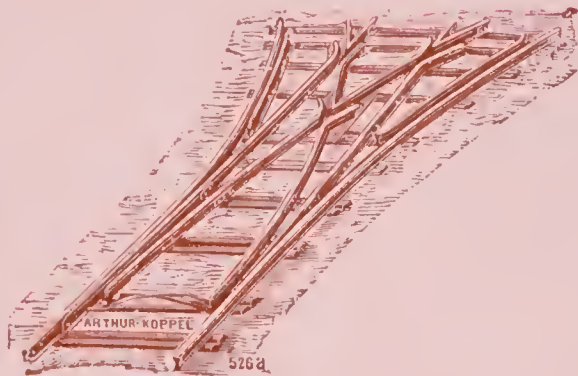
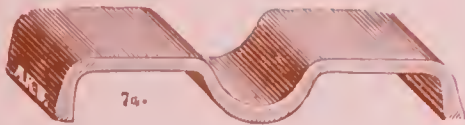
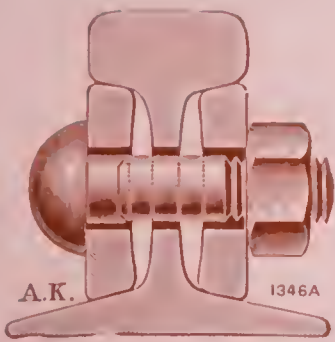
A LARGE STOCK

ALWAYS ON
HAND AT OUR
WAREHOUSES
READY FOR
PROMPT DELIV-
ERY. CATALOGUE
"C" WILL INTEREST
YOU. IT DESCRIBES
EVERYTHING WE
MAKE.

ARTHUR KOPPEL COMPANY

66-68 BROAD STREET, NEW YORK
53 OLIVER STREET, BOSTON
1639 MONADNOCK BLOCK, CHICAGO
MACHESNEY BLDG., PITTSBURG
515 MARKET ST., SAN FRANCISCO

WORKS
AT
KOPPEL
BEAVER CO.
PA.



OUR NEW PLANT

is situated in the heart of the great iron and steel belt, and having excellent shipping facilities, this will enable us to furnish material promptly. The finest equipment of special machinery will allow us to produce as economically as any other plant in existence engaged in similar work, without any sacrifice of the high standard of quality which has always been characteristic of our product.



**30
YEARS
OF
SUCCESS**

IN THE MANUFACTURE OF INDUSTRIAL RAILWAY EQUIPMENTS FOR ALL KINDS AND CONDITIONS OF INDUSTRIAL SERVICE.

**ARTHUR
KOPPEL
COMPANY**

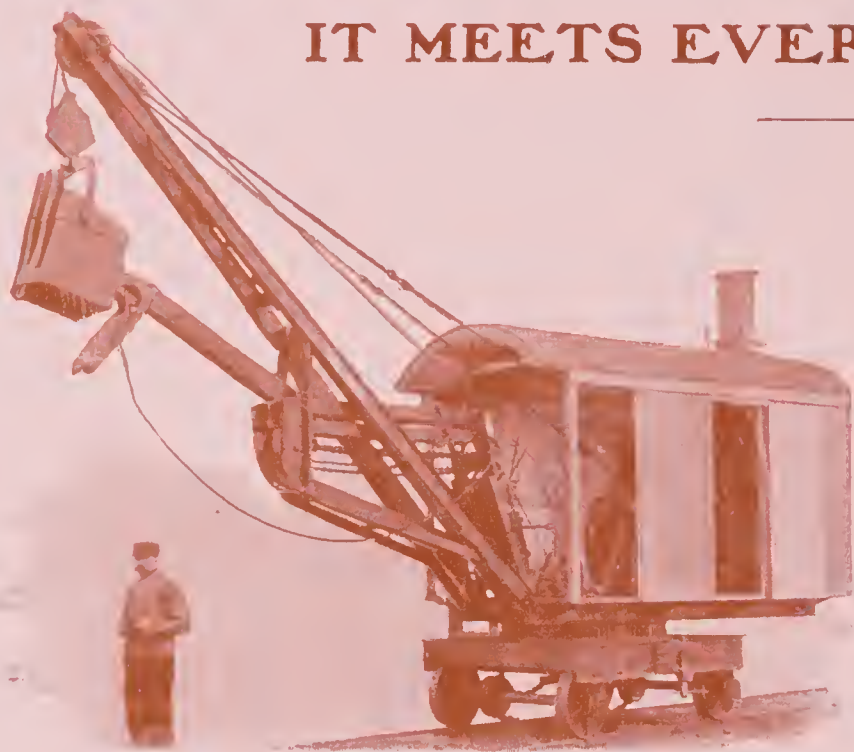
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MACHESNEY BLDG., PITTSBURG
515 MARKET ST., SAN FRANCISCO



Handle Your Clay With One Man and

The Thew Steam Shovel.

IT MEETS EVERY REQUIREMENT.



Type 0.

Swings through a complete circle.
Loads cars at side or in rear.
Cleans level floor for track.
Controlled by one operator.
Self-propelling and easily moved.

SHOVELS FOR ORDINARY CLAYS.

Type No. 0.—Weight 13 tons, $\frac{1}{2}$ or $\frac{5}{8}$ -yard dipper, capacity 50,000 to 70,000 brick. Especially designed for yards of moderate size.

Type No. 1.—Weight 25 tons, $\frac{3}{4}$ or 1-yard dipper, capacity 50,000 to 125,000 brick. Handles tough clays and is a very popular tool.

Type No. 3.—Weight 35 tons, $1\frac{1}{4}$ or $1\frac{1}{2}$ -yard dipper. Recommended for larger outputs than 100,000 brick per day.



Type No. 1.

One man on the shovel.
One boy on the ground.
It does not strike.
It does not quit.
It works in all kinds of
weather.

**We cover the field. We meet
the requirements. We guar-
antee results. Write for
Catalogue.**

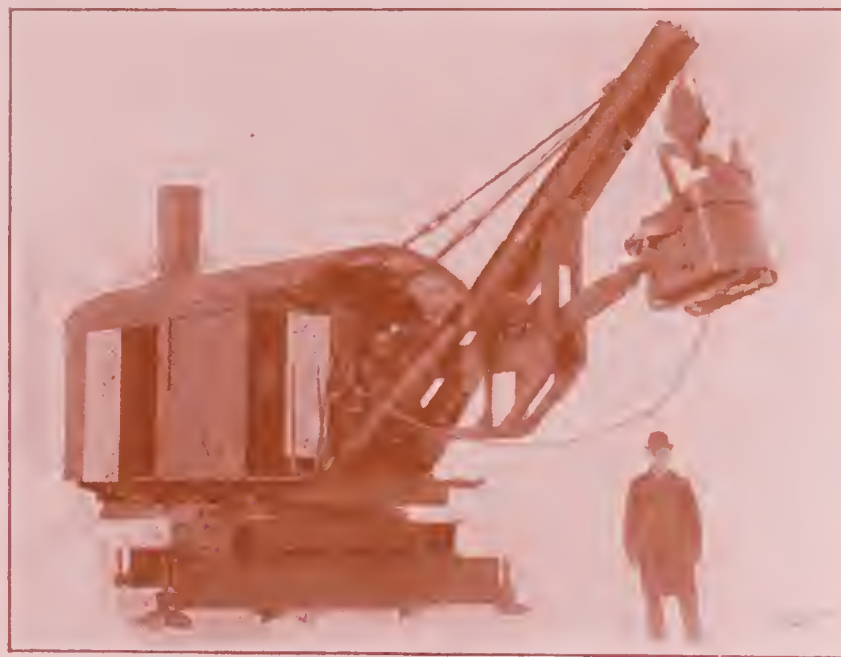
THE THEW AUTOMATIC SHOVEL COMPANY, Lorain, Ohio.

Convenience and Economy are Combined in

The Thew Steam Shovel.

With Excellence of Design, Material and Workmanship.

Reduces labor cost to a minimum.
 Secures thorough mixture of clay.
 Handles its own track when moving.
 Can be used as crane or for switching
 ing cars.
 Available for stripping as well as
 handling clay.

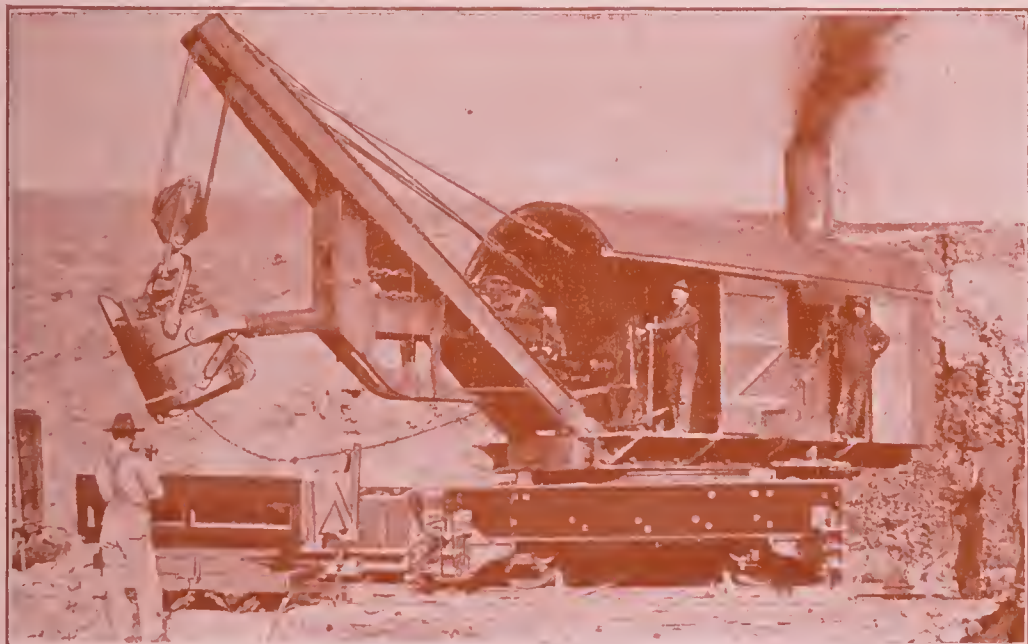


Type No. 2.

SHOVELS FOR SHALES AND FIRE CLAYS.

Type No. 2.—Weight 30 tons, $\frac{3}{4}$ or 1-yard dipper for difficult materials. Widely used for shales.

Type No. 4.—Weight 50 tons, $1\frac{1}{4}$ -yard dipper. Very powerful and intended for extremely difficult shales.



Type No. 4.

The Thew Shovel

Is a Labor Saver.

Is a Money Saver.

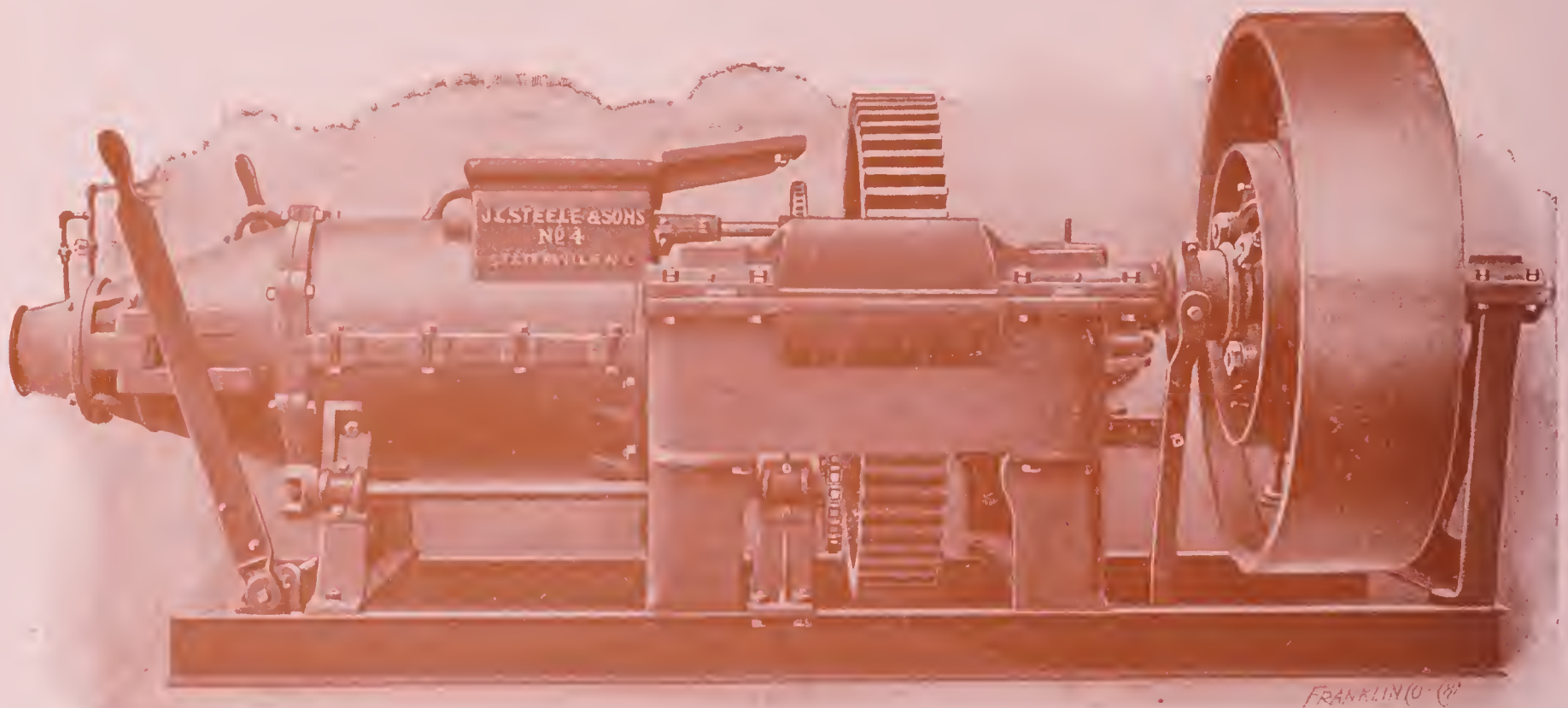
Is a Time Saver.

Is a Trouble Saver.

We also build Railroad Excavators and
 modify our designs to suit special
 conditions.

THE THEW AUTOMATIC SHOVEL COMPANY, Lorain, Ohio.

The Steele No. 4 Machine.



No. 4. Capacity 35 to 50 M per day.

Makes more brick and less noise per horsepower than any other machine.

Has no superfluous or delicate parts to give trouble.

Write for further information.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn.,
Western Agents.

ASK FOR CATALOGUE.

THE STEELE TILTING BRICK TRUCK.

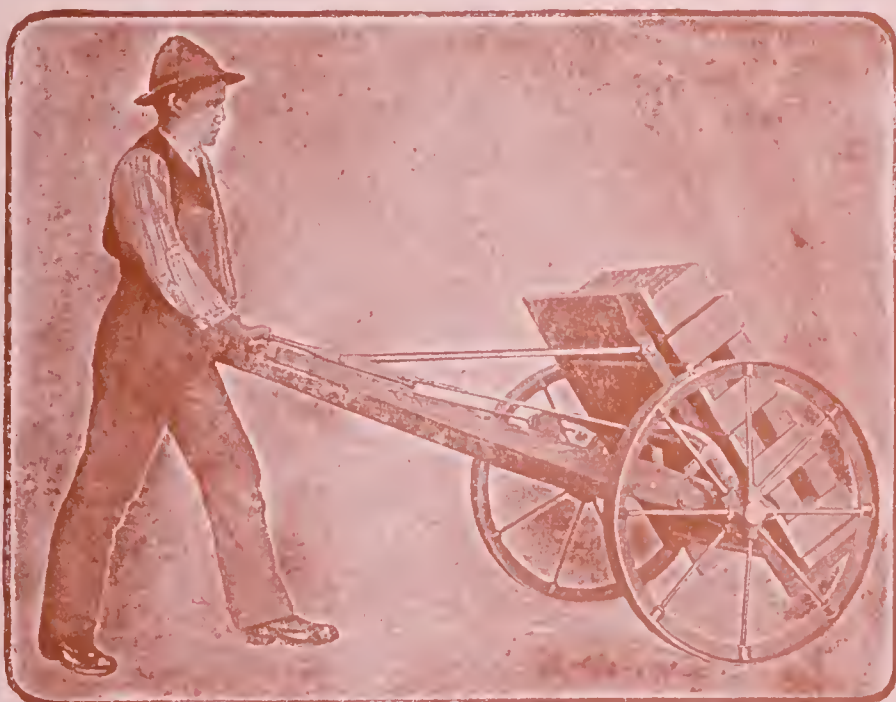
For use in connection
with our system of
sheds.

Can also be used on open
yard.



This Truck is roller bearing, has 30-in. wheels. It is provided with springs.

We also build Disintegrators, Granulators, Pug Mills, Hoisting Drums, Clay Cars, Dryer Cars, Turntables, Switches, Etc.



J. C. Steele & Sons,
Statesville, N. C.

SUCCESS BRICK MACHINERY CO.,
Memphis, Tenn.,
Western Agts.

ASK FOR CATALOGUE.

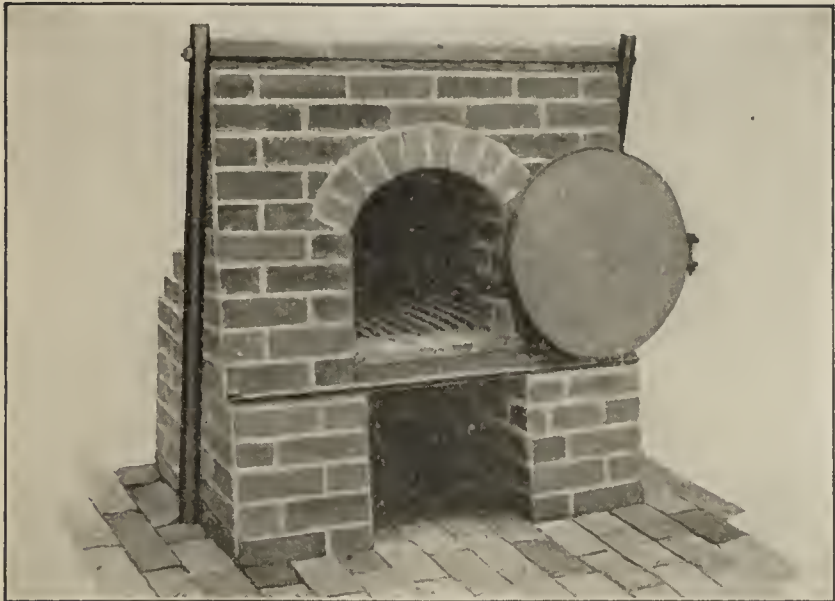


INDIANA ELECTROTYPE COMPANY

*Designers
Engravers
Electrotypers*

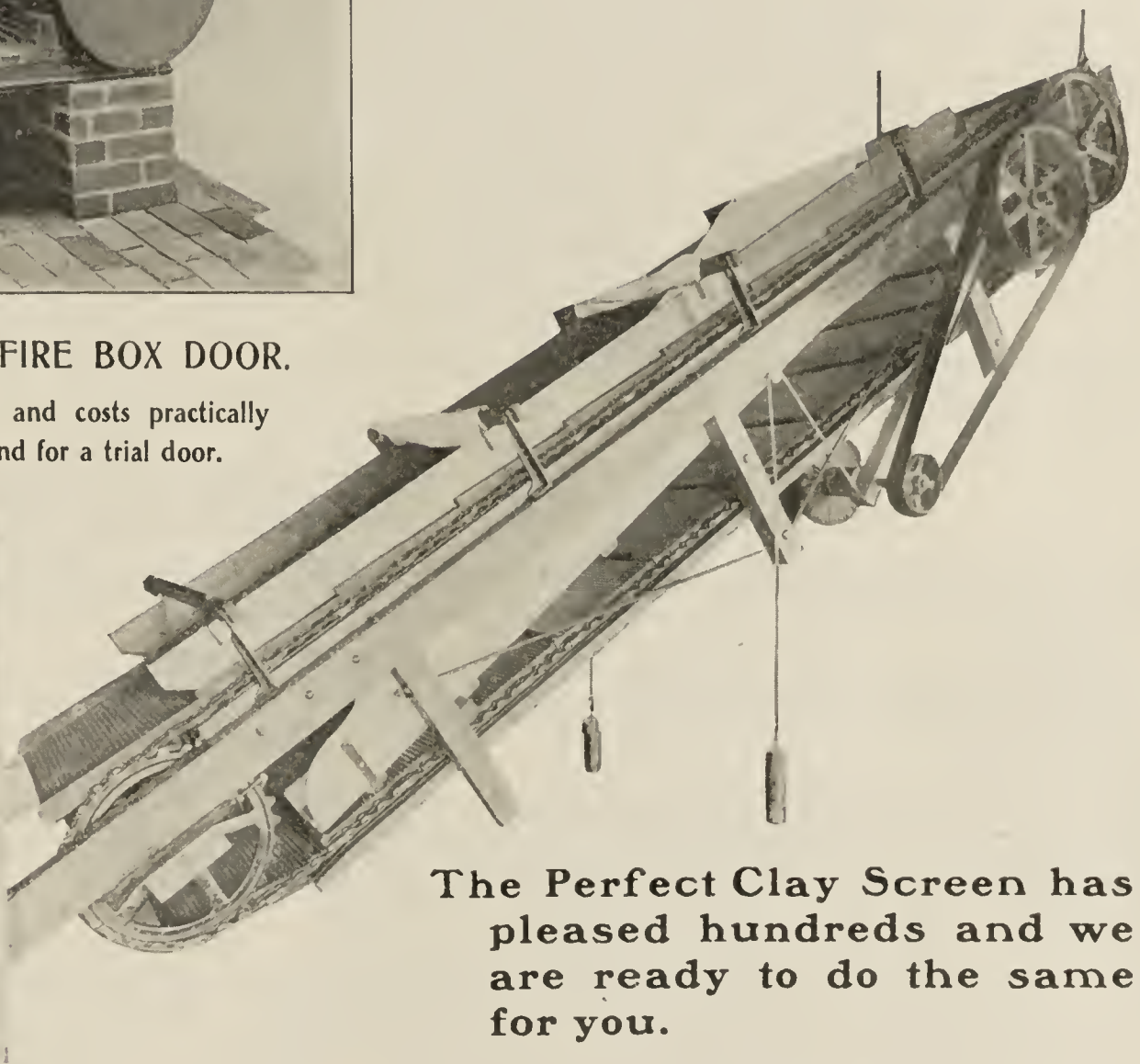
Both Phones 1270
23 West Pearl St
INDIANAPOLIS

TWO GOOD ONES.



DUNLAP'S ROLLING FIRE BOX DOOR.

Cheap to install. Durable and costs practically nothing to maintain. Send for a trial door.



The Perfect Clay Screen has pleased hundreds and we are ready to do the same for you.

We can save you some money this year, beside increase your output and improve your product. We guarantee results. Satisfaction or no pay.

It is for you to say the word.

Dunlap Manufacturing Co.,
Bloomington, Ill.

THE COST

Accurate Cost Systems, Giving Cost at Any Time, are Essential to Good Management.

USE OUR BUSINESS ACCOUNTING and RECORD SYSTEM and know at any time.

THE COST TOTAL OF ALL WARE.

THE COST IN ANY DIVISION.

COMPLETE TIMEKEEPING SYSTEM.

PERPETUAL INVOICE.

KILN RECORDS. FUEL RECORDS and all
Knowledge Essential to Success.

If you wish to enter the clay business, either to buy an old plant or start a new one, write us, we have some bargains.

We own original kiln patents of the triple draft system, now being extensively infringed. Write us about round kilns. We have some bargains in Stiff Mud Machinery.

WESTERN CLAY DEVELOPMENT COMPANY, Van Meter, Iowa.

REMARKABLE OFFER.

We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for

\$3.00



The New Way.

“POST” SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen. Guaranteed by Makers.
NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

Gen. Lew. Wallace: The author of “Ben Hur” writes, “I have tried every kind in the market and unhesitatingly give the preference to the “Post.”

Judge Luther L. Mills, Chicago: The “Post” Fountain Pen is the Best I have ever used; simple, reliable, durable.

Dr. Josiah Strong: The great author of “Our Country” says: “I have been hunting for twenty years a perfect fountain pen; have tried many, and they have tried me; but the “Post” leaves nothing to be desired.”

The CLAY-WORKER, INDIANAPOLIS, INDIANA.

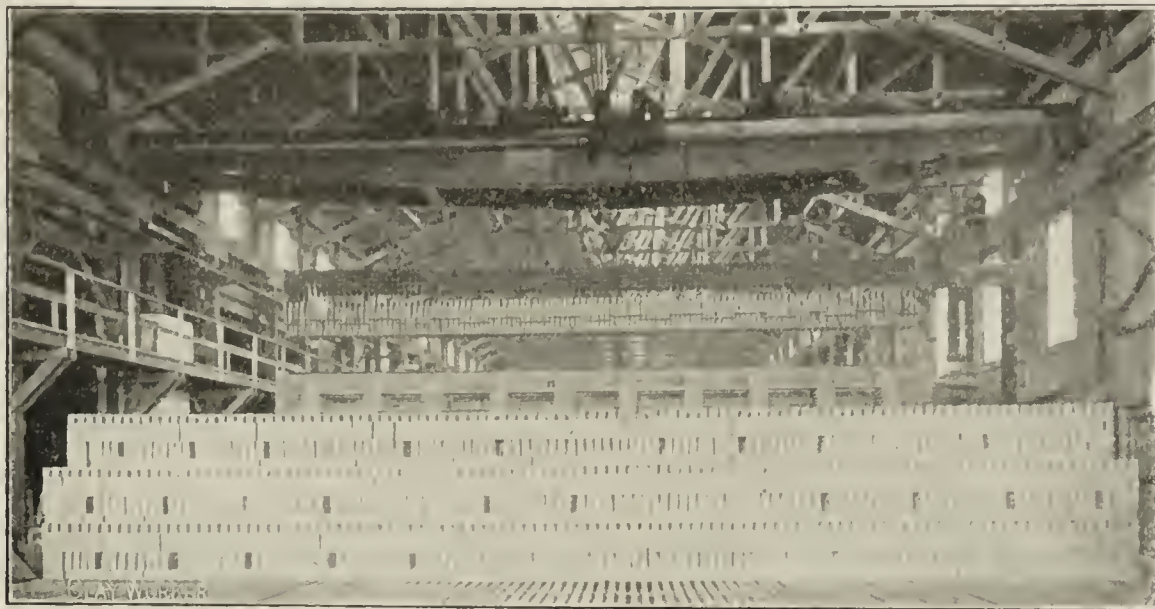
FISKE BRICKMAKING SYSTEM

J. Parker B. Fiske, Patentee,
Flatiron Bldg., New York City.

Eliminates all
hand labor
of wheeling,
drying, tossing
and kiln setting.



No cars, tracks,
turntables,
trucks, pallets
or wooden racks.



No breakage of
green bricks.
No waiting
for cars.
No delays.



Practically
no depreciation.



Write for
particulars.

PLANT AT DOVER POINT, N. H.

Two men with crane can move 100M bricks per day from the setting-up stands at the machine to the dryer and from the dryer to the kiln, and set them for burning at a total

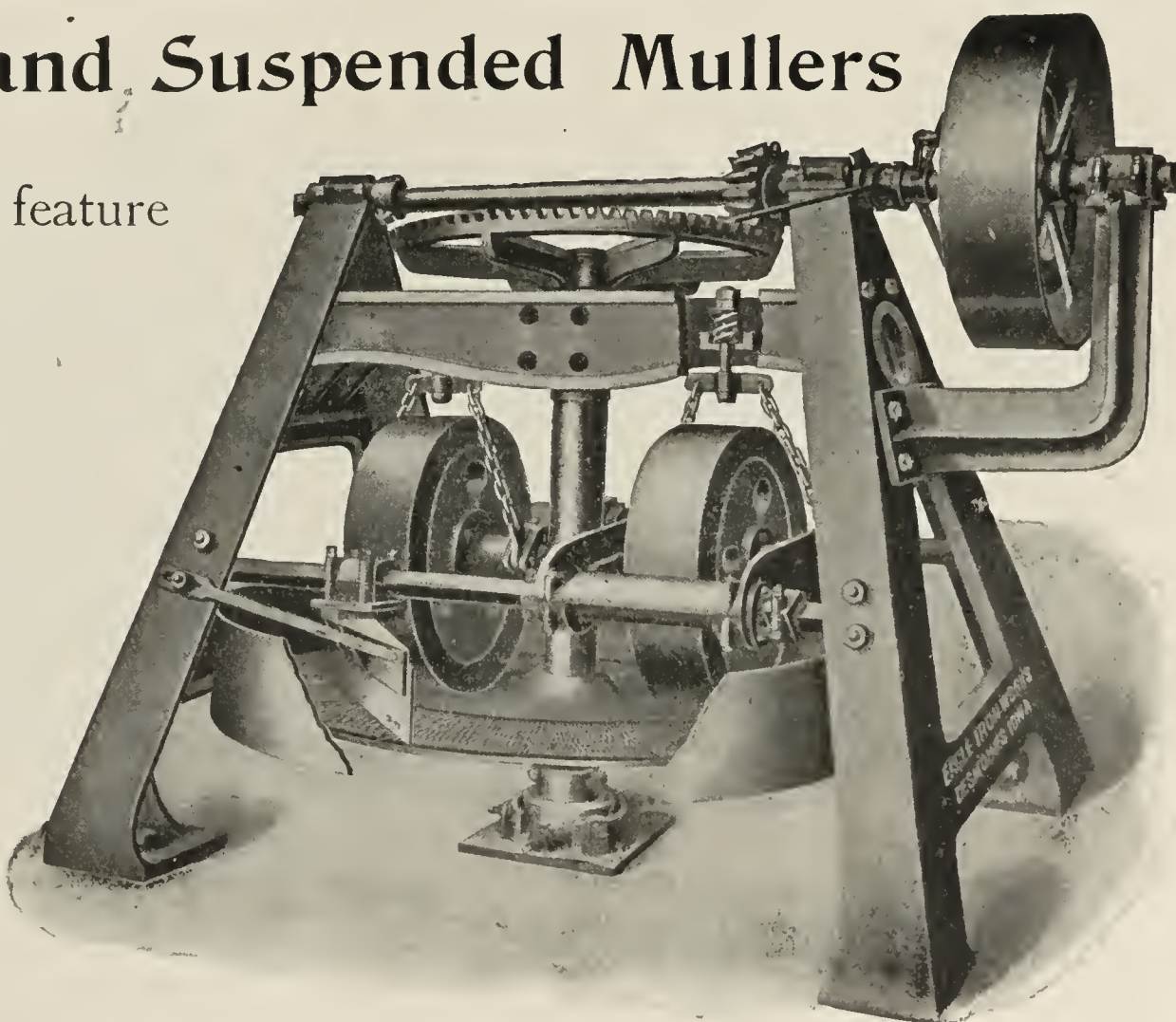
Labor Cost of 4c. Per M.

Independent and Suspended Mullers

the distinguishing feature
of our

DRY PANS.

Other valuable
features which our
catalogue fully
describes.



EAGLE IRON WORKS, Des Moines, Ia.

STEAM SHOVELS FOR BRICK YARDS.



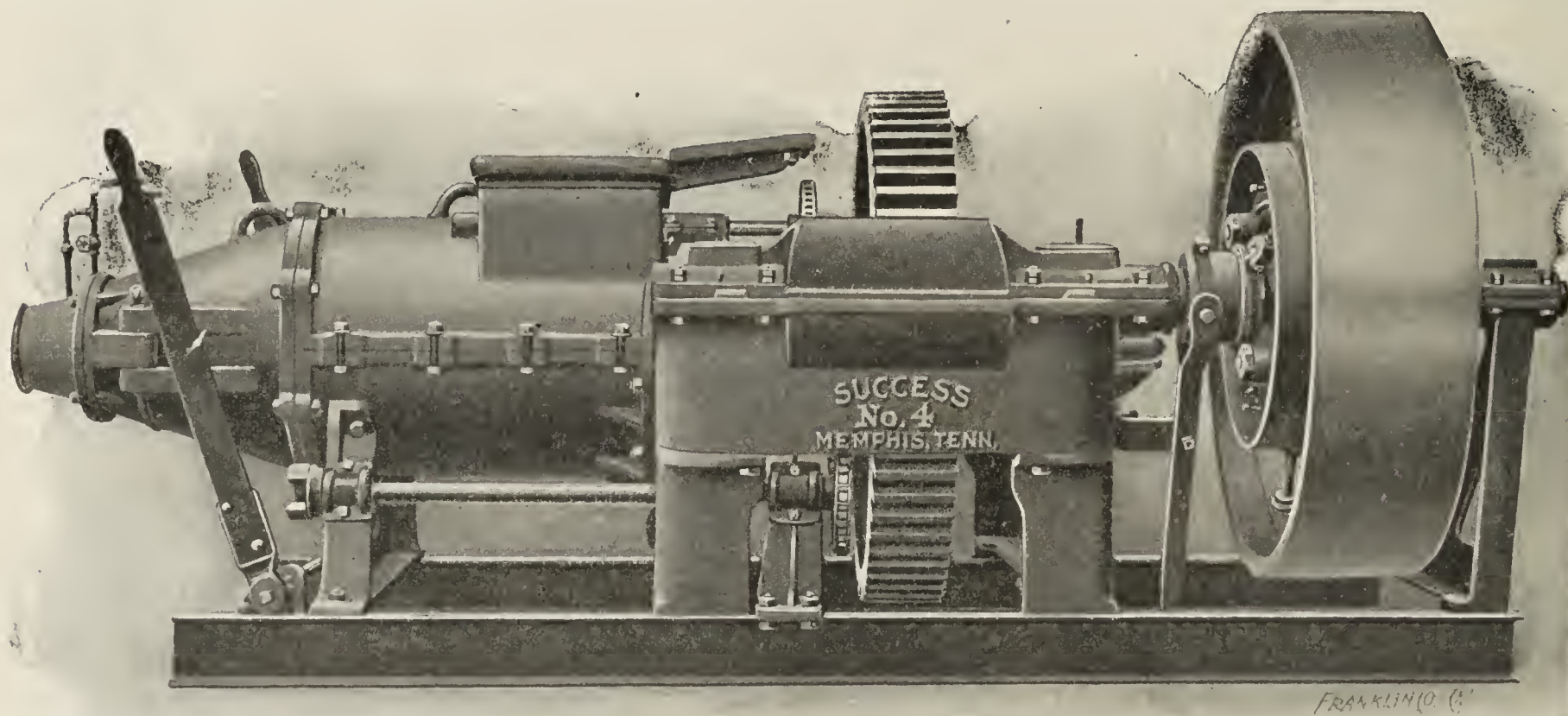
We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

Marion, Ohio.

F. H. HOPKINS & CO., Agents
Montreal, P. Q.



Cut represents our SUCCESS No. 4 Stiff-Mud Machine, constructed on **steel** foundation, **self-contained** and fitted with **steel** gears throughout. The strongest, most desirable and modern brick machine on the market.

Success Brick Machinery Company,

1403-4-5 Tennessee Trust Bldg., Memphis, Tenn.

Among Jeffrey Labor-Saving Devices Are "CENTURY" RUBBER BELT CONVEYORS

Elevating,
Power-
Transmitting,
Crushing,
Screening
Machinery,
Electric and
Storage Battery
Locomotives
For Mills, Mines,
Factories,
Industrial and
Power Plants.



Of the
Type Shown.
A Variety of,
Others
Illustrated
in
Conveyor
Catalogue
No. 67A.
Free with
Catalogues
on
Other lines.

THE JEFFREY MFG. COMPANY,

Columbus, Ohio, U. S. A.

NEW YORK.

CHICAGO.

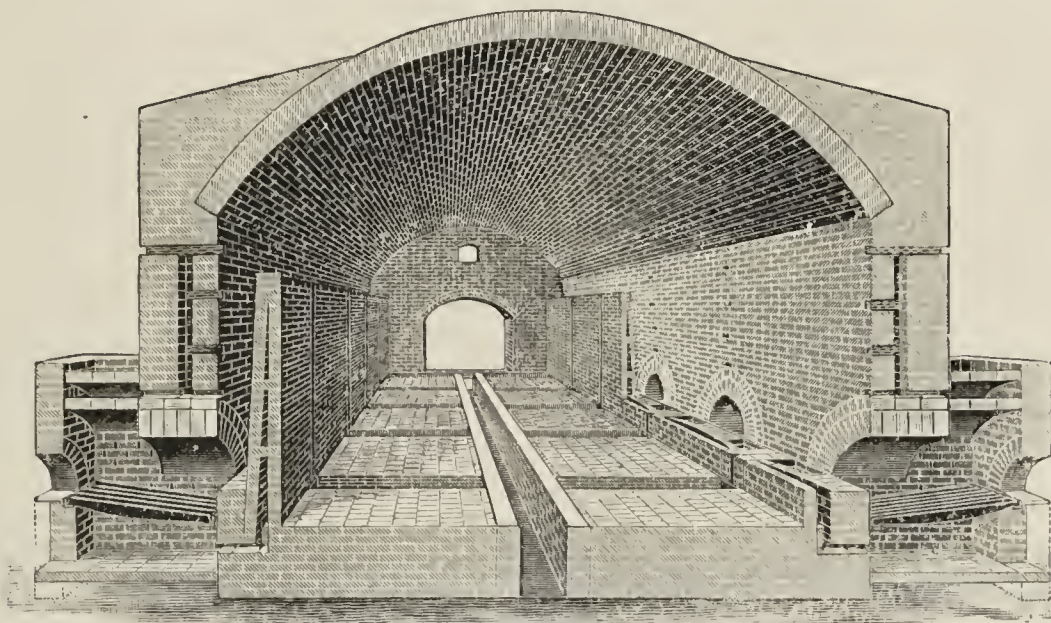
BOSTON.

ST. LOUIS.

DENVER.

The EUDALY ^{DOWN} ^{DRAFT} KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

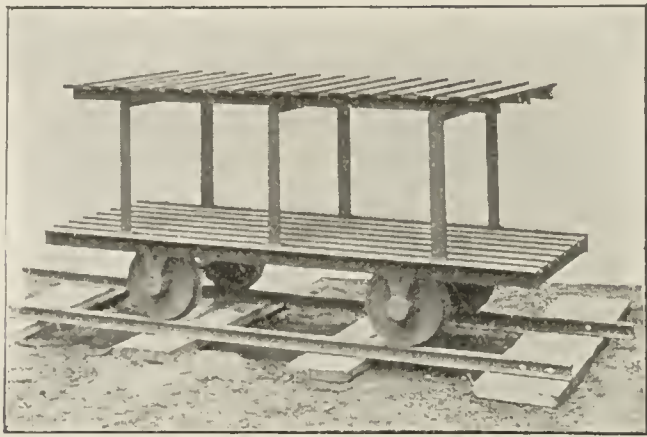
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.

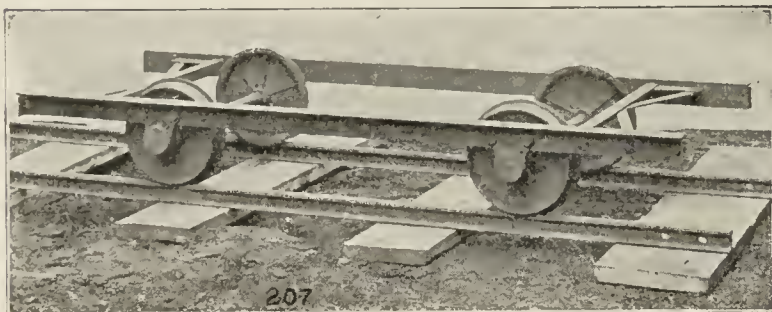
INDUSTRIAL RAILROAD EQUIPMENT.



No. 244.
DOUBLE DECK DRYER CAR,
STEEL DECKS.



No. 52,
TRUNION DUMP CAR,
FOR GENERAL USE.



No. 207. SOFT MUD FLAT CAR FOR FOOT PALLETS.

The Cleveland Car Co.,
West Park, Ohio.

**Builders of Light Steel Cars of
Every Description,**

**Switches, Turntables,
Portable Track Crossings,
Steel Pallets, Rail, Etc.**

SAND-LIME BRICK MACHINERY

Furnished and installed by the

International Sand-Lime Brick & Machinery Co.

(Incorporated under the laws of the State of New York.)

Under the Safest and Strongest Guarantees.

Inventors and Owners of the "Division Method" (patented in the
United States and all Foreign Countries.

Installed and Successfully Operated in Over Twenty Factories
in the United States.

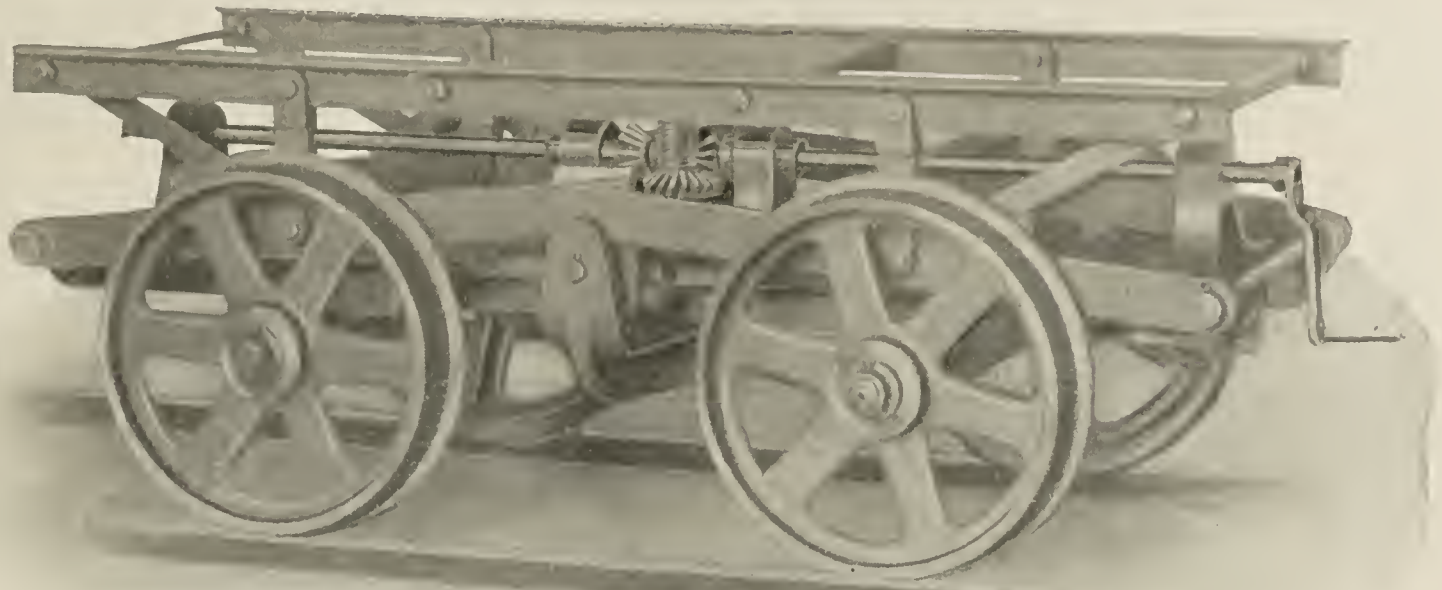
Write for information to the

International Sand-Lime Brick & Machinery Co.

**136 Liberty Street,
NEW YORK.**

COMPETITION COMPELS

the brickmaker to reduce the cost of manufacture to the lowest possible point. If **two** men properly equipped will accomplish what **all** your truckers now do, and at the same time deliver the ware to the setters in perfect condition, can you afford to continue as you are? An inquiry from you will receive prompt attention.



OPEN AIR AND ARTIFICIAL DRYERS—Car and Carless.

The Drymore System, 7th and Chestnut Sts., St. Louis, Mo.

The Exhaust Steam Dryer is THE NATIONAL.

CARROLLTON BRICK CO.

The National Dry Kiln Co.,

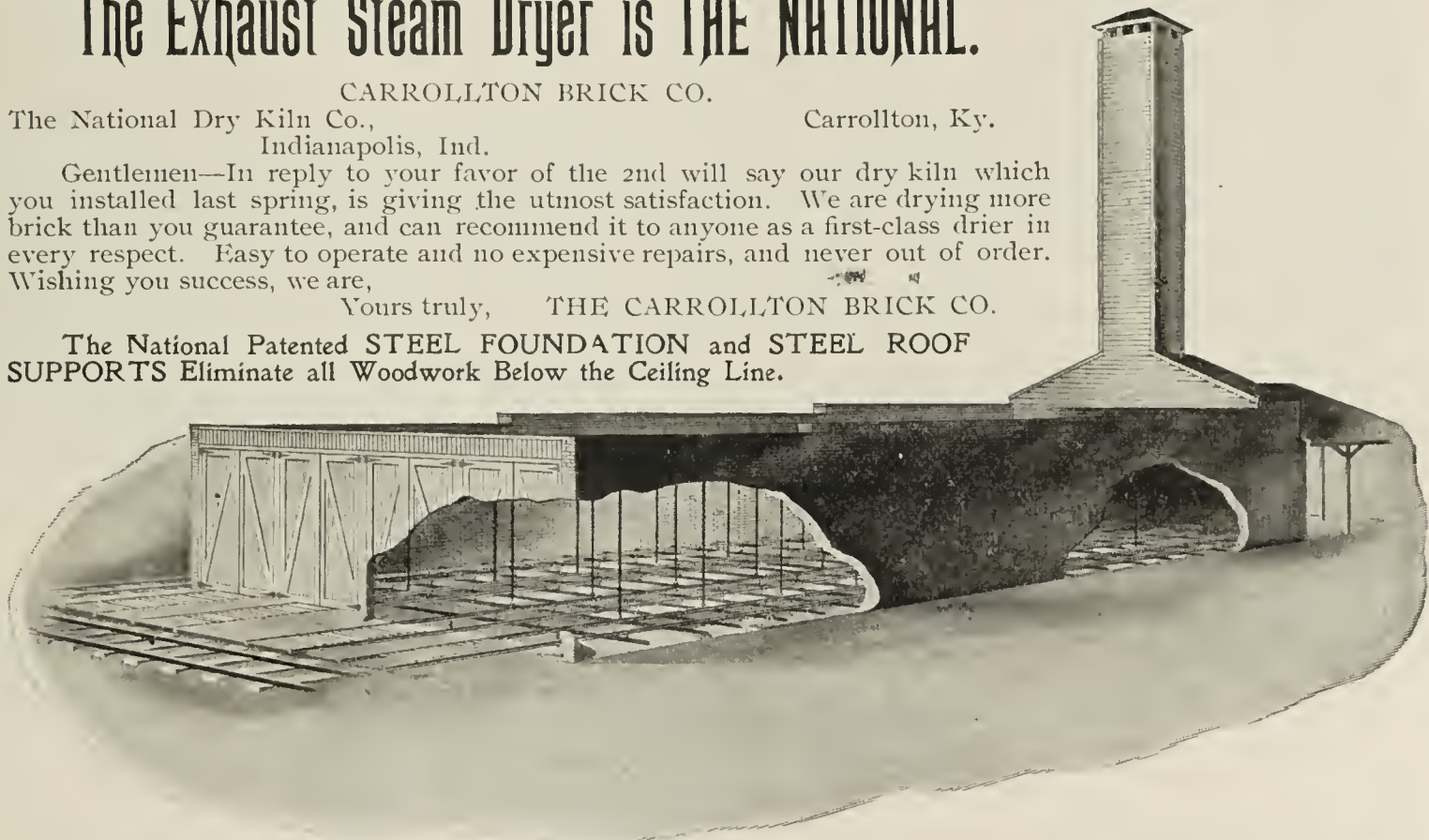
Indianapolis, Ind.

Carrollton, Ky.

Gentlemen—In reply to your favor of the 2nd will say our dry kiln which you installed last spring, is giving the utmost satisfaction. We are drying more brick than you guarantee, and can recommend it to anyone as a first-class drier in every respect. Easy to operate and no expensive repairs, and never out of order. Wishing you success, we are,

Yours truly, THE CARROLLTON BRICK CO.

The National Patented STEEL FOUNDATION and STEEL ROOF
SUPPORTS Eliminate all Woodwork Below the Ceiling Line.



We make all kinds of Cars for carrying Brick, Turntables, etc.

The National Dry Kiln Company,

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

INDIANAPOLIS, IND.

A Letter Which Will Interest Brickmakers.

GEO. C. PRUSSING, President,
A. J. WECKLER, Vice-President,
C. D. B. HOWELL, Treasurer.

WM. SCHLAKE, Purchaser,

C. B. VER NOOY, Auditor,
W. M. LEGNARD, Superintendent,
J. H. GRAY, Sales Department.

Illinois Brick Company,

Ninth Floor, Chamber of Commerce.
Phone Main 17.

Chicago, Jan. 4, 1907.

The Barron Dryer Co.,
84 La Salle St., Chicago.

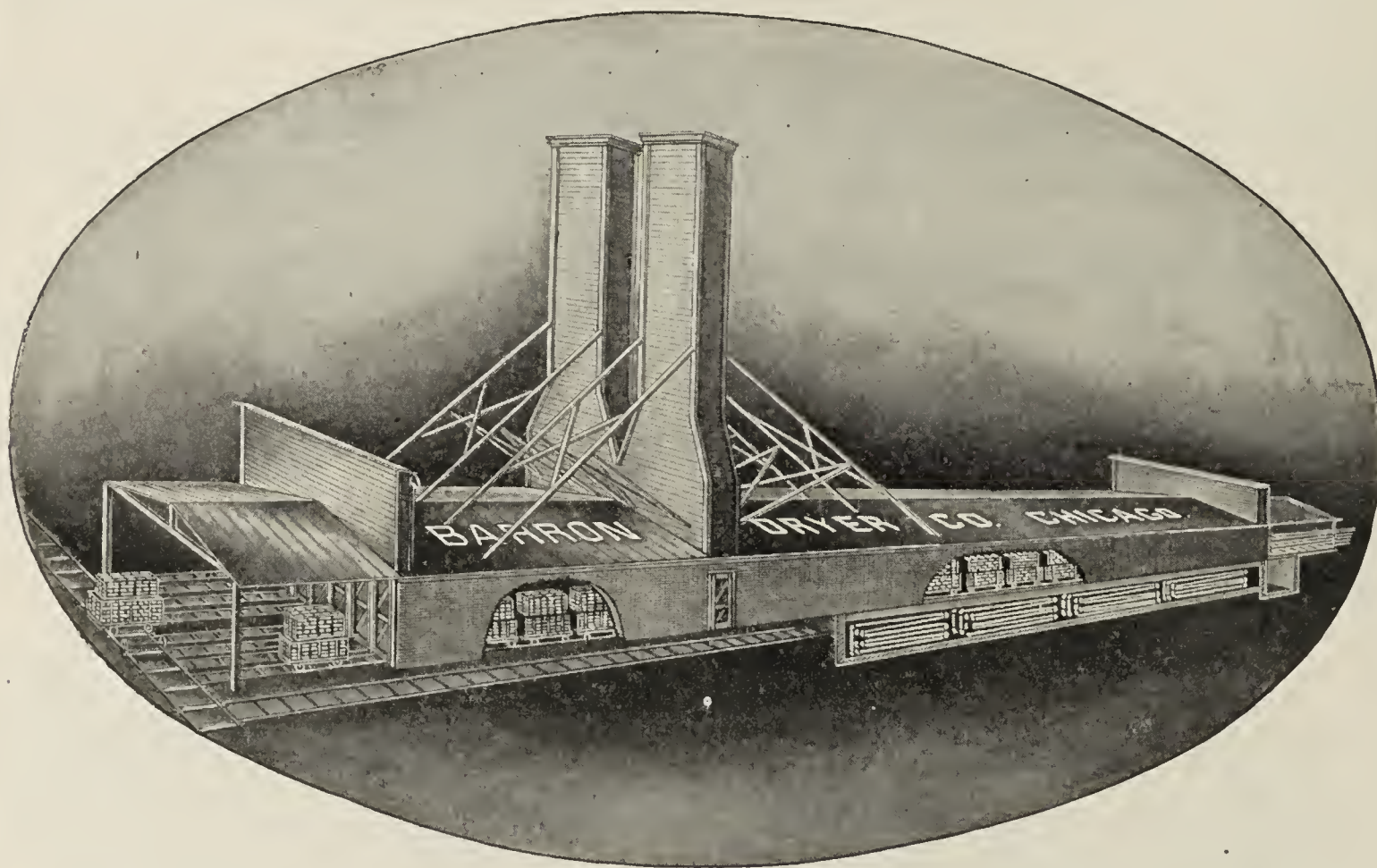
Gentlemen:

It may be of interest to you to know that we have made on our Yard 17, in 1906, 52,551,400 brick, in 2,083 1/2 working hours, and have dried them satisfactorily in your 18 track dryer.

Very truly yours,

ILLINOIS BRICK COMPANY.

(Signed) Geo. C. Prussing, President.



Barron Tender Clay Dryer, Which DOES THE WORK.

We construct and install Dryers adapted to drying all clay products with greatest perfection and economy in fuel and labor.

BARRON DRYER COMPANY,
84 La Salle St., CHICAGO, ILL.

BRICK PLANTS

EQUIPPED COMPLETE UP-TO-DATE SYSTEM

BRICK MACHINES

SOFT-MUD



WIRE-CUT
DRY-PRESS

PROCESSES



BRICK YARD SUPPLIES

BARROWS



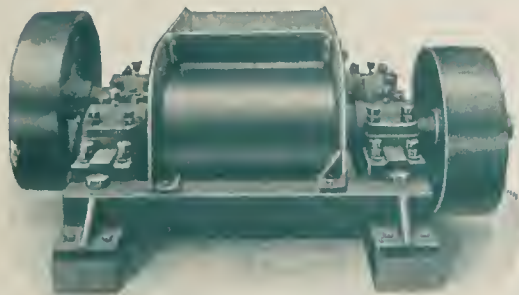
TRUCKS
CONVEYORS
ELEVATORS



LET US HANDLE YOUR CLAY - DIRECT FROM THE BANK
TO THE FINISHED PRODUCT = LABOR-SAVING THROUGHOUT



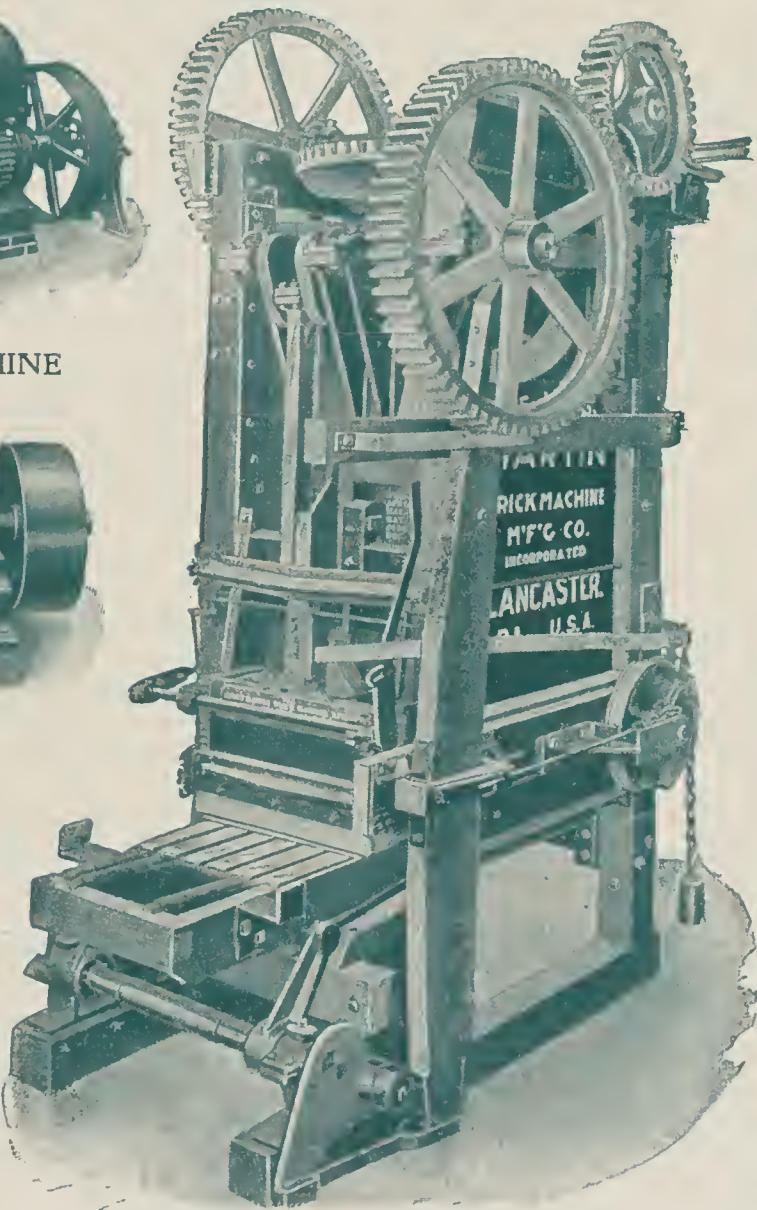
NO. 1 AUGER MACHINE



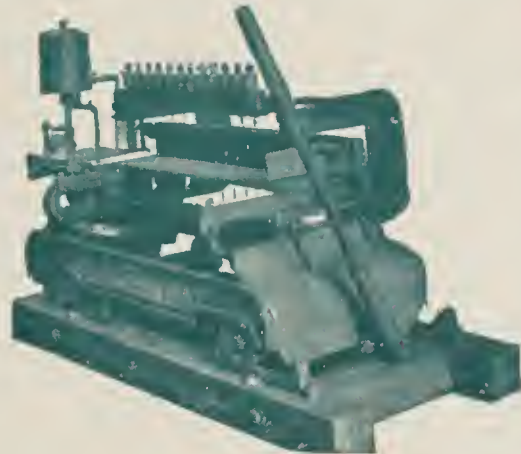
DISINTEGRATORS



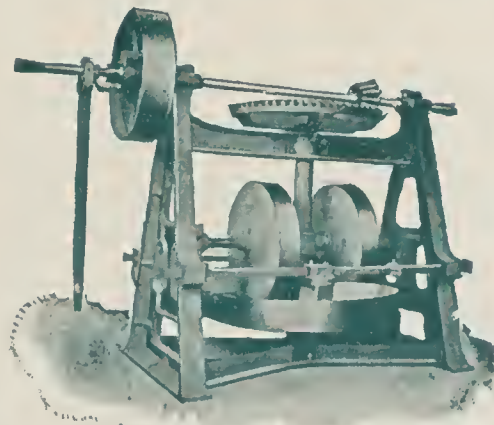
MULE TRUCK



MARTIN'S STYLE "A" BRICK MACHINE
"KING OF SOFT MUDS"



WIRE CUT TABLE



DRY OR WET PANS

REMEMBER

"WE FURNISH
EVERYTHING THE
BRICKMAKER NEEDS"

"MARTIN"
LANCASTER
PENNA. - - U.S.A.

MACHINE ROOM—MOULDED BRICK GOING INTO STEAM DRYER.



NO TRUCKS NECESSARY AND
NO CARS TO HANDLE

The Rossville Brick Co., Ros-	Capacity
ville, Staten Island, N. Y.....	100,000
The Barkwill Brick Co.,	
Cleveland, Ohio.....	60,000
Messrs. E. T. and I. Hand, Plain-	
field, N. J.....	15,000
The New York & Philadelphia	
Brick Co., Whippany, N. J....	30,000
The Farr Brick Co., Cleveland,	
Ohio.....	33,000
The Towle Brick Co., So. Brook-	
lyn (near Cleveland, Ohio.)...	30,000
The Lake View Brick Co.,	
Loraine, Ohio.....	30,000
The Collingwood Brick Co.,	
Toledo, Ohio.....	36,500

BRICK DRIED IN FROM SIX
TO TWELVE HOURS

IT'S VERY SIMPLE IN CONSTRUCTION
REQUIRES NO LARGE STACKS

Messrs. Zerrenner Bros., New	Capacity
London, Wisconsin.....	20,000
Messrs. Adams & Tomlinson,	
Somerset, Kentucky.....	20,000
Messrs. Abernethy, Lysterly & Co.,	
Bridgewater, N. C.....	15,000
The No. Bir'm Fire Brick & Pro f-	
ing Co., Birmingham, Ala.....	15,000
Messrs. Geo. Frid Co., Hamilton,	
Ontario, Canada.....	16,000
The Raritan Brick Co.,	
Matawan, New Jersey.....	26,000
The Gettysburg Brick Co.,	
Gettysburg, Pa.....	48,000
The Egg Harbor Brick Mfg. Co.,	
Egg Harbor City, N. J.....	30,000
Messrs. Bower & Best,	
Thompsonville, Conn.....	45,000
The Hillenbrand Brick Mfg. Co.,	
Louisville, Ky.....	31,000

IRON AND STEEL CONSTRUCTION
EXCEPTING ROOF

THE MARTIN "PATENT" RACK

THE MOST SATISFACTORY AND SURE
WAY OF HANDLING & DRYING BRICK

We solicit a thoro investigation into the merits of
this "system"—soft or stiff mud brick dried over
night without checking or cracking.

THE HENRY MARTIN BRICK MACHINE

Manufacture and control the sale and use of the



INTERIOR OF STEAM DRYER—ALSO SHOWING CABLE CONVEYOR.

BUILDING PRACTICALLY FIRE-PROOF
NO INSURANCE NECESSARY

Garner Brick Works, Haver-	Capacity
straw, N. Y., Mr. J. Peck, Mgr.	44,000
Messrs. Geo. F. Weaver Sons Co.,	
Dearfield, N. Y.....	30,000
Mr. Wm. E. Fitzgerald,	
Coxsackie, N. Y.....	50,000
The Rochester German Brick &	
Tile Co., Rochester, N. Y.....	40,000
The Queens County Brick Mfg.	
Co., Farmingdale, L. I.....	40,000
The Standard Brick Co.,	
Newark, N. J.....	50,000
The Scheider Brick Co.,	
Detroit, Michigan.....	35,000
Messrs. Geo. H. Clippert & Bro.,	
Brick Co., Detroit, Mich.....	33,000
Georgia Brick Co., Athens, Ga..	25,000

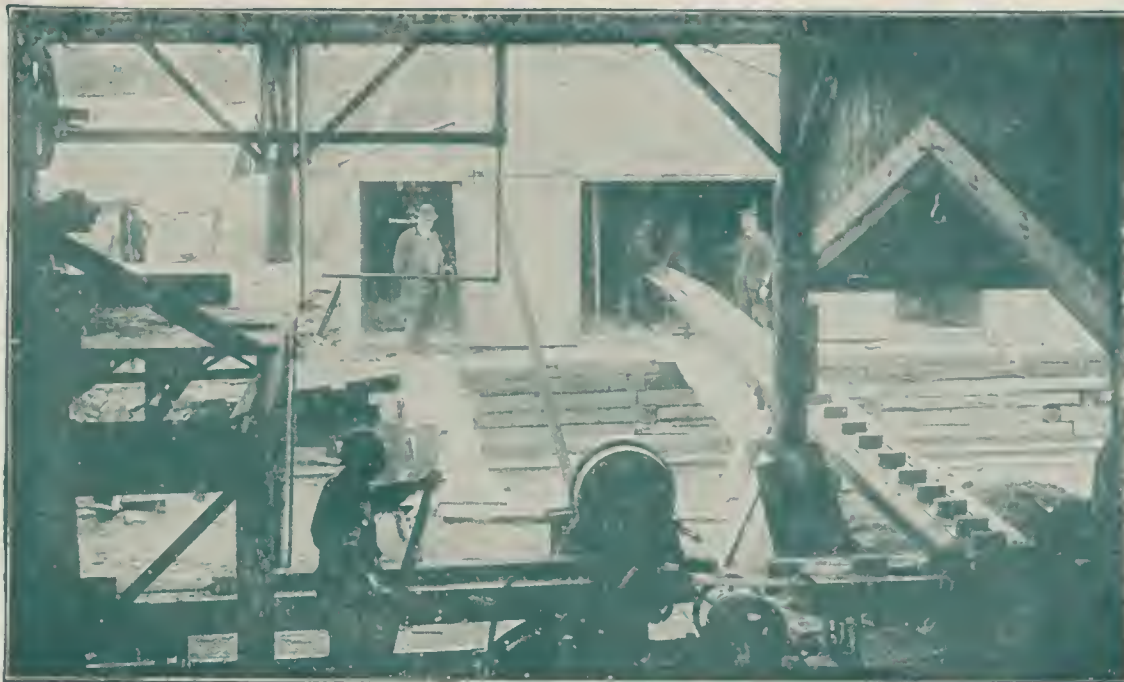
PRACTICALLY NO WEAR OR
TEAR—GOOD RESULTS

STIFF-MUD BRICK GOING INTO THE STEAM BRICK DRYER.

NO FANS—NO BLOWERS
NO LONG TUNNELS

The Bingen Brick Co., South Bethlehem, Pa.	Capacity 30,000
The Maumee Brick & Tile Co., Fort Wayne, Indiana.....	45,000
The Scanlon Brick Co., Cohoes, New York.....	40,000
Messrs. Washburn Bros. Co., Glasco, N. Y.....	100,000
The North Phila. Brick Works, Wm. Kelly, Philadelphia, Pa.	70,000
Messrs. H. C. Carroll & Sons, 58th and Girard Ave. Phila. Pa.	30,000
Est. of Samuel Huhn, 33d and Dickinson Sts., Phila, Pa.	30,000
Mr. James Florey, East Dowingtown, Pa.....	40,000

WE UTILIZE THE EXHAUST
STEAM ENGINE



PIPE STEAM BRICK DRYER

PATENTED

FEBRUARY 22d, 1898—No. 599,509
OCTOBER 10th, 1905—No. 95,520
NOVEMBER 14th, 1905—No. 804,489

Printed herewith are the well known firms using this latest improved "Martin System" of handling and drying either stiff or soft mud brick.

MFG. CO., LANCASTER, PENNA., U. S. A.

"Martin" Patent System Rack Pipe Steam Brick Dryer

BENEFITS OF OPEN AIR DRYING UTILIZED IN THIS SYSTEM

The Union Brick Co., Shamokin, Pa.....	Capacity 30,000
The Globe Real Estate Co., Scranton, Pa.....	25,000
Messrs. Grim Bros., Allentown, Pa.....	30,000
Mr. T. Cooper Ramsay, Delta, York County, Pa.....	15,000
The Chickies Brick Works, Chickies (near Lancaster, Pa.)	15,000
The Spring Garden Brick Mfg. Co., York, Pa.....	30,000
The Wilmington Brick Co., Wilmington, Delaware.....	30,000
The Eastern Brick Co., H. Smith & Sons, Baltimore, Md.....	40,000
The Potee Brick Co., Baltimore, Md.....	35,000
Messrs. Brigham Bros., Kingston, N. Y.....	100,000

THE STEEL PALLETS AND STEAM
PIPE WILL LAST A LIFETIME

NO ENGINES OR ENGINEERS
REQUIRED AT NIGHT.

The Steelton & Harrisburg Brick Co., Steelton, Pa.....	Capacity 35,000
Mr. W. H. Carbaugh, New Oxford, Pa.....	12,000
Mr. W. B. Garrabrants, Berkeley Heights, N. J.....	15,000
New England Brick Co., Boston, Mass.....	50,000
Leiby & Flurie, New Cumberland, Pa.....	15,000
People's Brick Corporation, Lansdowne, Md.....	33,000
Wm. Convey, Philadelphia, Pa.	45,000
Schmitt Brick Co., Columbus, O.	30,000
Messrs. Fields & Co., Chester, Pa.	30,000
Mr. Jacob Pontz, Lancaster, Pa.	20,000
Mr. Joseph Metz, Havana, Cuba.	20,000

THE CABLE CONVEYOR WILL
HANDLE THE BRICK



THE DRIED BRICK COMING FROM THE DRYER TO KILNS.

BRICK MACHINERY

THAT WILL STAND HARD WORK

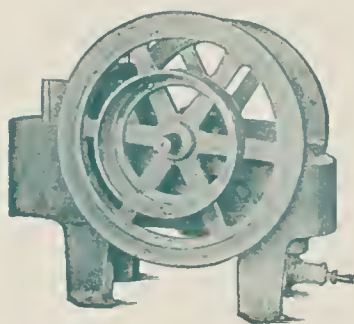
MARTIN'S STYLE "P"



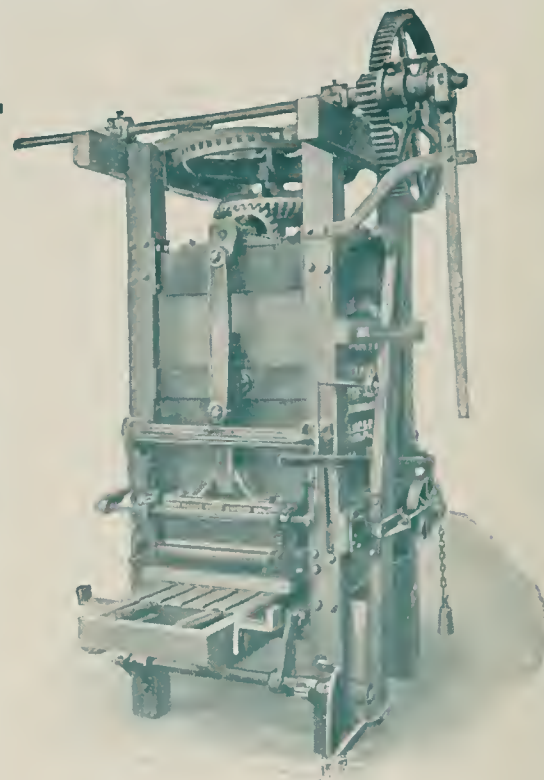
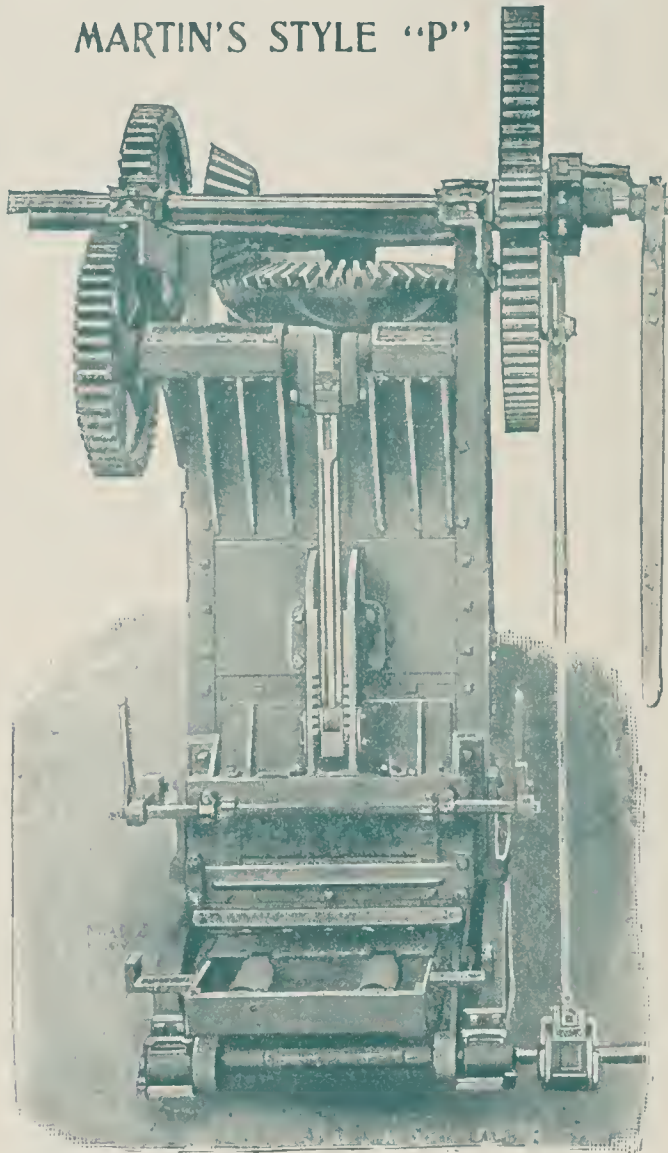
ANIMAL POWER MACHINE



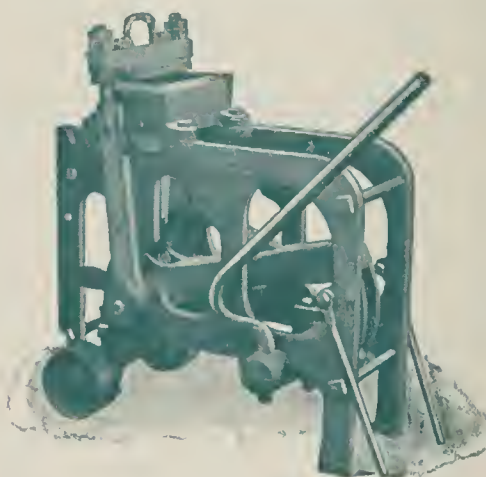
BRICK MOULDS



ROCK CRUSHERS



STYLE "B" BRICK MACHINE



HAND REPRESSES

LET US SHOW YOU FIGURES THAT WILL INTEREST YOU?
DURABILITY—ECONOMY—SATISFACTION—ARE THE POINTS.

SANDERS
GRANULATORS
PUG MILLS
DRYER CARS
BARROWS



& TRUCKS
EVERYTHING
BUILT FOR
HARD USAGE



BRICK DRYERS
CLAY CARS
KILN
CASTINGS



OUR LINE
IS THE
COMPLETE
LINE

THE HENRY MARTIN BRICK MACHINE MFG. CO., Inc.

CLAY WORKING ENGINEERS — AND MACHINERY EXPERTS

LANCASTER, PA., U. S. A.

The RICHARDSON-LOVEJOY ENGINEERING CO.,

Consulting Engineers and Factory Architects.

1534 North High St.,

COLUMBUS, OHIO.



ENGINEERING.

Geological Examination of Properties; Surveying and Mapping; Investigation of Manufacturing Propositions; Designing of Plants; Driers for Any Material; Kilns of All Types; Faults of Manufacture Corrected; Modernizing for More Economical Operation.

TESTING MATERIALS FOR CLAY, LIME AND CEMENT INDUSTRIES.

Preliminary Practical Tests Showing Value of Clay for Any Purpose; Chemical Analysis; Refractory Tests; Cement Testing.

TESTING AND CONTROLLING APPARATUS,

Thermometers, Pyrometers, Hygrometers, Anemometers, Draft Gages, Recording Apparatus, Power Plant Specialties, Fuel Testing and Gas Analysis Apparatus.

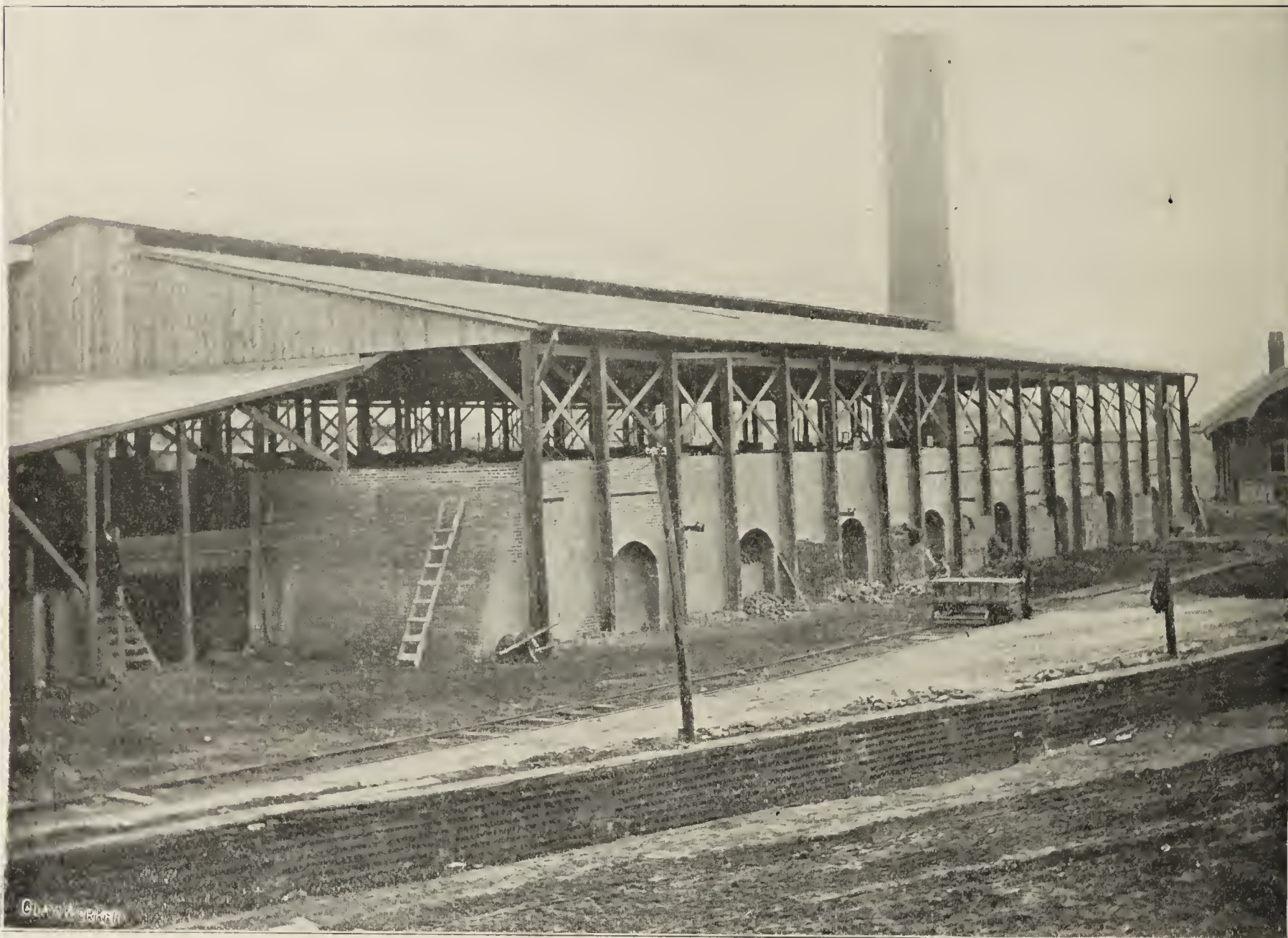
MECHANICAL DEVICES.

Special Labor Saving Devices; Moulds and Dies; Improved Clay Preparing Machinery.

The cost of our services is insignificant compared with the returns from an Economical Construction and Economical Operation.

Send for "Brick Works Engineering;" "Brick Kilns;" "Testing and Controlling Apparatus."

The Youngren Gas-Fired Continuous Kiln.



Delegates to the Convention of the N. B. M. A. at St. Louis who are interested in the economical burning of paving brick should avail themselves of the opportunity to visit the plant of the Alton Paving Brick Co., within a short distance of St. Louis, where "The Youngren Gas-Fired Continuous Kiln" is being used for burning paving brick.

The Youngren Gas-Fired Continuous Kiln.

has passed the experimental stage, and is now in successful operation, burning all kinds of clay products, including COMMON BRICK, PAVING BRICK, PRESS BRICK, DRAIN TILE, ETC., with a fuel consumption not exceeding ONE-THIRD of the fuel used for similar purpose in individual kilns.

It is **ECONOMICAL,**
COMPACT,
CONVENIENT,
EASY TO OPERATE,
UNDER PERFECT CONTROL.

That this kiln is rapidly gaining in popularity is evidenced by the constantly increasing demand for it, especially by the manufacturers of the better classes of clay ware.

Among prominent manufacturers who have recently closed contracts for "**The Youngren Gas-Fired Kilns**" may be mentioned:

THE OHIO MINING AND MANUFACTURING CO.,
Shawnee, Ohio.

One 40 thousand daily capacity kiln for burning their famous "SHAWNEE BRAND" of high grade face brick, which are burnt at a temperature of 2200° F.

THE COLUMBUS AND HOCKING CLAY CONSTRUCTION CO.,
Columbus, Ohio.

One 50 thousand daily capacity kiln for burning a high grade face brick, to be erected at the new mammoth works at Greendale, Ohio. This will be the first of a series of continuous kilns at this plant, which will have an ultimate capacity of 500 thousand brick per day.

For particulars address

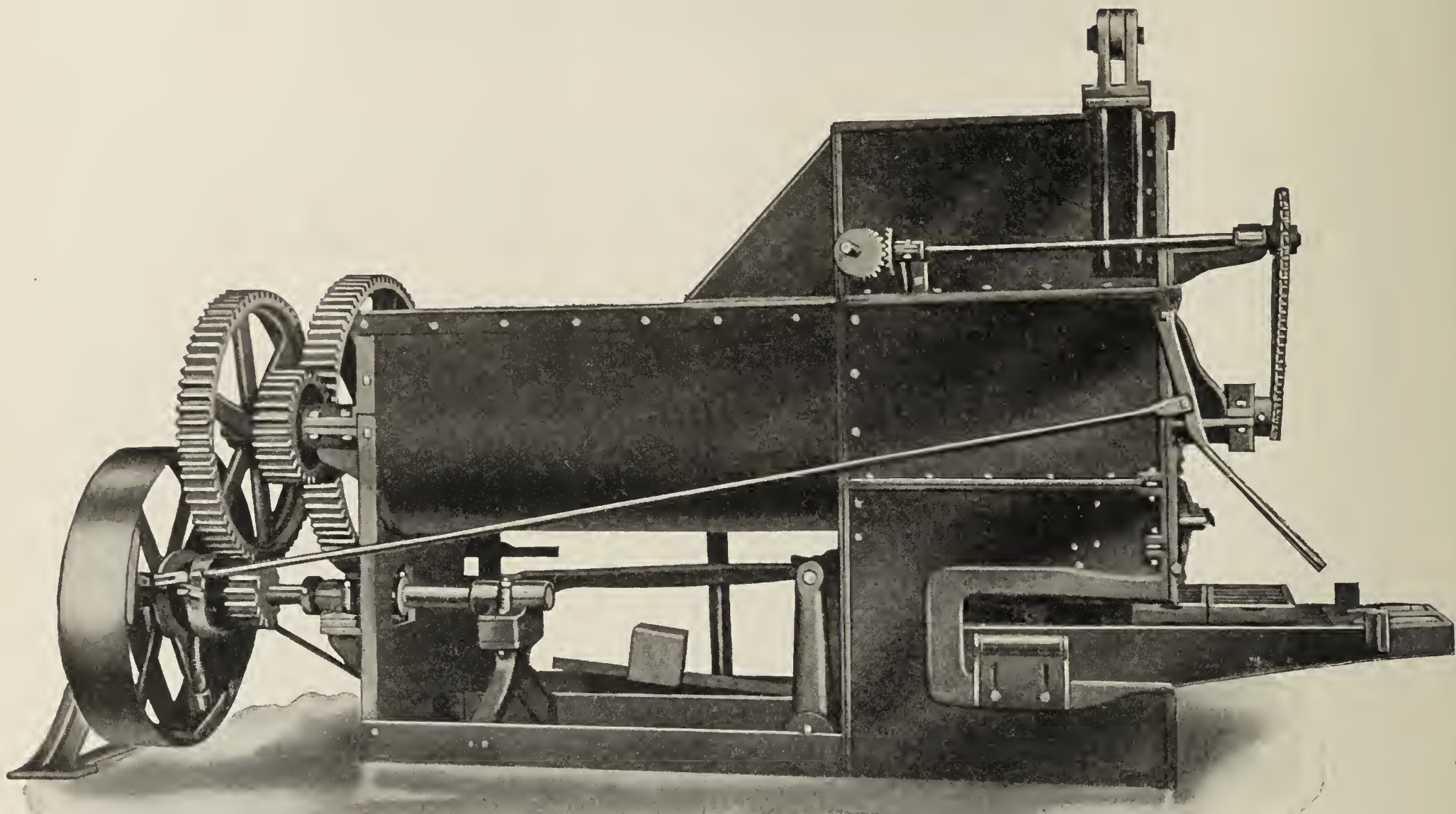
P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.

A SURE WINNER.

The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine of large capacity, strong and heavy, with vertical press. To meet this demand, we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

The frame of the machine proper consists of six heavy iron plates. The front or press-box end is made as rigid as is possible by the use of iron and steel.

The Working Parts consists of a large horizontal pug mill, made of heavy boiler steel, 10 feet long, and two $3\frac{1}{2}$ -inch square steel shafts, one of which passes through the pug mill, with fifteen grinders and wipers attached. This shaft works independently from the one that operates the mud press and makes three revolutions to one mold of brick, which insures the greatest pugging capacity of any machine built.

The second shaft works entirely on the outside of the machine, and is only used to operate the mud press and mold push out.

The estimated weight is 16,500 pounds, length of machine over all 18 feet and 3-inches, width of machine over all 8 feet and 9-inches, height of front part of pug mill 7 feet and 6-inches, height of rear part of pug mill 5 feet and 6-inches. Friction clutch pulley is 48-inches in diameter, 12-inch face. Capacity 40,000 to 50,000 brick in ten hours. Power required, from 20 to 25 H. P.

I will be at St. Louis at the National Brick Manufacturers' Association, and will be glad to tell you anything about this machine. I will wear button No. 102. Let me "show you."

JAMES W. HENSLEY,
Indianapolis, Ind., U. S. A.

List of users furnished on application. My 1907 catalog, which will describe this machinery fully, mailed free on application.

We manufacture a complete line of BRICK MACHINERY

and make a specialty of equipping yards.

REGULAR BRICK BARROWS.

The best built. Price \$6.50 each.

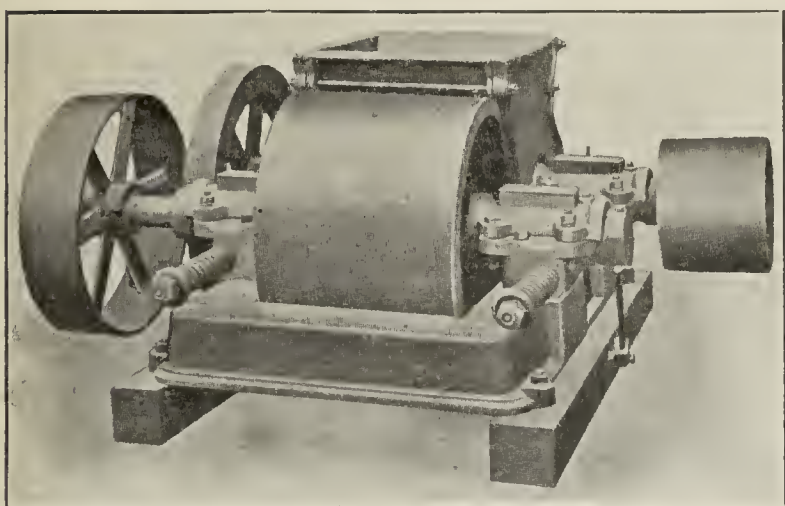
Stock size wheel, 20 inches diameter.
(If wanted 18 inches.)

There's a fine LEG.
Never can be broken.
Shoes that not do mar
the yard and that slide
easily.



Our Heavy Clay Disintegrator.

Note the springs and what is said about them below.



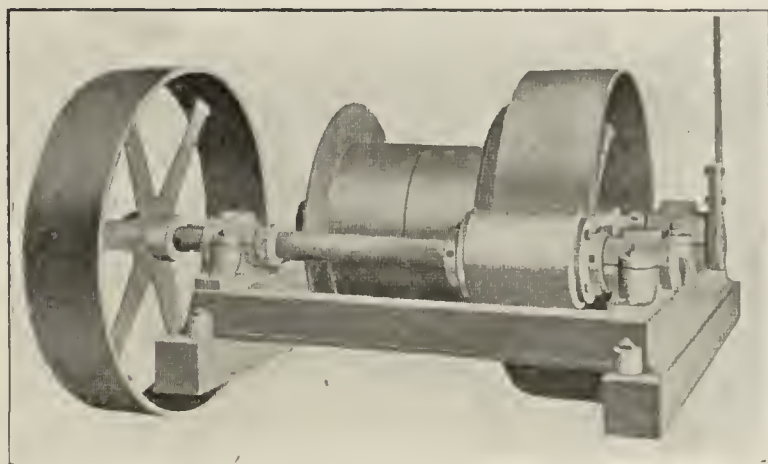
This particular disintegrator we believe to be much the best one that is built, as we intend it for large capacity, and to stand up to severe work for years. Both rolls are chilled. The journals are 10 inches in length. The small roll has a heavy balance wheel. Note its massive construction. There is a weighted scraper so hung that it automatically cleans the large roll.

RELIEF SPRINGS: After considerable experimenting we have learned just how to put relief springs on the large roll, and do it successfully. Occasionally a bolt or something else gets into a disintegrator that cannot be crushed, and it always means a smash-up. We have experimented long before adopting these, but can now guarantee them a success.

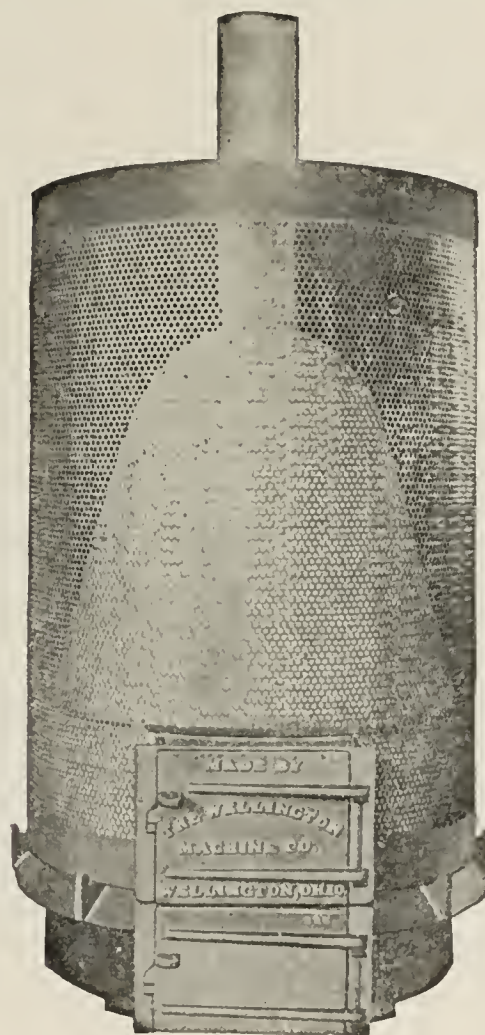
CAPACITY, 25,000 to 50,000 per day according to speed at which it is run. Pulleys fast roll 14 dia. x 10-in. speed, 700 to 800. Slow roll, 24 dia. x 6-in.; speed, 50 to 75.

1907 CATALOGUE MAILED FREE
ON APPLICATION.

Winding Drum.



Our Direct Driven Self-Contained Winding
Drum is a Labor-Saver.



Sand Dryer.

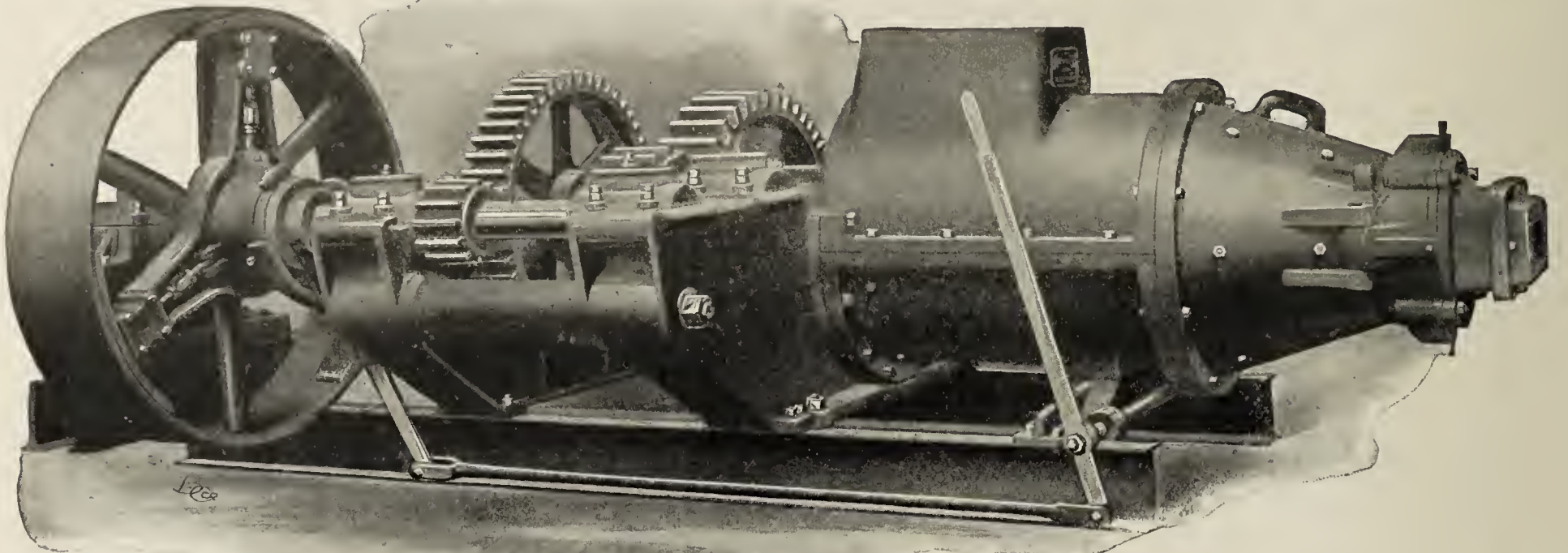
Weight, 1,100 lbs. Every brick works needs one. Diameter over all, 3 ft. 1 in. Height, 4 ft. 9 in. We will be glad to send one to any responsible party subject to ten days' trial and approval. We sell them that way and not one ever came back.

JAMES W. HENSLEY,

Successor to S. K. Fletcher.

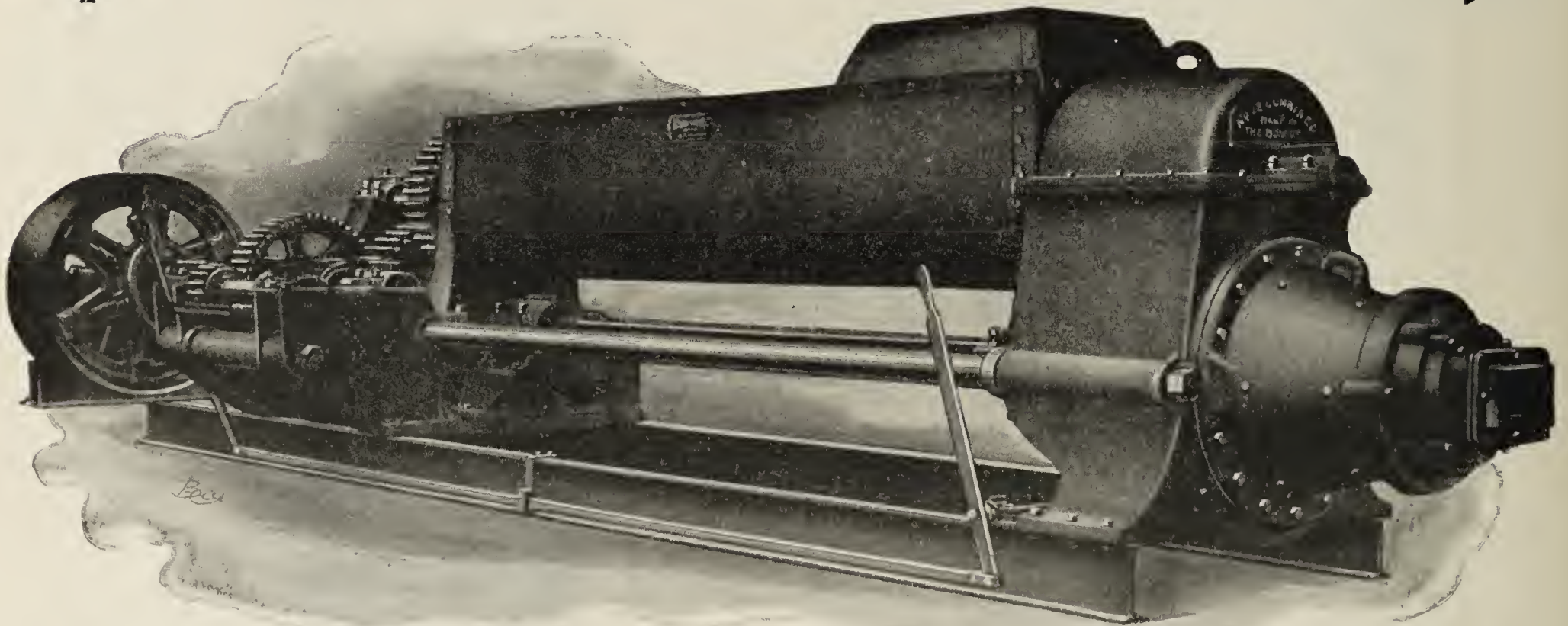
Indianapolis, Ind.

Modern Brick Machinery



No. 10 Auger Brick Machine.

50,000 to 75,000 capacity per day. Steel gears and pinions and all wearing parts get-at-able.



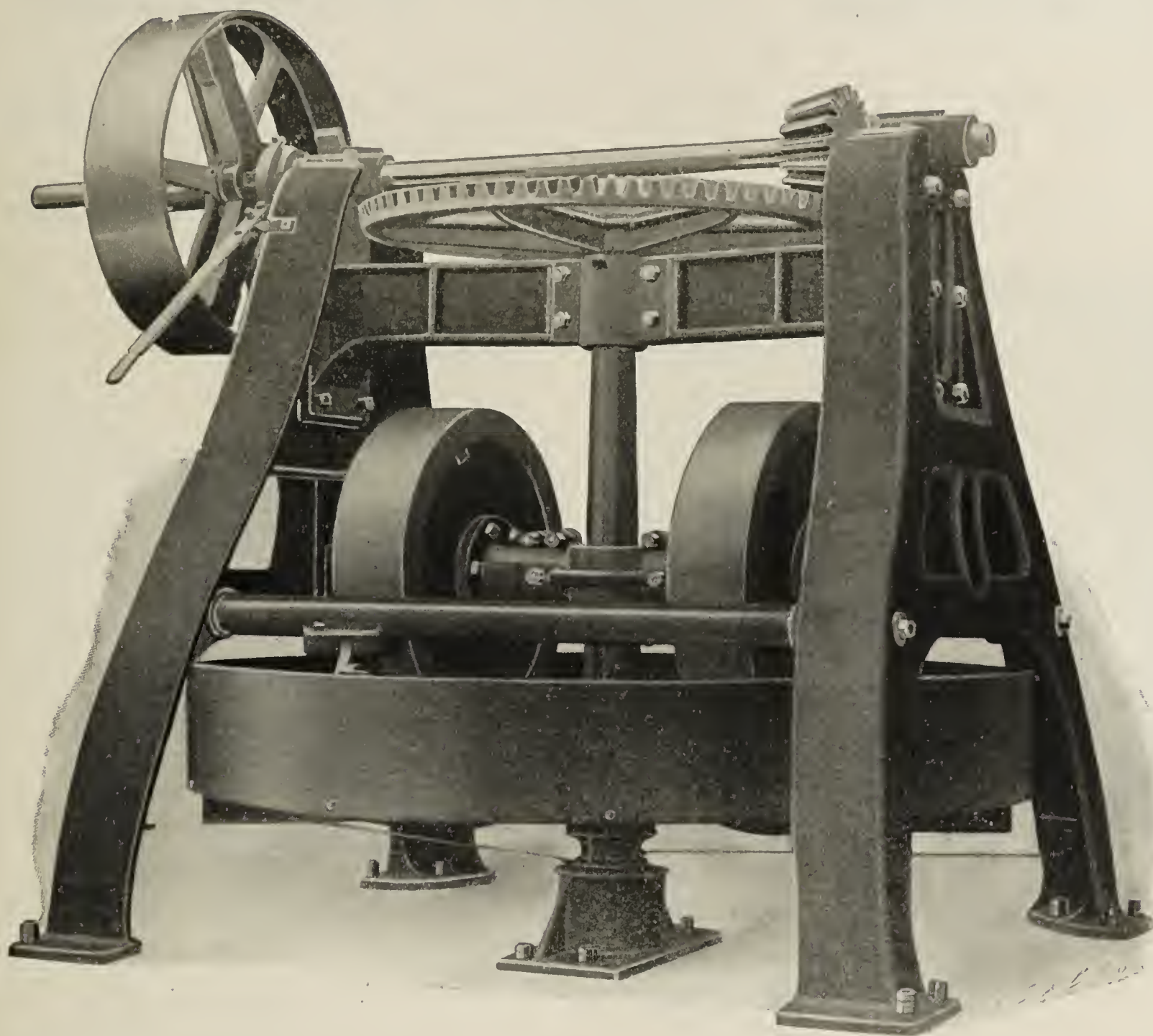
No. 12 Combined Brick Machine and Pug Mill.

All steel gearing, and very heavy construction throughout. Main thrust bearing is outside of frame and can be rebabbited without dismantling Capacity 100,000 to 125,000 per day.

THE BONNOT COMPANY, Canton, Ohio, U.S.A.

To Lessen Your TROUBLES Use Our PIANO WIRE SCREEN.

BUILT FOR SERVICE

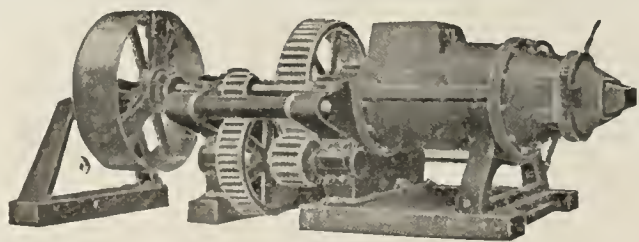


9 FT. IRON FRAME DRY PAN.

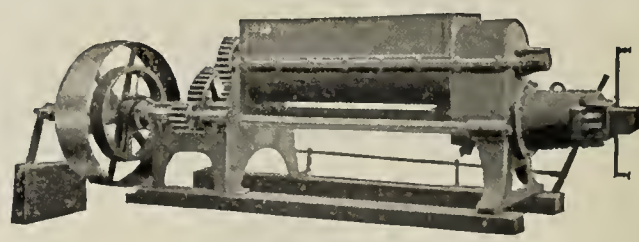
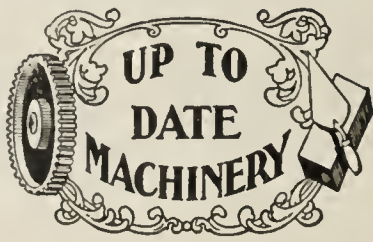
Write for Circular No. 12, just issued, showing our latest designs of brick machinery.

Leather bound memorandum book for 1907 is now ready, and free to brickmakers for the asking.

THE BONNOT COMPANY,
Canton, Ohio, U. S. A.



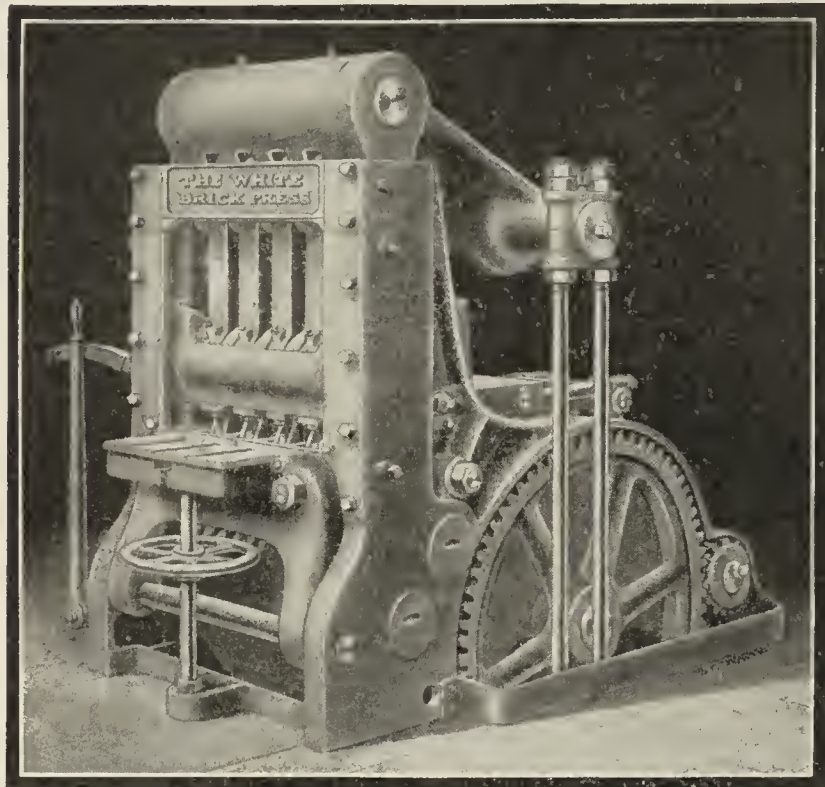
Auger Machine.



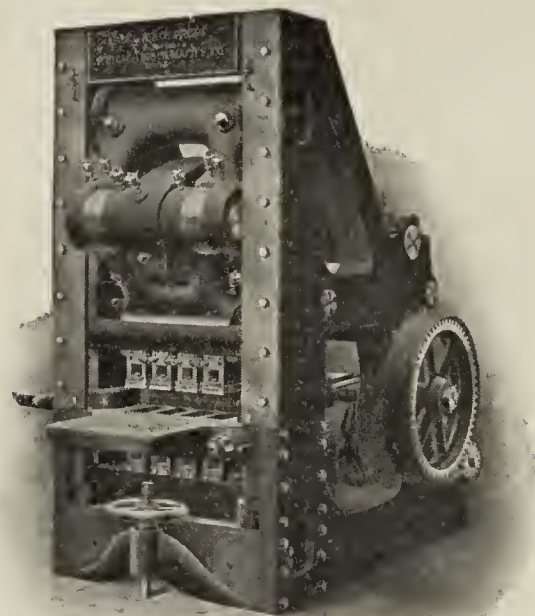
Combination Machine.

UP-TO-DATE MACHINERY

For Making all Kinds of Brick, Dry Pressed, Wire Cut, Sand Molded



New White Press.

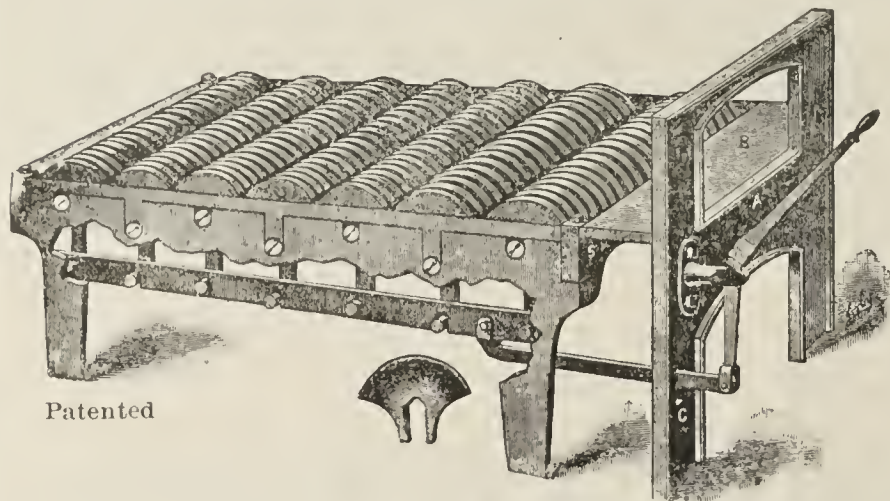


New Model Berg Press.

Full Line
of
BRICKYARD
SPECIALTIES
and
SUPPLIES.

In addition to our well known **Berg Press**, we are now bringing out our new **White Press** for Clay Brick Work. It is especially recommended for difficult and refractory clays, and for Fire Brick making. By far the most powerful Press built. Molds changed in **Seven Minutes**.

Special Catalogue sent on application.



Patented

U. S. SELF-CLEANING GRATE

In position ready for use. Part of frame cut away to show connection below.

SOMETHING NEW FOR 1907.

Rocking and Dumping Grates for Kilns.

Save Coal, Save Labor, and
do away with Checked Brick.

Send for "LECTURE ON COM-
BUSTION" by HIS SATANIC MA-
JESTY.

CHICAGO BRICK MACHINERY CO., 77 Jackson Blvd.

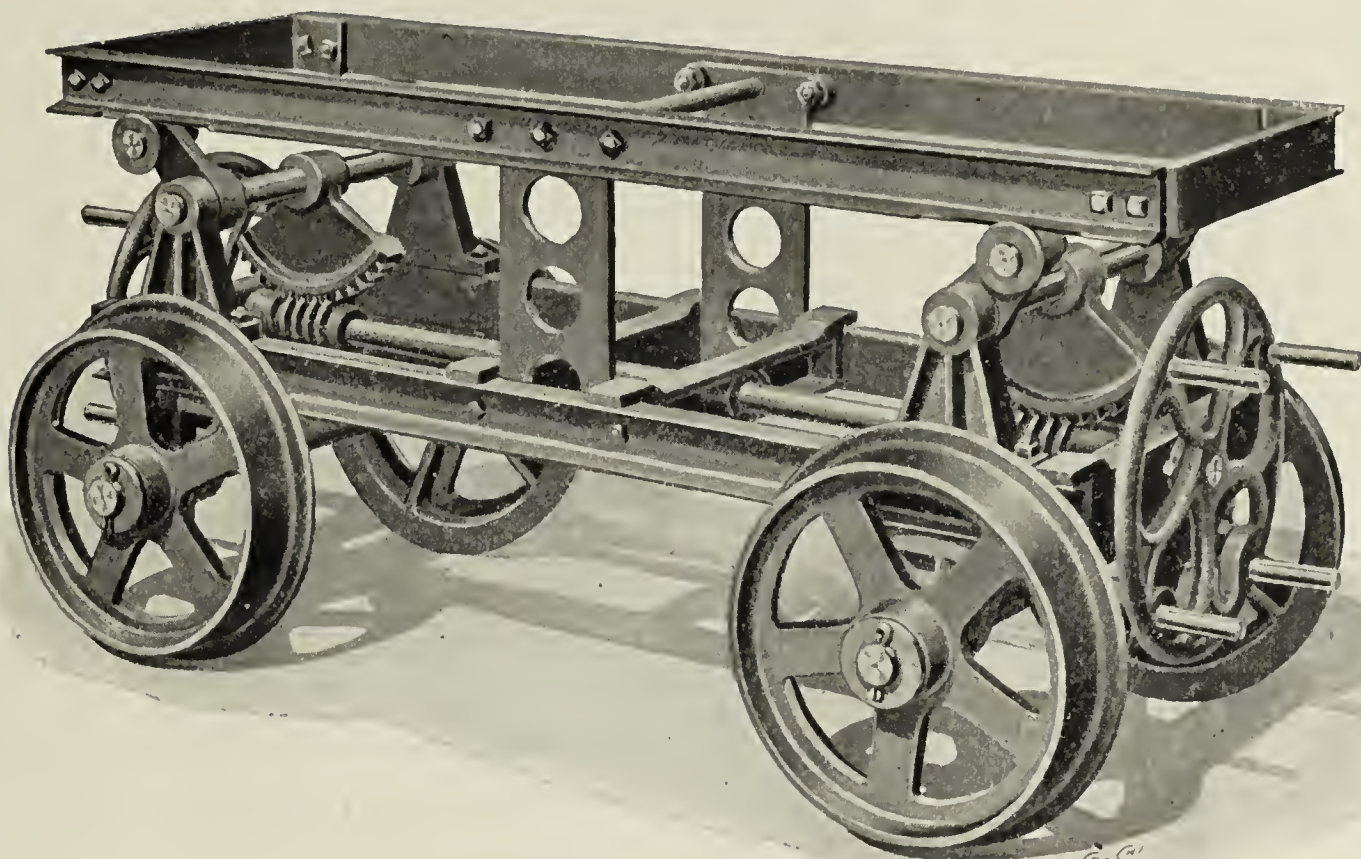
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.



THE "GUILDER."



**Elevating and Lowering Brick Car For Open Air
System of Drying.**

Strong and Serviceable. Easy to Handle. Operated from either end. All Iron and Steel. Raised and lowered by worm gear and segment. The most perfect car of its kind made. Write us in regard to this car and our open air system, and let us tell you what we can do for you.



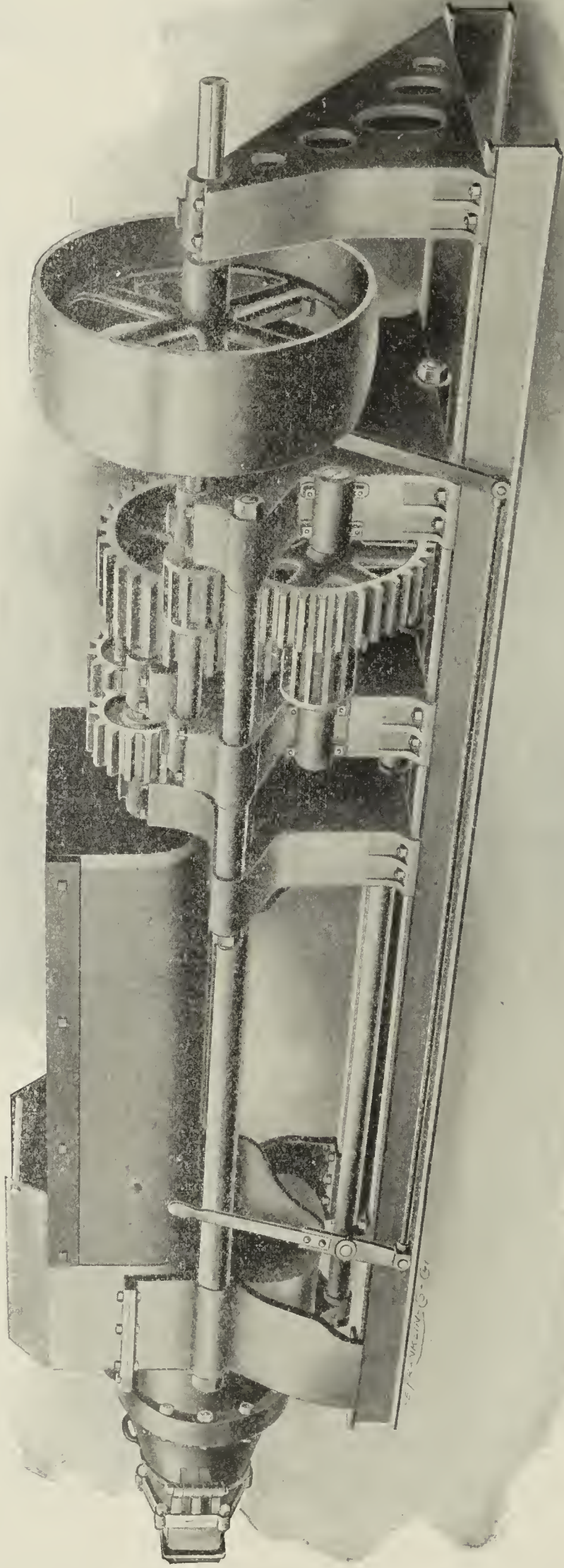
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.



The Largest and Heaviest Combined Brick Machine in the World.



FATE'S "SPECIAL" COMBINED.

Length over all 25 feet. Height 6 feet 6 inches. Width 6 feet 4 inches. Pug shell 42 inches by 10 feet. Main auger shaft 6 inch diameter. Intermediate shaft 4½ inches. Counter shaft 3½ inches. Main gear 12 inch face. Intermediate and pug gear 8½ inch face. Weight 30,000 lbs. Capacity 100,000 to 150,000 brick per day. Write for particulars.

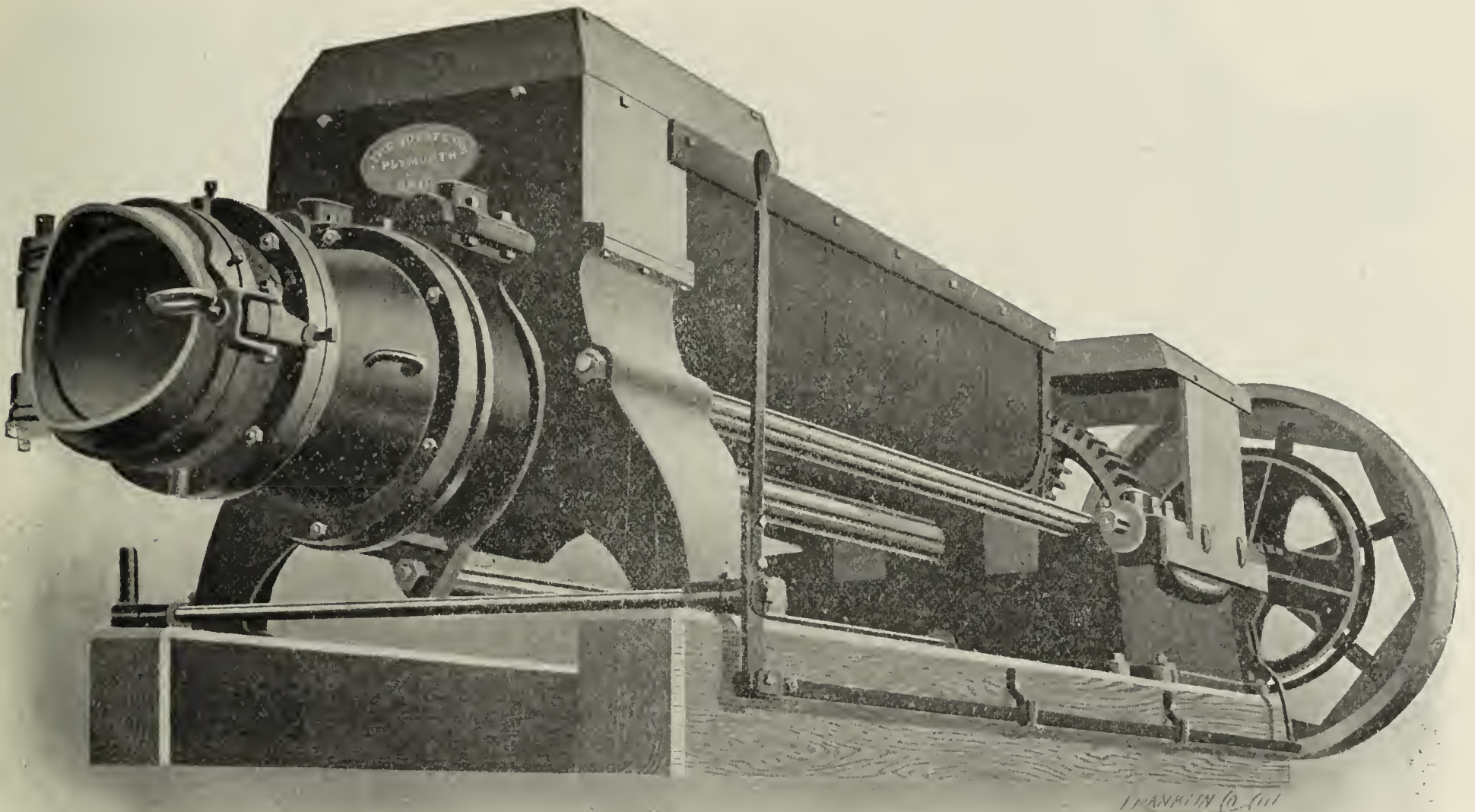


The J. D. Fate Co.

Richland County,

Plymouth, Ohio.

The Premier Combined Brick Machine.



Although now second in size in our line of Combined Machines the Premier is by no means second to any machine in the world of the same size in strength or capacity, and it still holds the high position it has won among the clayworkers by its ability to work all day, and every day, and never fail to turn out its full quota of good first class brick.

If you want a machine that will make from 60,000 to 100,000 good brick per day, and one that you can always depend upon the "Premier" is the one to buy.

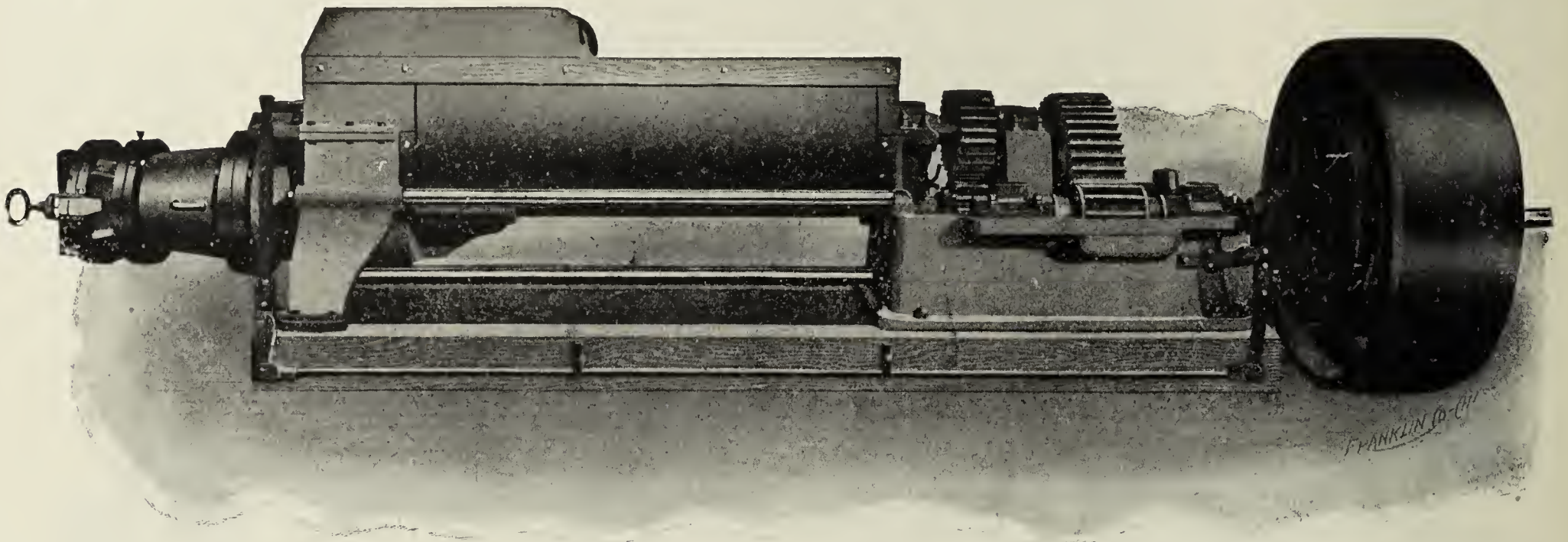


The J. D. Fate Co.

Richland County,

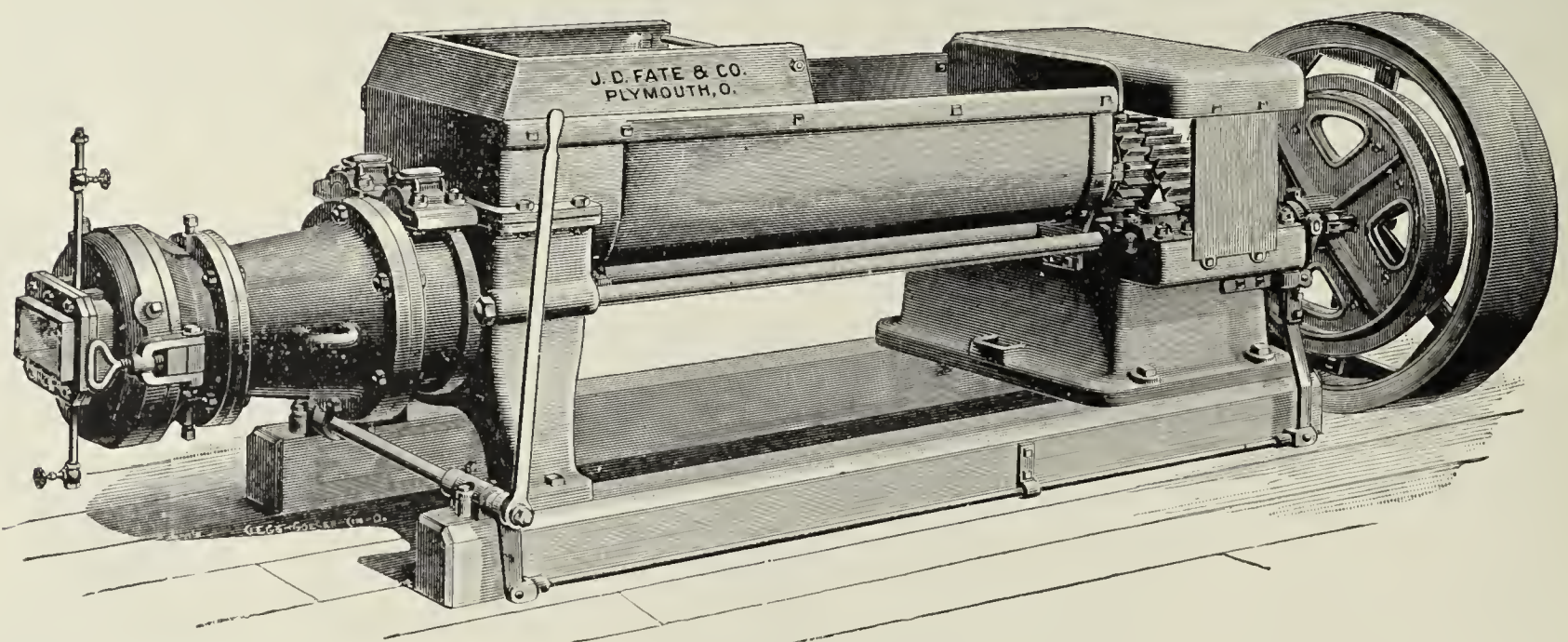
Plymouth, Ohio.

Imperial Combined Machine.



This is our middle size Combined Machine and is a favorite with the brick maker who wants to make from 30,000 to 40,000 brick per day, and more so with the tile maker who wants very large capacity in drain tile, combined with the very finest quality. Look at the cut of this machine with vertical attachment.

Hummer Combined Machine.



This was the first of our Combined Machines, and one of the best for the clayworker with a medium capacity plant, either of Brick or Tile, or both.

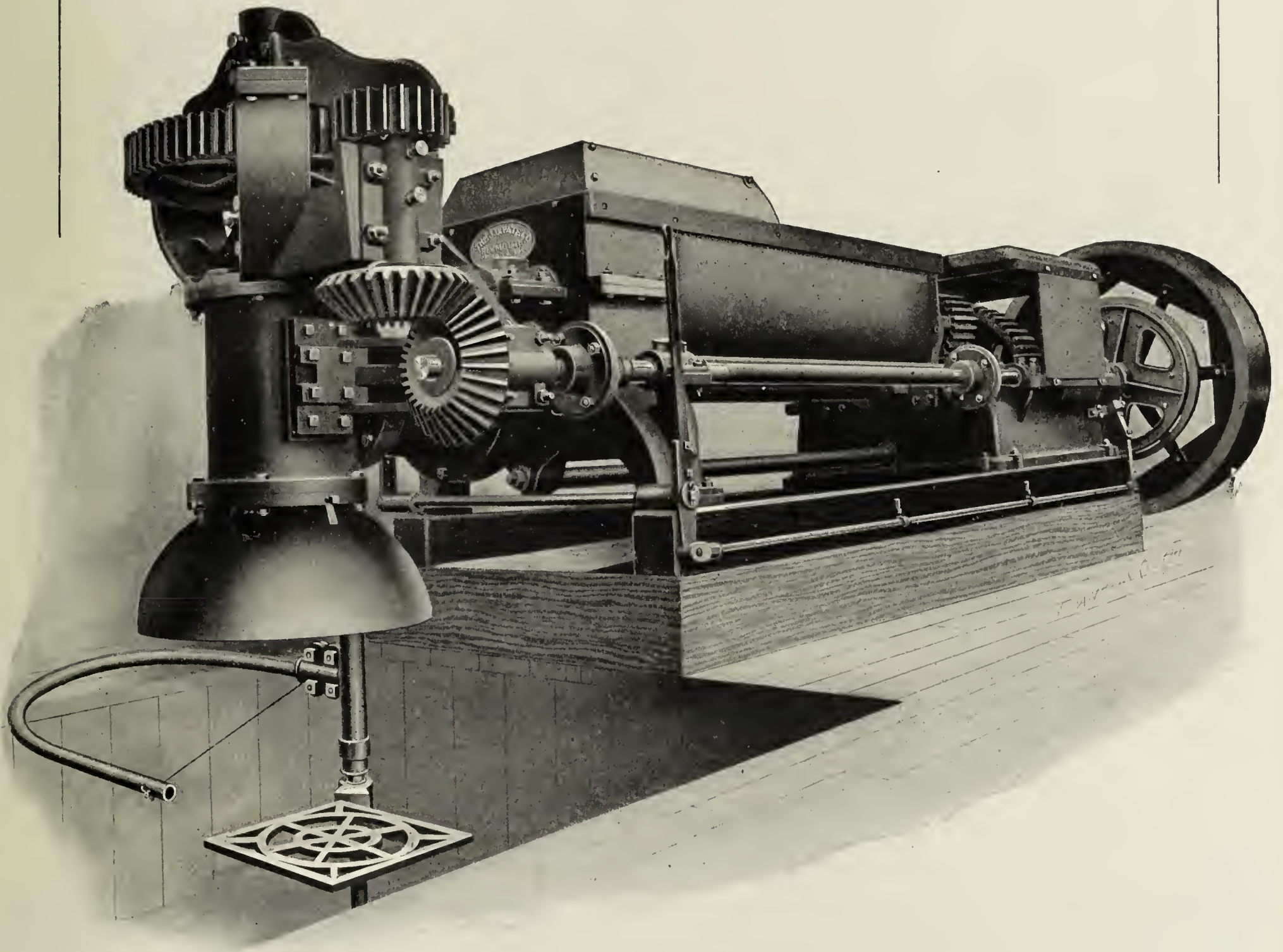
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.



Imperial Machine With Vertical for Large Tile.



If you are going to make large tile or are now making them, it will pay you to investigate this machine, for it is the best one made. It is properly proportioned and geared, is simple in its construction and operation, and is amply strong enough to stand any strain. It has all the capacity that you will want, and the tile made on it are perfect and true. This same attachment can be used in connection with our Hummer, Hummer Jr. and "D" size machines.



The J. D. Fate Co.

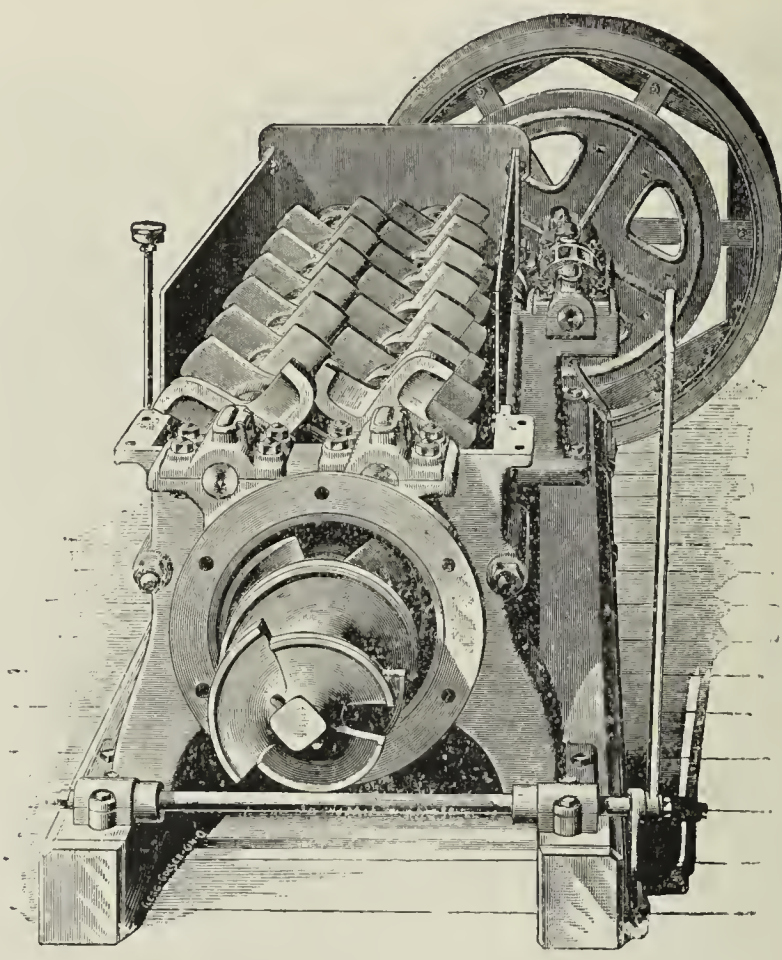
Richland County,

Plymouth, Ohio.

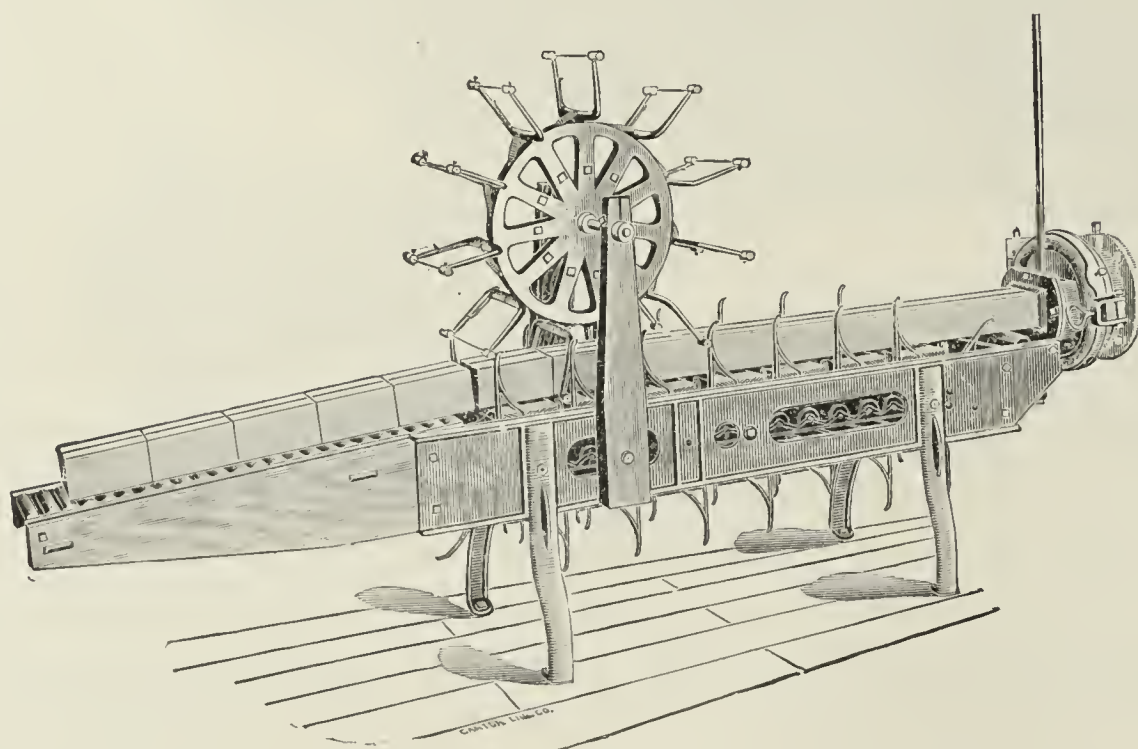
Interior View of All the Combined Machines.

Please notice the double shaft arrangement which is a feature of all our Combined Machines, and which has proven again and again that more and better pugging capacity can be obtained with six feet of a double shaft pug mill than any twelve foot single shaft pug mill ever built will give you.

If your clay requires much pugging these are the machines that will do the work.



End Cut Brick Table With Roller Delivery.



The Bensing Automatic End Cut Brick Cutter is entirely automatic, is simple, strong and easy of adjustment, and requires no attention. It is adapted for cutting all kinds of end cut brick. Its capacity is unlimited, and the machine is yet to be designed that will make brick faster than this table will cut them, and cut them perfectly.

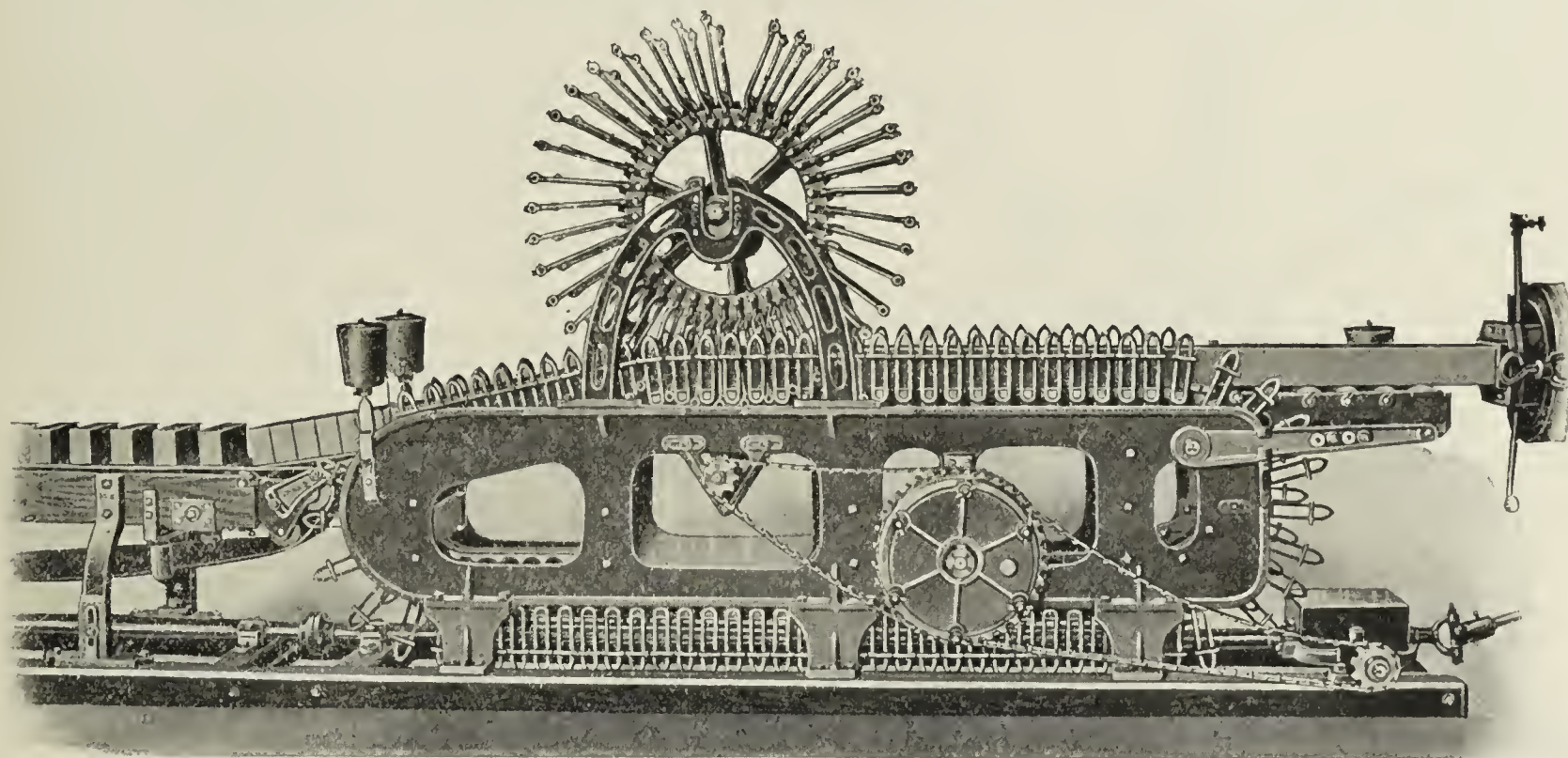
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.

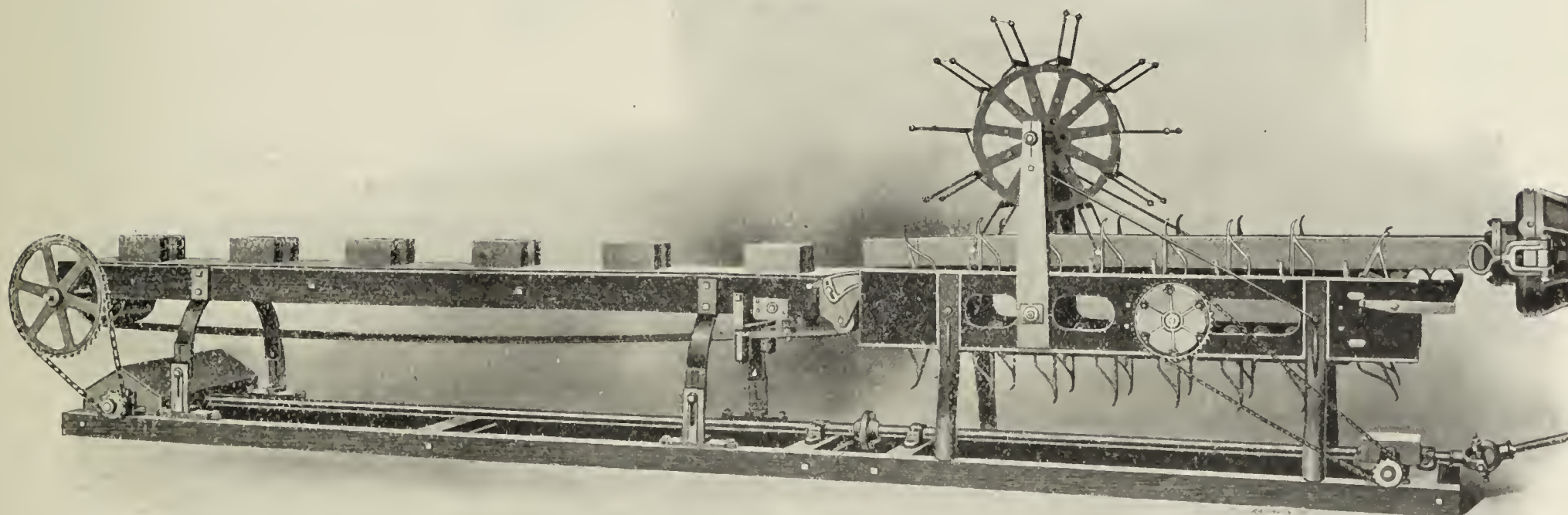


Bensing's Automatic Side Cut Brick Cutter.



The only absolute down cut machine on the market. Never cuts a waste brick or stub end, and every brick square and true with the face like repressed brick.

Bensing's End Cut Brick Cutter With Belt Delivery.



The Best End Cut Brick Cutter in the world, and especially adapted for cutting Hollow End Cut Brick.

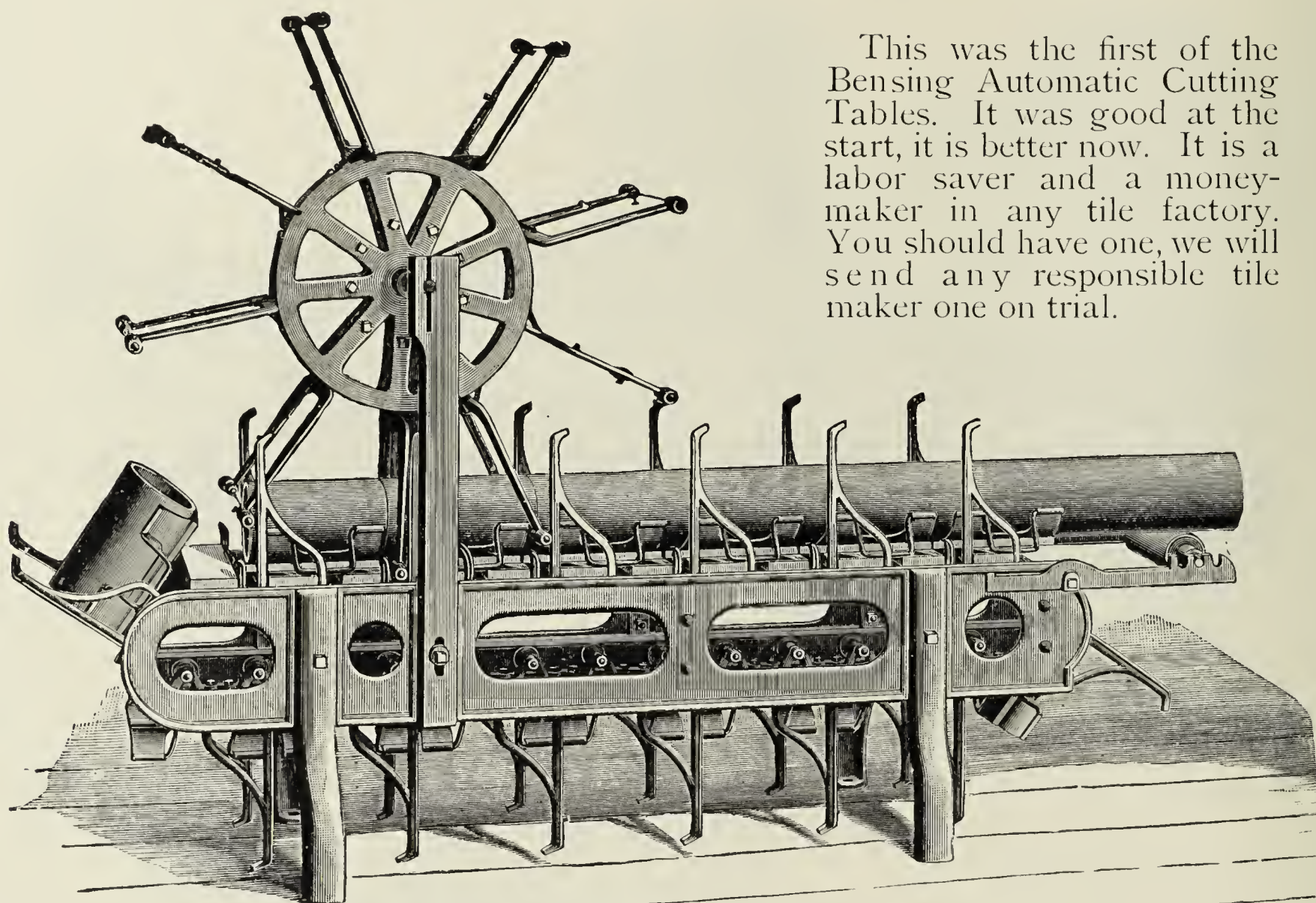


The J. D. Fate Co.

Richland County,

Plymouth, Ohio.

Bensing's Automatic Drain Tile Cutter.



This was the first of the Bensing Automatic Cutting Tables. It was good at the start, it is better now. It is a labor saver and a money-maker in any tile factory. You should have one, we will send any responsible tile maker one on trial.

We want you to consider carefully the Combined Machine and Automatic Tables shown on the preceding pages if you are thinking of buying anything of this kind, for they will surely fill all your requirements. There are many good, logical reasons why you should buy one of these machines or tables when you need a new one as there are a great number of "points" in which these machines excel all others. Every one of these "points" are important to the user, and every one of them helps to make the "Premier" line of Clay Machines and Bensing's Cutters the most satisfactory and longest lived machines of their kind yet designed. We make nothing but clayworking machinery, and our whole time, thought and energy goes in this one line, and there are no other machines to divide or distract our attention—it all goes to this one thing—Clayworking Machinery.

We don't ask you to buy any of our Machines or Tables just because we say they are better than others, but we do ask that you give us an opportunity to prove up the claims we make for our line of machinery.

If you are going to be in the market for anything in the way of a machine or table, write us for particulars, prices and "points."

DRYING BRICK WITHOUT A DRYER

How many men do you use taking off bricks?

How many dryer and car men?

How many tossers in the kiln?

How much time do you lose switching cars in and out of kilns?

How many times are the machines stopped waiting for cars?

How much is lost because there are no dry bricks ready for kilns?

How many bricks are lost each year in transit through dryer?

How many cars of brick are wrecked each year?

How much does it cost you to keep up the dryer, dryer cars, tracks, etc.?

How much money have you invested in this and what is the depreciation?

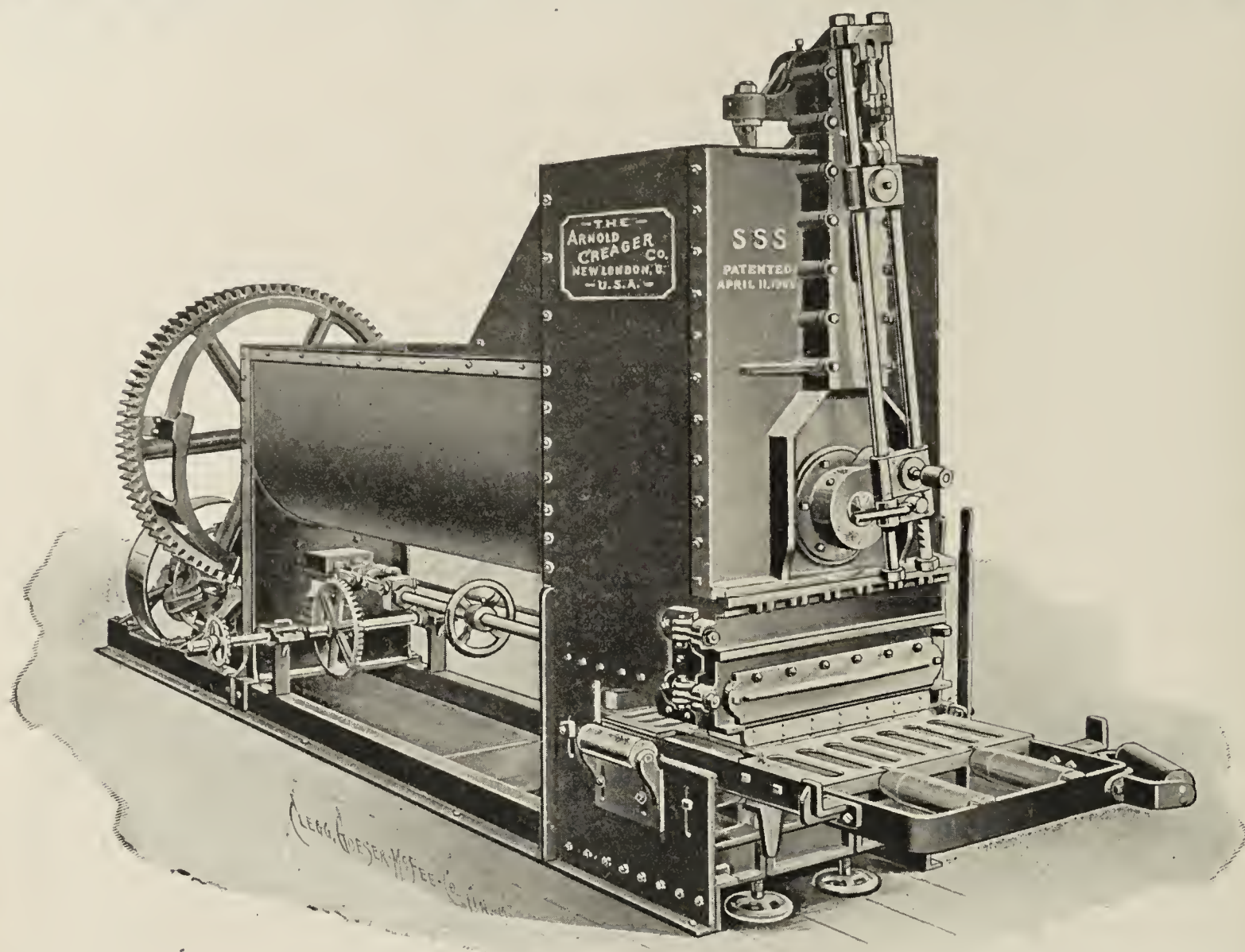
HOW MUCH WILL YOU SAVE IF ALL THE
BRICKS THE MACHINE CAN MAKE GO INTO
THE KILN, WITHOUT CARS, WITHOUT LA-
BOR, WITHOUT DRYERS, WITHOUT TRANS-
FER CARS, WITHOUT TRACKS, WITHOUT
STOPS, WITHOUT DELAYS?

Now is a good time to figure it up, and when you have figured it,
let us tell you how to save the total sum and at
the same time get better bricks.

The Scott Kiln=Drying Company

1400 Russell Street, Detroit, Mich.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1906—Grand-Automatic" address

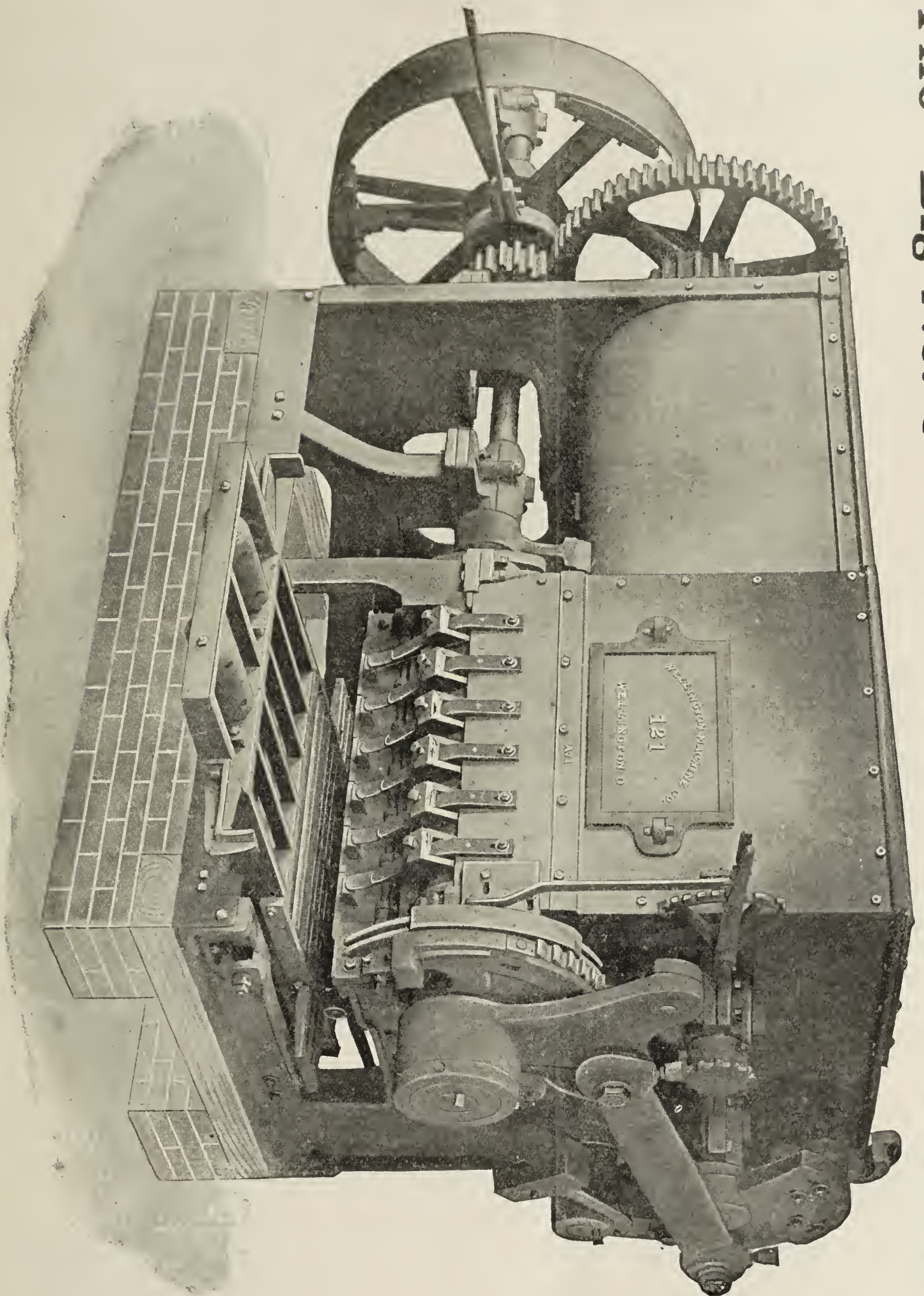
The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

CINCINNATI, OHIO.

CABLE "AUTOMATIC".

OVER
235
"Monarch"
Brick
Machines
in use
==
OVER
565
"Quaker"
Machines
in use.
==
WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

ROLLER-BEARING
BARROWS.

The Wellington Machine Co.,

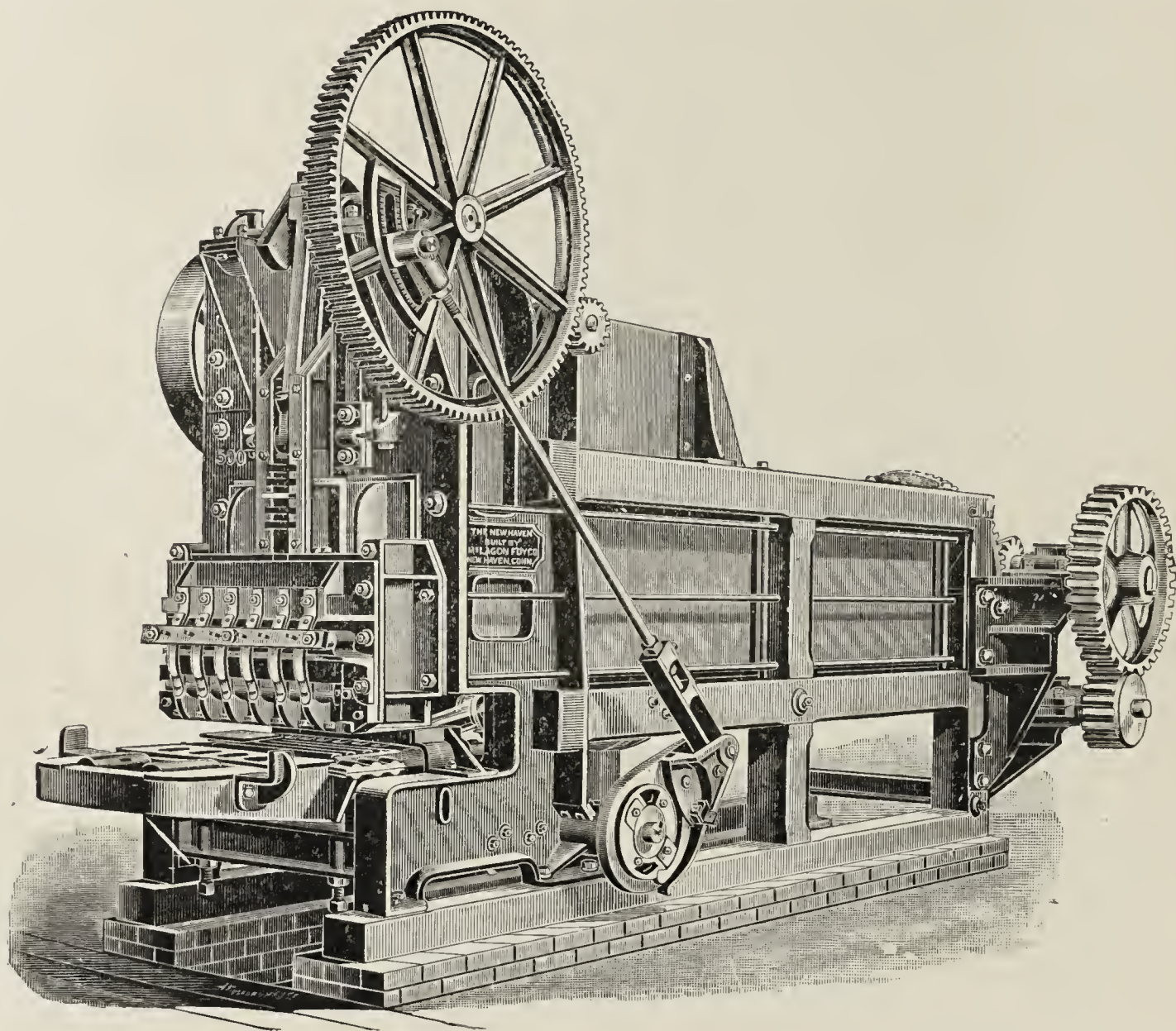
WELLINGTON,

OHIO.

Send for Catalogue.

Endurance the Crowning Quality

The New Haven Brick Machines are built for service. Their history is a record of unusual success. In their construction every wise economy is applied, and cheapness is scrupulously avoided.



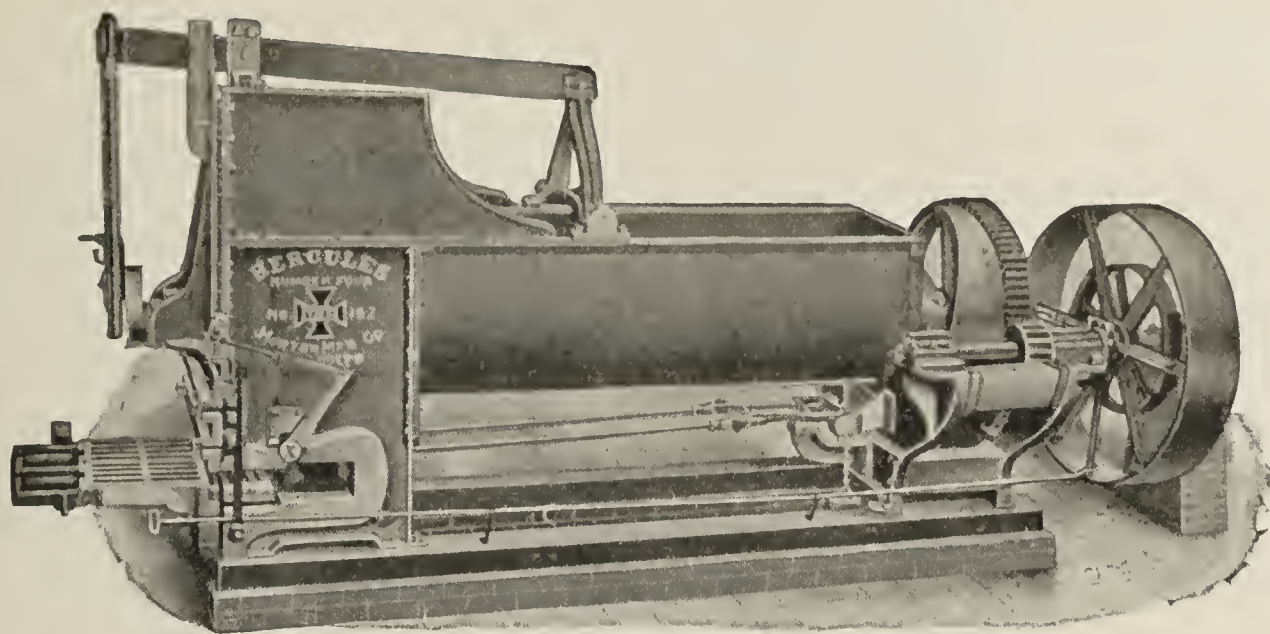
The "New Haven" Horizontal Brick Machine.

The New Haven Horizontal Brick Machine is the strongest Soft Clay Brick Machine in the world. The machine is adapted to work any clay, and is suitable for any yard, large or small, that uses steam for motive power. The brick made on it are solid and square, having smooth surfaces and sharp corners. For quantity and quality of production we challenge comparison with any machine built.

The EASTERN MACHINERY CO.,

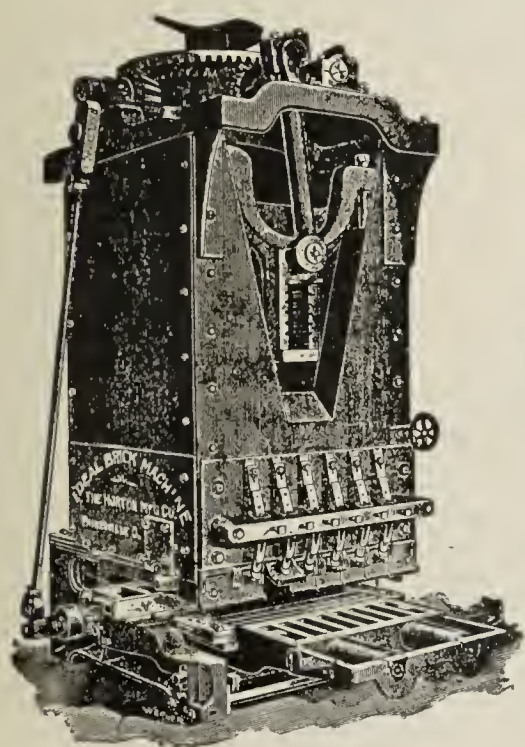
 **NEW HAVEN, CONN.**

Do Not Miss This Opportunity.

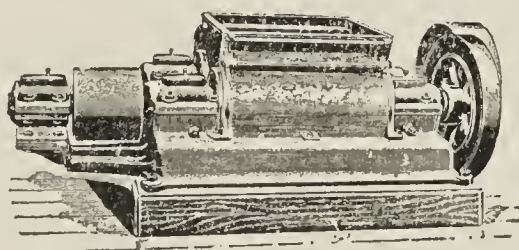


Hercules No. 4 Brick Machine.

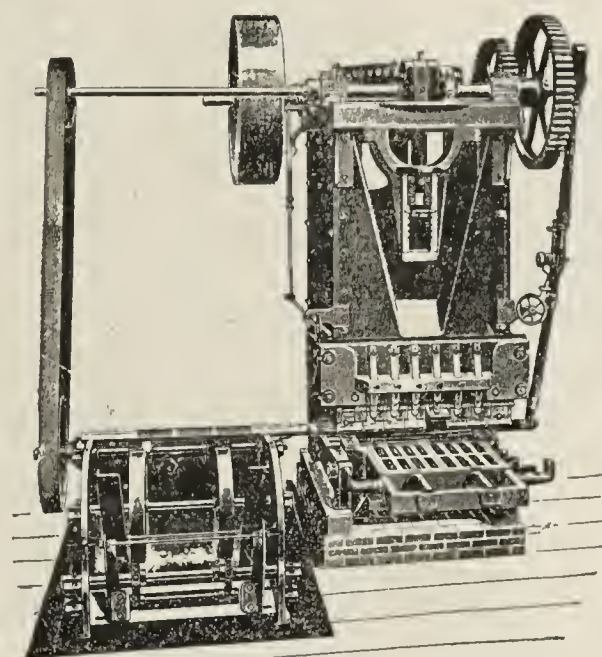
Let Us Have Your Inquiries Today.



Ideal Horse Power.

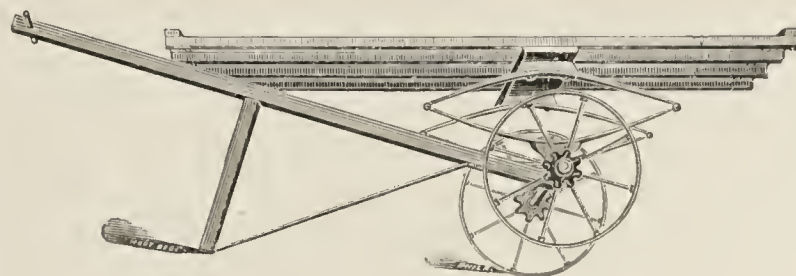
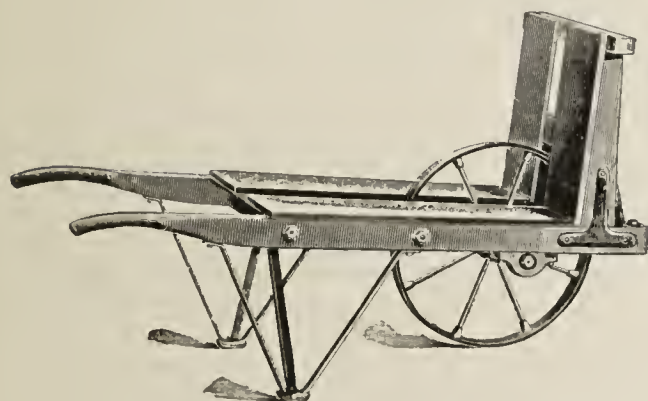


Disintegrator.



Ideal Steam Power and Sander.

OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.

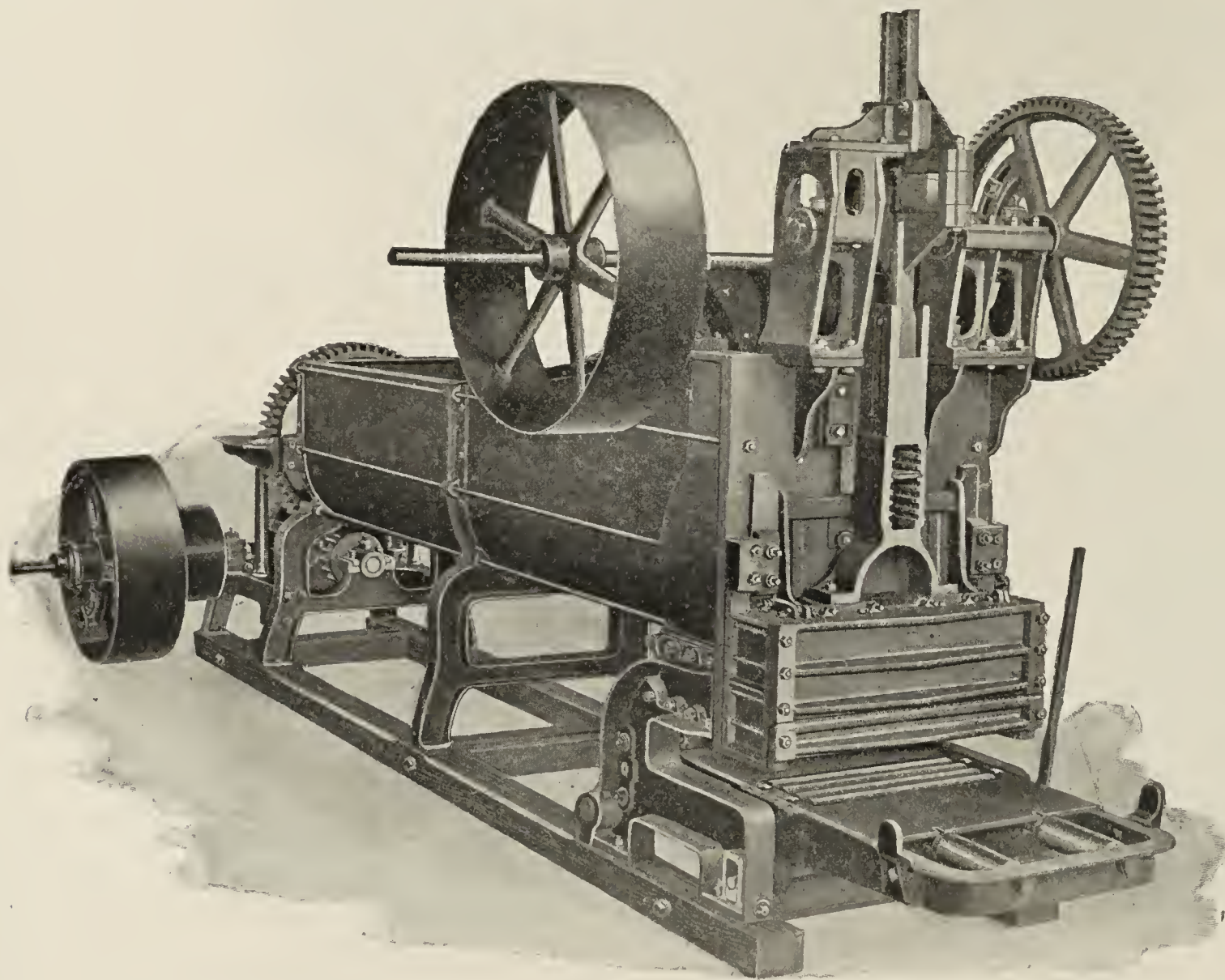


Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

The Potts Horizontal Brick Machine.

The equipment of Sand Mould Brick Plants is our specialty. We manufacture the complete plant—Brick Machine, Disintegrators, Mould Sanders, Granulators, Winding Drums, Clay Cars and Steam Dryer. This makes a one-man proposition, and we are responsible for the satisfactory working of the entire plant from The Clay Bank to the Kiln.



The only
Sand Mould
Brick Machine
made
in which
Cast Steel
Gears
are used
exclusively.
They can not
be broken.
Steel shaft
large
in
diameter.

ALL IRON AND STEEL.

Heavy, Strong and Durable. Large tempering capacity, insuring brick that will have clean, sharp corners and smooth surfaces.

Great strength enables working the clay stiff and filling a six brick mould perfectly. Every claim made fully guaranteed.

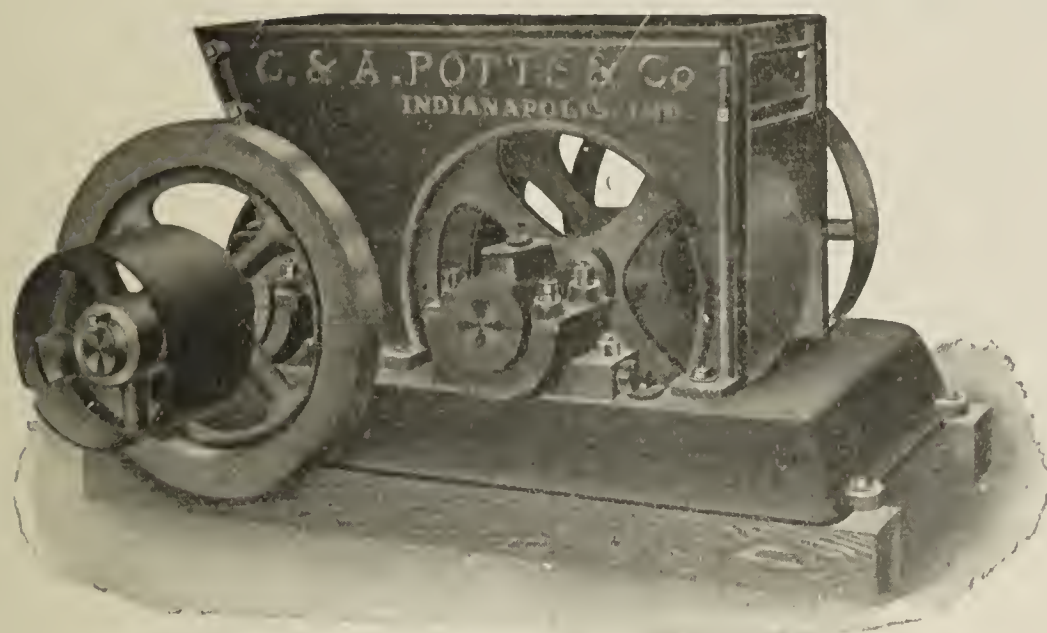
C. & A. POTTS & CO.,

Indianapolis, Ind.

Mention the Clay-Worker.

CLAY DISINTEGRATORS

Either Single or Compound.



Having chilled rolls made from a special grade of iron.

Steel shafts. Ring oiling bearing, long and large in diameter. Adjustable steel bars.

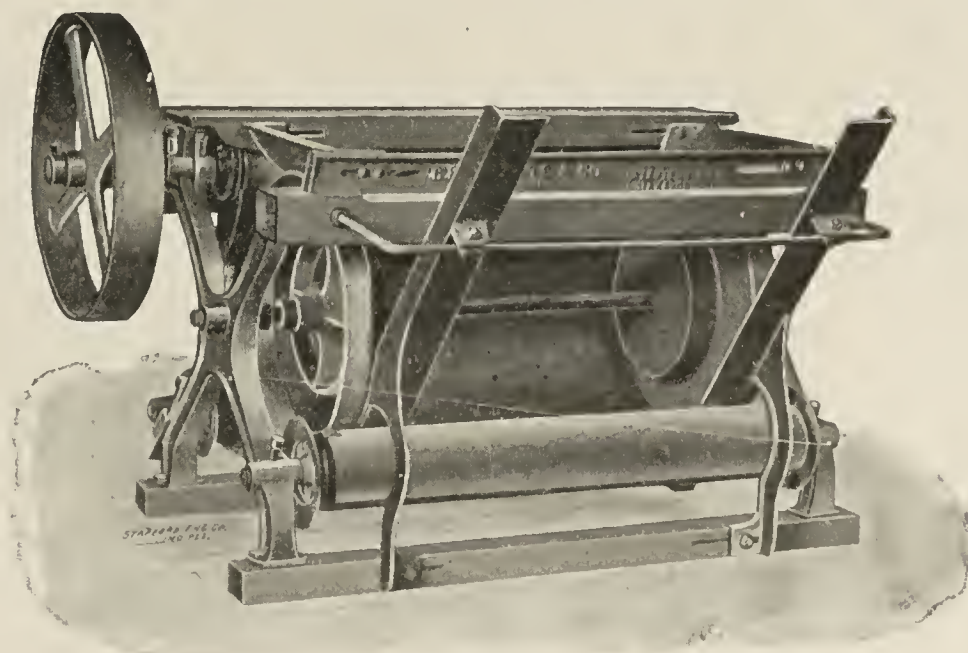
The Potts Disintegrator is the standard machine. All others are imitations. Grinds the clay and separates the stone. No choking or clogging from wet, sticky or hard dry lumps.

MOULD SANDERS

which have no place for the moulds to catch. No unusual wear on the moulds. No chains, sprockets or gears to wear and break.

Does not waste or spill the sand.
Sands the moulds perfectly.

Every machine guaranteed and shipped subject to trial.



We manufacture a complete line of Clayworking Machinery, Granulators or Feeders, Winding Drums, Clay Cars, Trucks and Barrows, a Dryer which is no experiment, and which will dry the most tender clay in from eight to ten hours.

We furnish everything from Clay Bank to Kiln, and GUARANTEE RESULTS.

C. & A. POTTS & CO.,

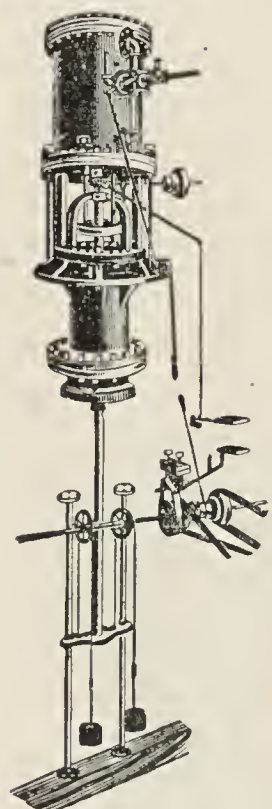
Mention the CLAY-WORKER

Indianapolis, Ind.

BIGGEST SINGLE ORDER

For Clayworking Machinery EVER PLACED
in Uncle Sam's domains, has gone to

THE STEVENSON CO.,
of Wellsville, Ohio.

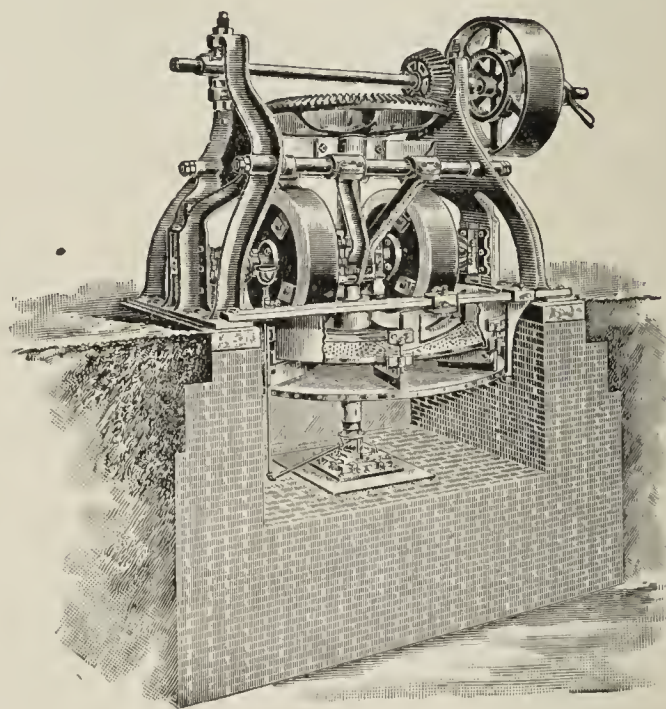


This mammoth order was placed by

The Robinson Clay Product Co.,
Of Akron, Ohio,

one of the giant sewer pipe corporations of the world, after a keen inspection of a number of plants recently erected by the Stevenson Co., which convinced them beyond a doubt that Stevenson's machinery is the most speedy and perfect in the world, and no progressive company can afford to be without it.

The judgment of such a company is entitled to the greatest weight with other manufacturers, actual or prospective. Here is their order:



THE ROBINSON CLAY PRODUCT CO.
Akron, Ohio.

John J. Starr, Secretary.

October 30th, 1906.

The Stevenson Company, Wellsville Ohio.

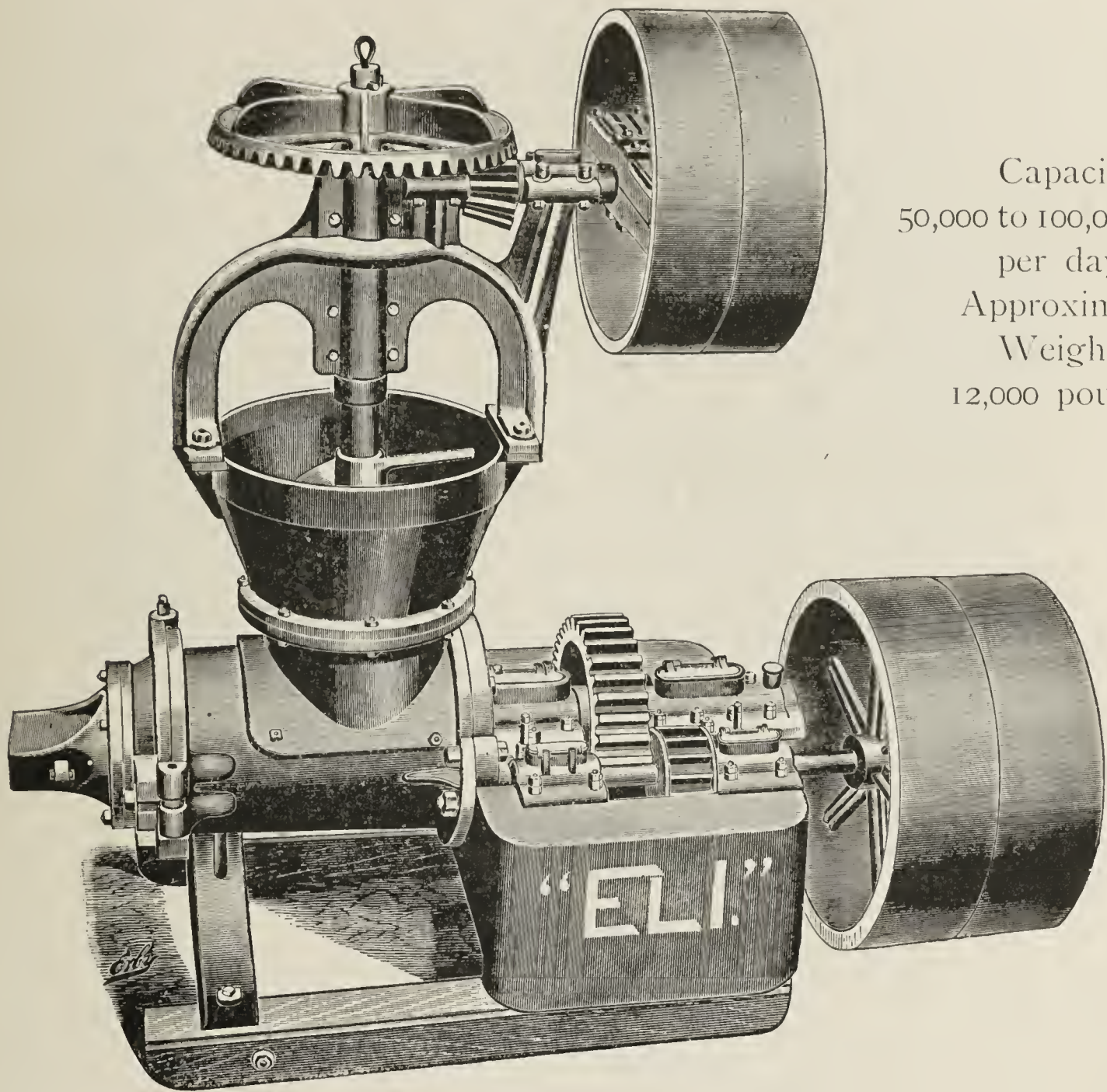
Gentlemen—As per your proposition of the 27th, quoting us on sewer pipe machinery, you may enter our order for the following:

- 4-9 Ft. Improved Iron Frame Dry Pans
- 10-8 Ft. Improved Iron Frame Wet Pans
- 1-44 x 60 x 21" Sewer Pipe Press
- 4-40 x 52 x 20" Sewer Pipe Presses
- 2 Sets of Socket Dies from 2" up to 24"
- 7 Clay Carriers and Feeders
- Delivery--sixty and ninety days
- Terms--as specified in proposition.

Yours truly,
THE ROBINSON CLAY PRODUCT CO.,
John J. Starr, Sec.

MICHIGAN BRICK AND TILE MACHINE CO.

Morenci, Michigan.



Capacity
50,000 to 100,000 brick
per day.
Approximate
Weight:
12,000 pounds.

SPECIAL "ELI" MACHINE.

These machines are guaranteed to make brick and tile without Lamination.

Seattle, Wash., Nov. 20, 1905.

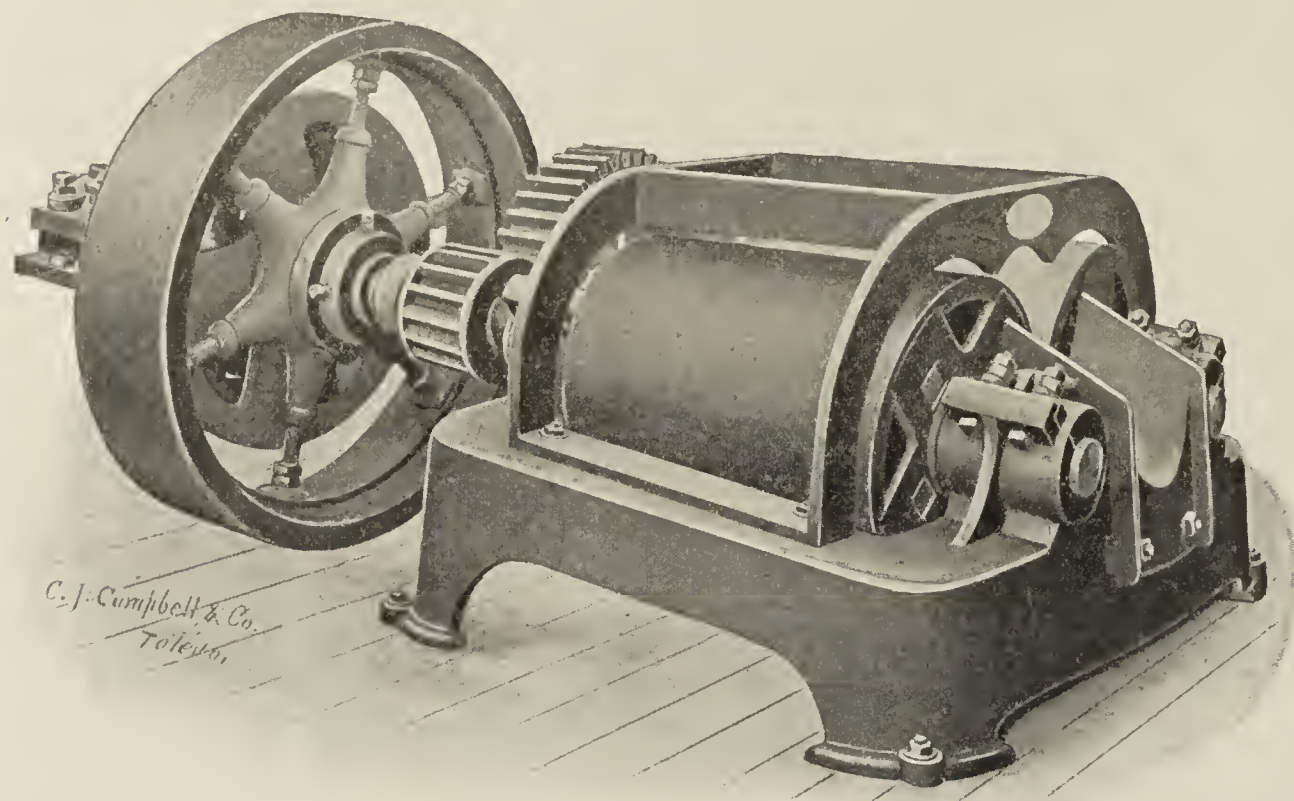
Michigan Brick & Tile Machine Co.,
Morenci, Mich.

Gentlemen—About fourteen years ago we bought from your firm an "Eli" brick machine. We put Eli to work upon his arrival here, and he has made for us many millions of paving and fire brick. The clays used on this machine have been of exceptionally refractory character, testing the machine to its utmost in all particulars, but during these years the machine has been equal to any occasion, and is today as good as the day we installed it.

Yours very truly,
DENNY-RENTON CLAY & COAL CO.,
Geo. W. Kummer, Mgr.

Cut Down Your Crusher Expense

by the use of a machine the wearing parts of which are reduced to the smallest possible size, and made of the hardest practicable material.



The Brewer No. 59

The roll shells are removable, are made of white-iron, and are of the same hardness throughout as chilled rolls are on the surface.

When a roll is worn the shell only has to be replaced; the balance of it is as good as ever.

The effect of the conical shape of the rolls is to throw out the stones, and on account of that shape the gears which drive them may always be maintained the proper depth in mesh irrespective of the distance rolls are set apart.

Rolls are driven at differential speeds, and have a grinding rather than a rolling effect.

Scrapers are adjusted from above without crawling under the machine.

Frame and two journals cast in one piece.

Weight 3,000 pounds. Rolls 22-in. long, tapering from 17 to 14-in diameter.

A larger and heavier pattern for those who want it; also a high grade compound crusher.

H. Brewer & Company

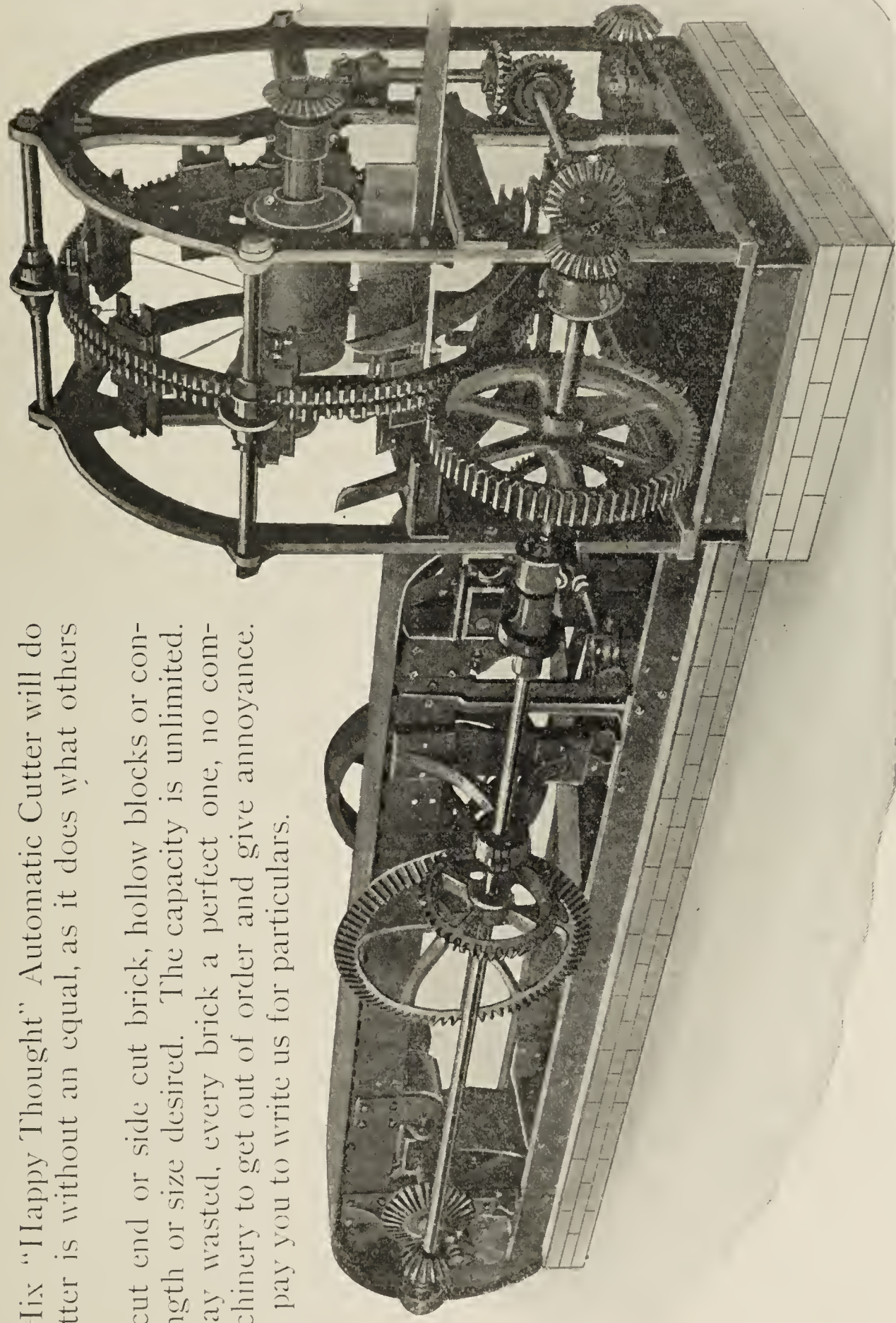
Designers and Builders of Clayworking Machines

TECUMSEH, MICHIGAN

Are You Interested in a Cutter That Will Double Your Profits For 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal, as it does what others can not do.

Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited. No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance. It will pay you to write us for particulars.



THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

THE WALLACE MFG. CO., Frankfort, Ind., U.S.A.

HOME OF HOOSIER CLAY MACHINERY.

ESTABLISHED 1878.

INCORPORATED 1906.



New Factory of Madden & Co., Manufacturers of Hoosier Brick and Tile Machinery.

Hoosier Upright Tile Machines are in a Class by Themselves. Machines for all Sizes of Tile—3 inches to 30 inches.

Hoosier Cutting Tables for Brick and Tile are unsurpassed for accuracy and service.

WATCH FOR OUR NEW CATALOGUE.

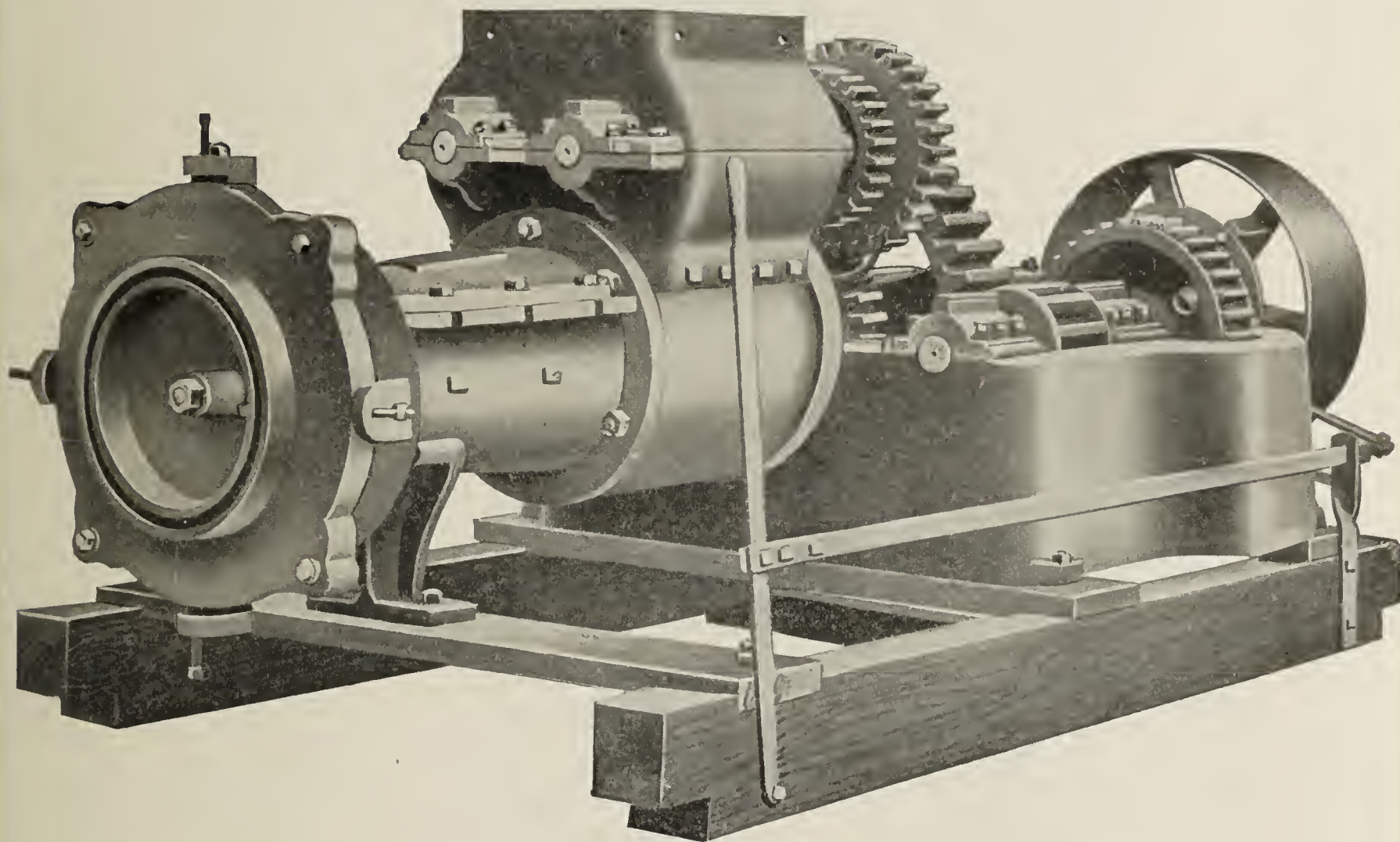
Write us for information.

MADDEN & COMPANY, Rushville, Ind.

Hoosier Clayworking Machinery

1878—Twenty-nine Years' Experience—1907

Brick, Tile and Hollow Block Machines



Note **DESIGN, STRENGTH** and **SIMPLICITY** of this machine.
THIS IS OUR NEW MODEL Stiff Mud Machine with extra pugging
 and feeding attachment, the use of which practically eliminates lamination.
 Made in two sizes for capacity up to 100,000 per day.

AUSTIN BRICK AND TILE WORKS.

ED. BARR, Proprietor.

Manufacturer of PAVING AND COMMON BRICK AND DRAIN TILE.

Dealer in St. Louis Fire Brick and Fire Clay.

Austin, Minn., December 29, 1906.

MADDEN & Co., Rushville, Ind.

Gentlemen—It affords me pleasure to give my testimonial of the efficiency of Madden machinery. Fifteen years ago I put in an outfit of your machinery in Mason City, consisting of a 5 B Brick and Tile Machine, Pug Mill and Granulator, which has been in continuous operation ever since, and has worked enough clay to make a string of tile to encircle the globe. The machine is rated at 25,000 brick per day, and the last time I saw it, it was making tile at the rate of 36,000 4-in. tile a day, which was about a month ago. There has been three other outfits of Madden machinery installed there. Eleven years ago I installed an outfit of your machinery in Austin, consisting of 5 B Brick and Tile Machine, Pug Mill and Granulator in which I have worked a great variety of clay from the fattest to the leanest, and the machinery does its part well.

I consider the Pug Mill the best mixer I ever saw. It operates with mill level full of clay from one end to the other and with little power.

I don't think my repair bill has exceeded \$300.00 in 10 years on the brick machinery.

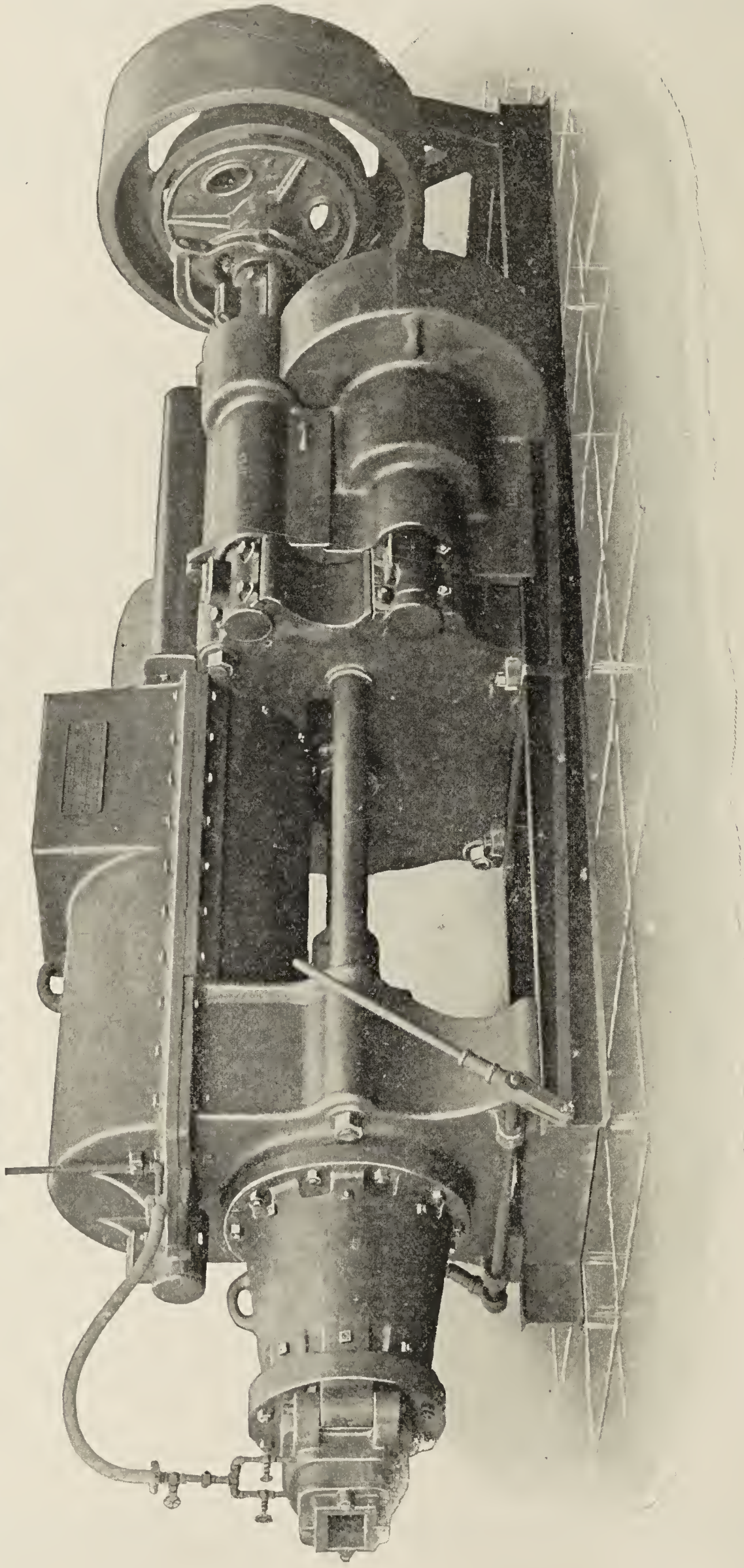
Yours respectfully,

ED. BARR.

For further information address

MADDEN & COMPANY, Rushville, Ind.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

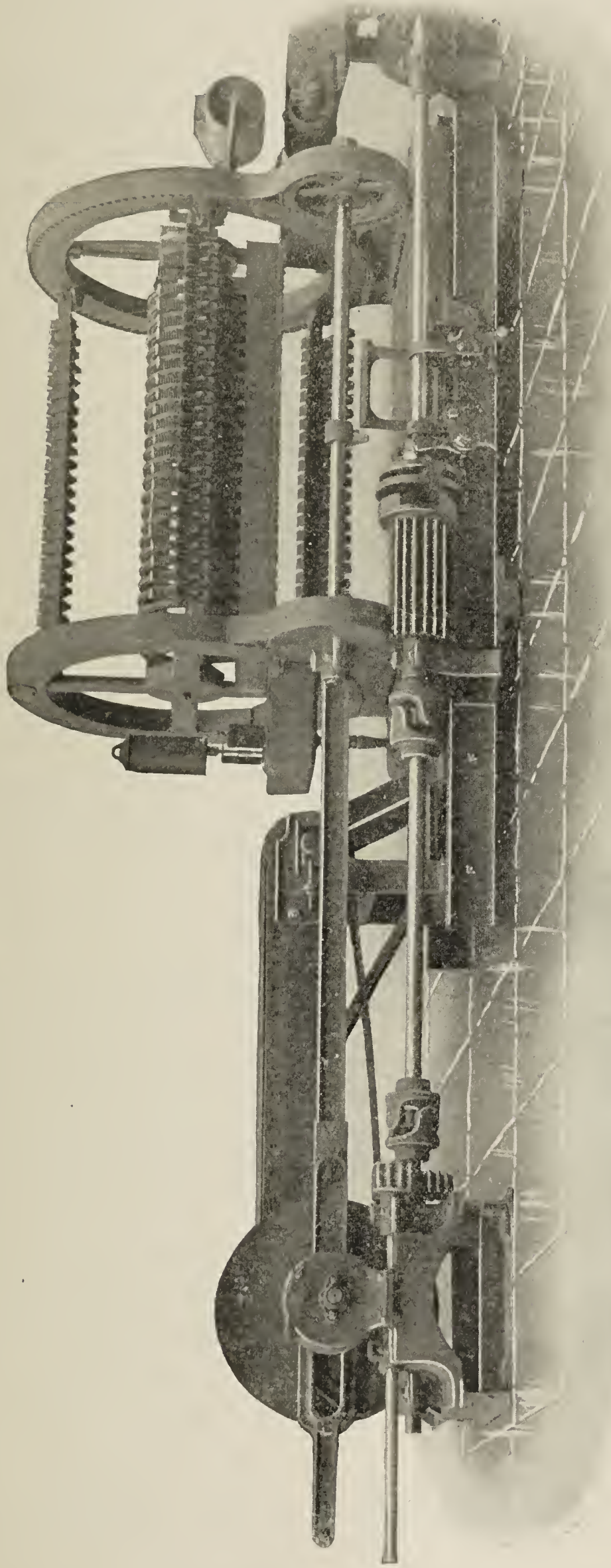
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

BOOKS FOR CLAYWORKERS.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

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With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application

Tables of Analyses of Clays, by Alfred Crossley. Price \$1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

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A Treatise on the Benefits of Farm Drainage, with plans and illustrations for making and laying tile.

These Books will be Mailed, Postage Prepaid, to Any Address in the United States or Canada, on Receipt of Price.

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Indianapolis, Ind., U. S. A.

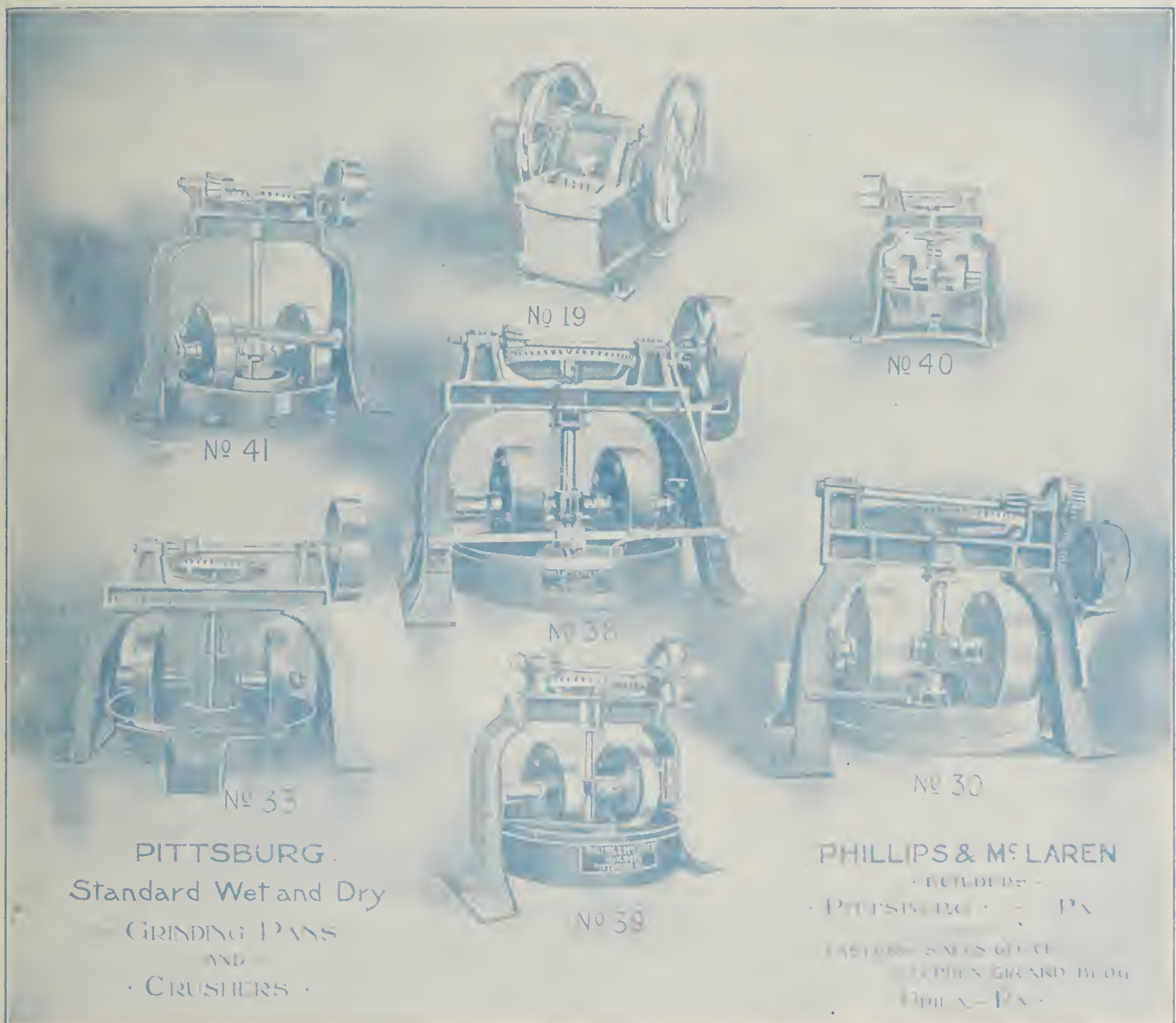
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Pittsburg, Pa.

Standard Wet and Dry Grinding Pans

FOR BRICKYARDS, STEEL WORKS, POTTERIES, CHEMICAL WORKS, SAND PLANTS,
GLASS WORKS, STEEL FOUNDRIES, ETC.

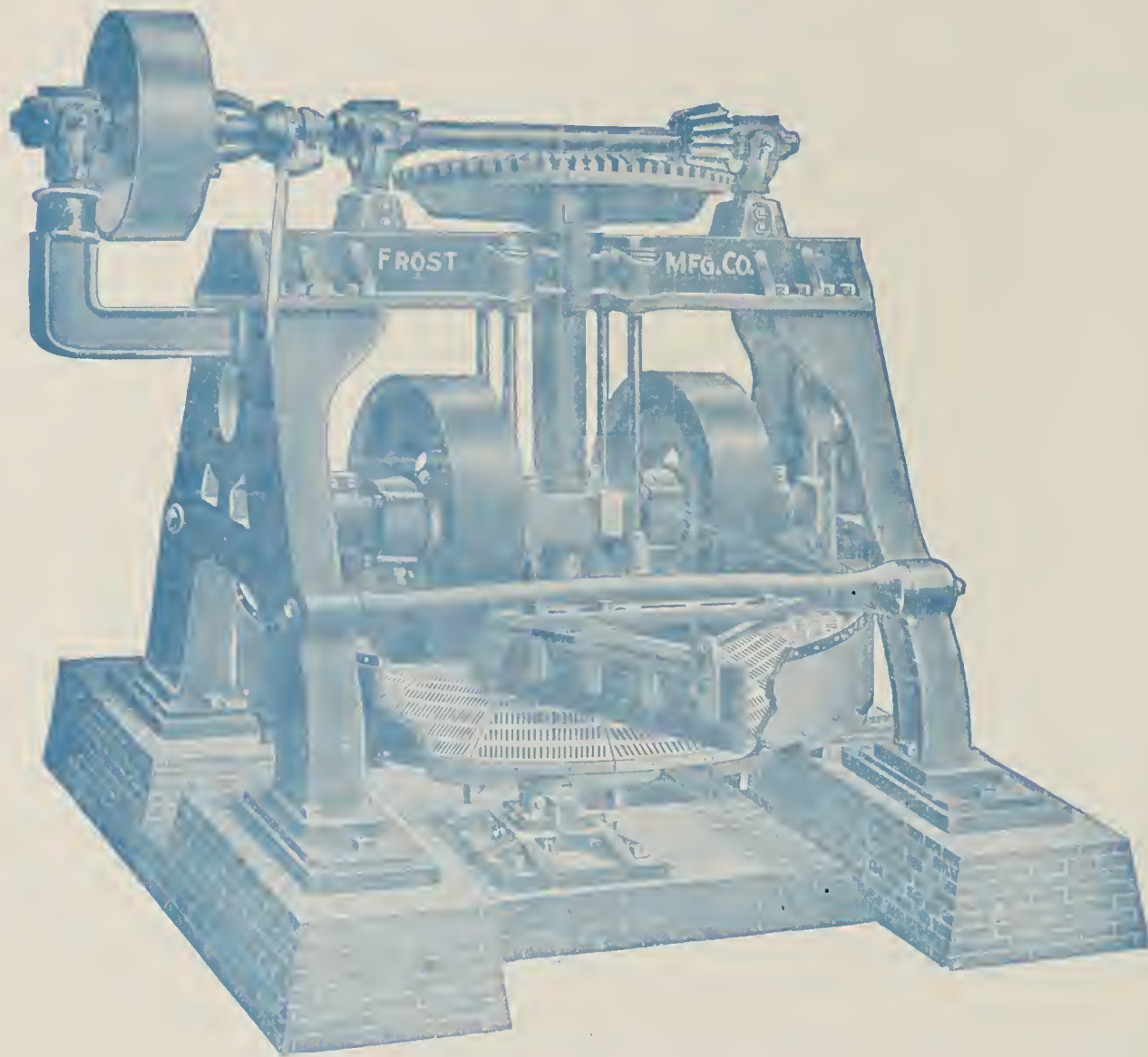
This illustration is designed to show a few of our Pans, built Wet and Dry, Revolving and Stationary, from 3½ ft. up to 10 ft. diameter. Also made for unusual conditions, such as grinding in water, grinding carborundum, foundry ashes, refuse, etc. They are built for hard service, are extremely simple in design, heavy and powerful.



If interested tell us what your material is and capacity desired,
and we will quote you accordingly.

We make **Crushers** also.

FROST DRY PAN

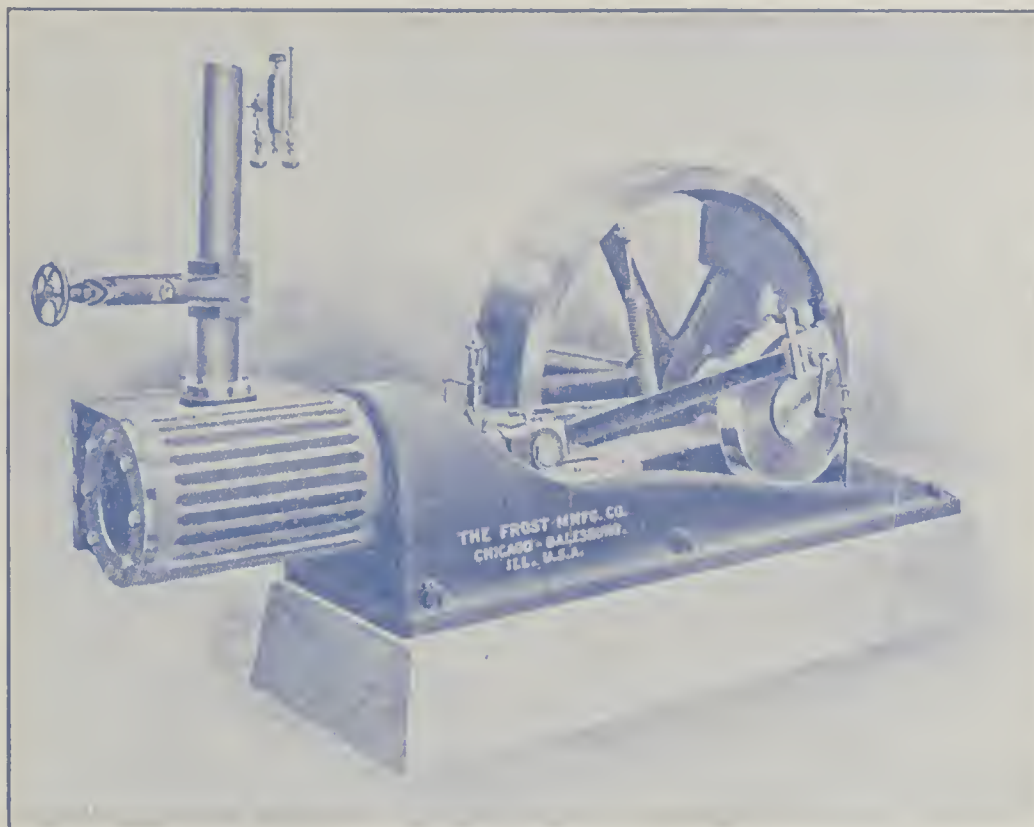


The FROST Pan is the BEST Pan. All Others Imitate but Never Equal.
A Few of Our Customers.

Purinton Paving Brick Co., Galesburg, Ill.	16 Frost Pans	Gainesville Brick and Tile Co., Gainesville, Texas.	1 Frost Pan
Streator Paving Brick Co., Streator, Ill.	4 Frost Pans	N. Y. Hydraulic Pressed Brick Co., Rochester N. Y.	1 Frost Pan
National Brick Co., Chicago, Ill.	3 Frost Pans	DeSota Brick and Tile Co., DeSota, Iowa	1 Frost Pan
Western Brick Co., Danville, Ill.	6 Frost Pans	Dixon Wood Company, Pittsburg, Pa.	1 Frost Pan
American Steel Foundries Co., East St. Louis, Ill.	3 Frost Pans	Choctaw Pressed Brick Co., Mansfield, Ark.	1 Frost Pan
Buffalo Brick Co., Buffalo, Kan.	3 Frost Pans	Ardmore Coal and Power Co., Ardmore, Ind. Ter.	1 Frost Pan
Cherryvale Pressed Brick Co., Cherryvale, Kan.	2 Frost Pans	Atlas Brick Co., Allegheny, Pa.	1 Frost Pan
La Prairie Brick Co., La Prairie, Quebec	6 Frost Pans	Elk City Brick Co., Elk City, Kan.	1 Frost Pan
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Hydraulic-Press Brick Co., St. Louis, Mo.	8 Frost Pans	Standard Brick Co., Crawfordsville, Ind.	1 Frost Pan
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The Frost Manufacturing Co.

Works: GALESBURG, ILL.
SALES DEPARTMENT:
135 Adams St., CHICAGO, ILL.
Cable Address, "FROSTMANCO," Chicago.



GREELEY, COLO., December 14, 1906.

FROST MANUFACTURING CO.,

Gentlemen:—Replying to your favor of the 11th inst., would state that in 1900 I installed a 55 Horse Power Frost Side Crank Engine at our factory at Wautoma, and also one at our factory at Iola, Wis., and in 1901 installed one in our factory at Rice Lake, and take great pleasure in stating that they have all given the best of satisfaction, and up to the present time they have not cost one cent for repairs.

Very truly yours,

WILLIAM D. BOTHWELL.



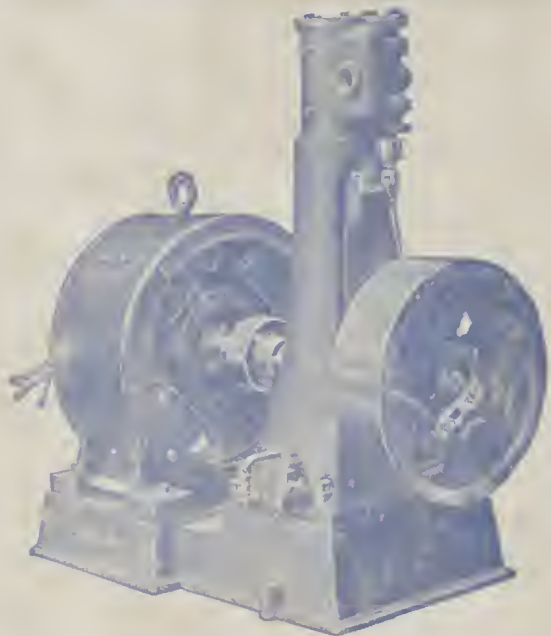
The Frost Manufacturing Co.

Works: GALESBURG, ILL.

SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago.



(Engine Patented.)

**THE
"ABC" Enclosed Self-Oiling Steam Engine**

Runs from 3 to 6 months without oiling or adjusting. Invaluable for driving Blowers, Generators, Pumps, etc.

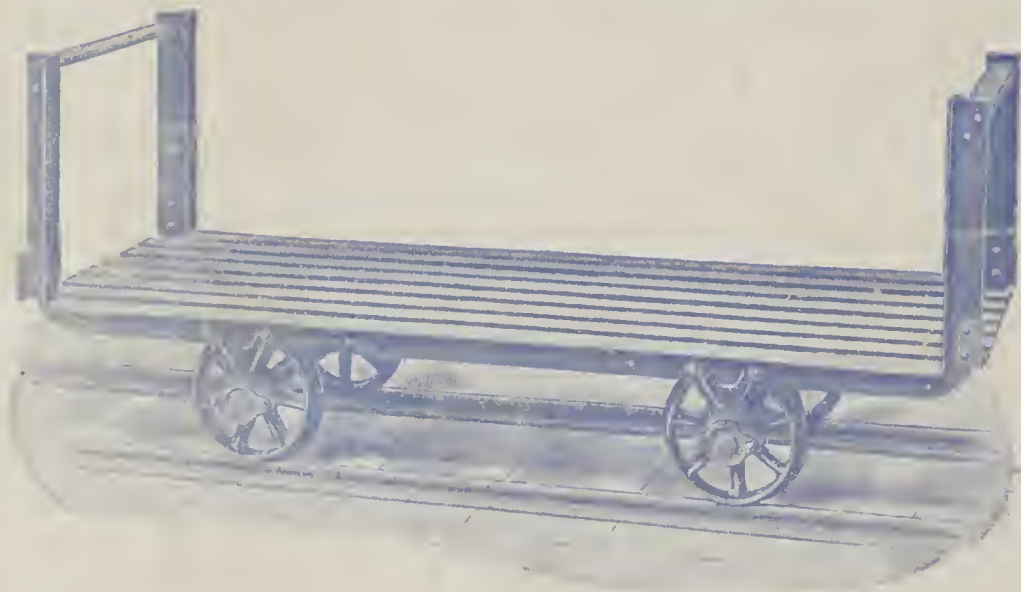
Shall we send you descriptive matter?

**AMERICAN BLOWER CO.,
DETROIT.**

New York. Chicago. Atlanta. London.

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FULL PAGE
AD
APPEARS ON
PAGE 206
THIS ISSUE**

**DUNLAP MFG. CO.
BLOOMINGTON, ILL.**



Special Car With or Without Top Deck.

**DRYER CARS,
DUMP CARS,
REPRESSES,
WIRE SCREENS,
DRYERS.**

**THE OHIO CERAMIC ENGINEERING COMPANY,
CLEVELAND, OHIO.**

**Builders of the best, cheapest and easiest running cars on
the market. Try us for the proof.**

CLAY-WORKER

PUBLISHED MONTHLY BY
T.A. RANDALL & CO. INDIANAPOLIS

DELEGATE

CONVENTION

NATIONAL BRICK
MANUFACTURERS
ASSOCIATION

ST. LOUIS
1907

FEBRUARY 1907
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T.A. RANDALL

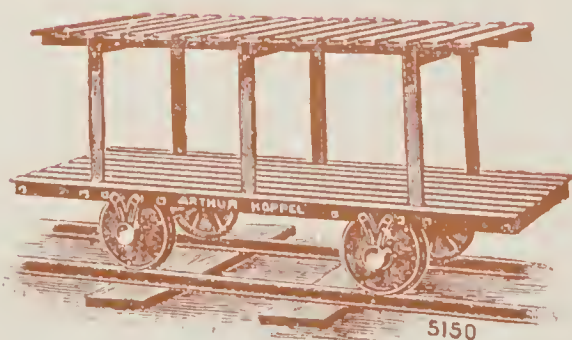
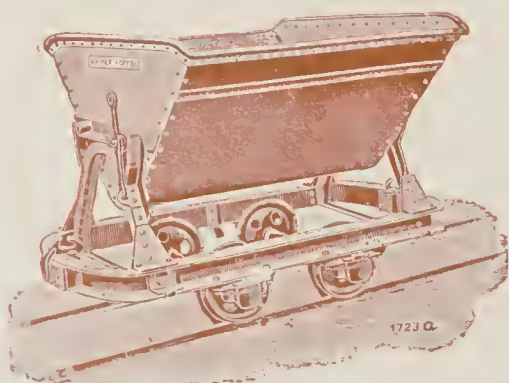
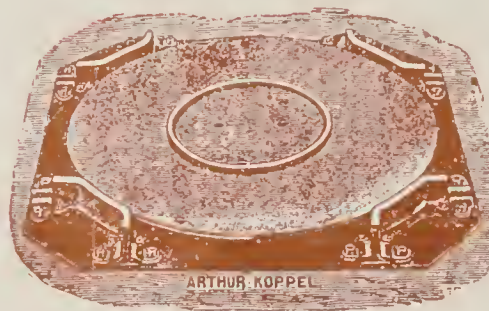
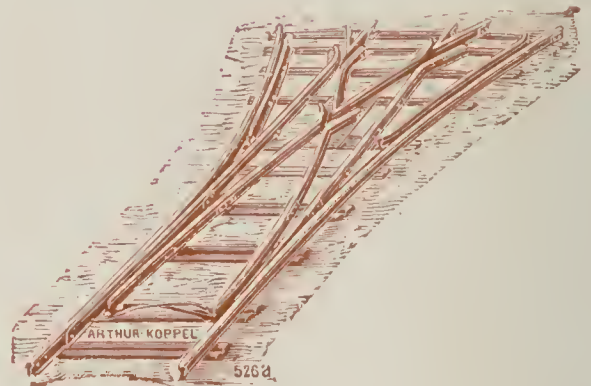
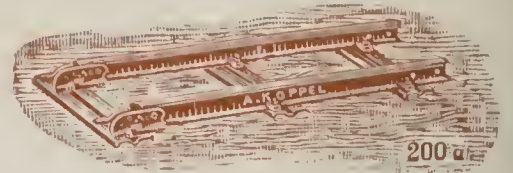
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OUR COMPLETE INDUSTRIAL RAILROADS

FOR MINES, QUARRIES AND BRICKYARDS, INCLUDING RAILS, STEEL TIES, PORTABLE TRACK, SWITCHES, FROGS, TURNTABLES, CROSSINGS, WHEELS, AXLES, SPARE PARTS, PLATFORM CARS, STEEL DUMP CARS, DRYER CARS, LOCOMOTIVES, ETC.

WRITE FOR CATALOG "C."



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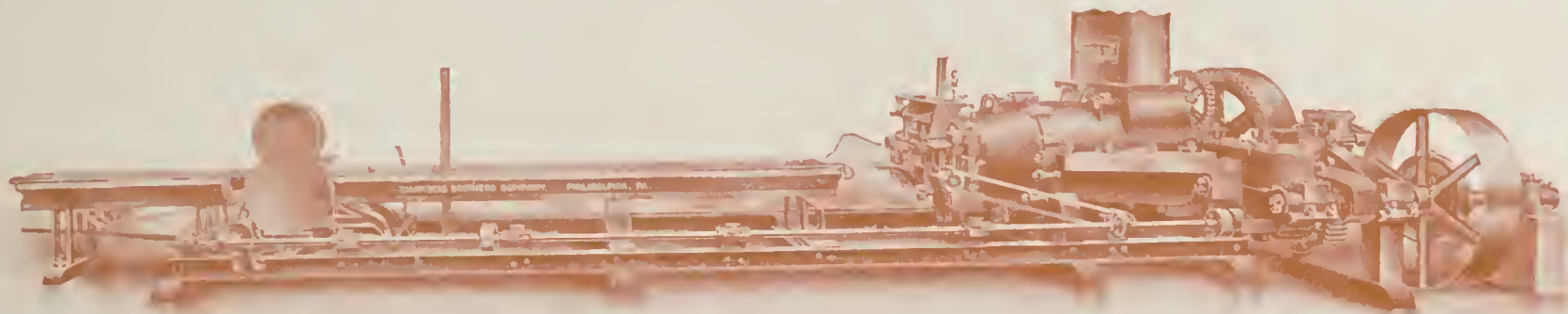
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MACHESNEY BLDG., PITTSBURG
515 MARKET ST., SAN FRANCISCO

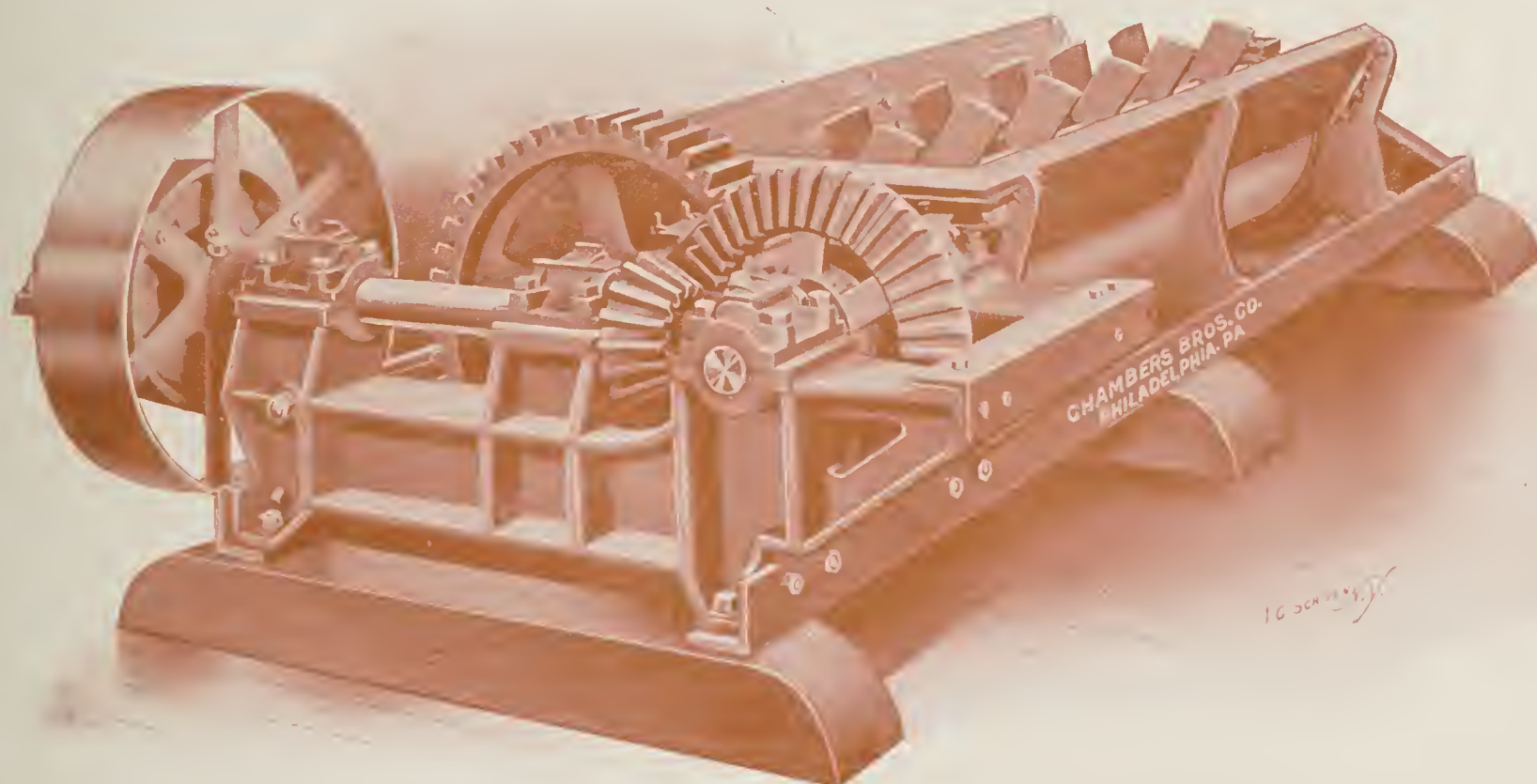


THE CHAMBERS BRICK MACHINERY.



One of our customers states to us that he has made 11,600,000 bricks in eight months this season on one of our Auger Brick Machines without a single break of any part, save cutting wires. Yet his clay contains stones to cause the breakage of 500 wires in a single day.

We Build Equally Good Clay Grinders and Mixers.



New Iron Frame Granulator and Feeder
(Weight About 16,000 Pounds)

You may dump clay into this machine in any manner and in any quantity. It stands the work.

CHAMBERS BROTHERS COMPANY

Chicago Office:

E. R. FRAZIER, 59 West Jackson Blvd.

A. R. ROOT, Representative at large.

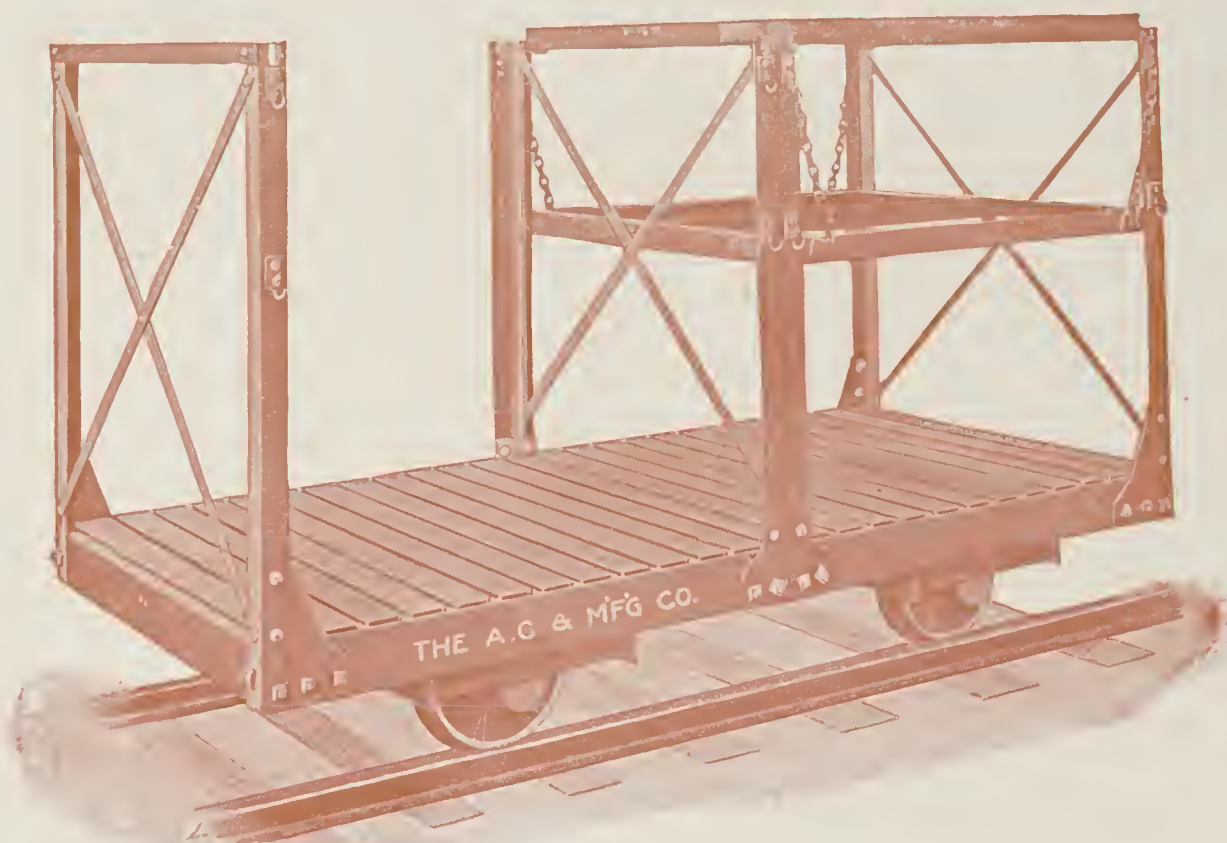
L. S. MORRISON, Southern Representative,
with Headquarters in Atlanta, Ga.

Fifty-Second Street, Below Lancaster Avenue

PHILADELPHIA, PA.

(SEE ADS ON PAGES 441 to 444.)

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 415.)

THE HARRINGTON AND KING PERFORATING CO.

PERFORATED METALS

OF EVERY DESCRIPTION

AND

FOR ALL PURPOSES

FOR SCREENS OF ALL KINDS

PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

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No. 231 North Union Street,

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JUST A MOMENT!



Before turning to the next page spend just a moment with us. We have something we want to say to you. It's this:

The Barber Asphalt Paving Company, one of the largest concerns in Iowa engaged in the manufacture of brick, contracted with us to design for them a

RODGERS WASTE HEAT DRYER

and, after the dryer was completed and fully tested by them, they wrote us as follows:

"The dryer has worked like a charm from the start. We have maintained a temperature of 200° to 240° at the discharge end of the dryer and any variation of temperature desired can be accomplished in a short period of time, by the proper adjustment of dampers. We have found one cooling kiln to give us ample heat for our 15 tunnels.

"The receiving end of the dryer we keep at 100° to 110° and whatever temperature we decide to hold we can maintain as a constant factor. We find that as much depends on circulation as on heat, in drying brick, and the volume of circulation which can be used depends on the character of the clay which enters into the brick product. A clay which will stand 250° at the discharge end and 125° at the receiving end, can be dried in 18 to 20 hours with your system. We are absolutely convinced of this, not as a matter of theory, but from actual experiment.

"We wish particularly to compliment you on the apparatus furnished us. Both horizontal slide valve engines run as noiselessly as a watch, and the parts are so proportioned that there is no jar, no vibration, and no "over-stress."

"The care and thought which you have given the subject of waste heat from both a commercial and theoretical standpoint, tells its own tale in the waste heat system which you designed for this plant."

A RODGERS WASTE HEAT DRYER

is well designed and well equipped with the best apparatus which can be built. It is capable of drying your brick as rapidly as your clay will permit, and more economically than any other dryer

Decide NOW to intrust us with the designing of your dryer and the building of your apparatus and the PROFITABLE result you will obtain will prove your decision well made and this moment with us most profitably spent.

L. E. RODGERS ENGINEERING CO.,

Waste Heat Dryer Specialists,
Brick Works Engineers,

303-305 Dearborn St.

CHICAGO.



The Boyd Brick Press

PLAIN FACTS IN A FEW WORDS.

THE BOYD BRICK PRESS is not an imitation, nor an untried or experimental machine. It was introduced to the brickmakers of the United States and the World over eighteen years ago, and has been on the market every day since.

THE BOYD BRICK PRESS is built by the oldest and largest Brick Press Manufacturers in the World, who from long practical experience know what is required of Brick Presses, know how to build them, and have shops with modern equipment for the work.

THE BOYD BRICK PRESS was the standard at the start and is the standard now. It was alone at the start; it has led ever since, and it leads today. Steady progress, merit and improvements have kept it at the front.

THE BOYD BRICK PRESS is built for work; long work; hard work; constant work, and never fails to do its work. It does the best work, keeps at it for the longest time and produces the best brick.

THE BOYD BRICK PRESS is simply and strongly built, of the very best materials, and the workmanship is unsurpassed. It saves the most time, the most labor and gives the least trouble and the least expense,

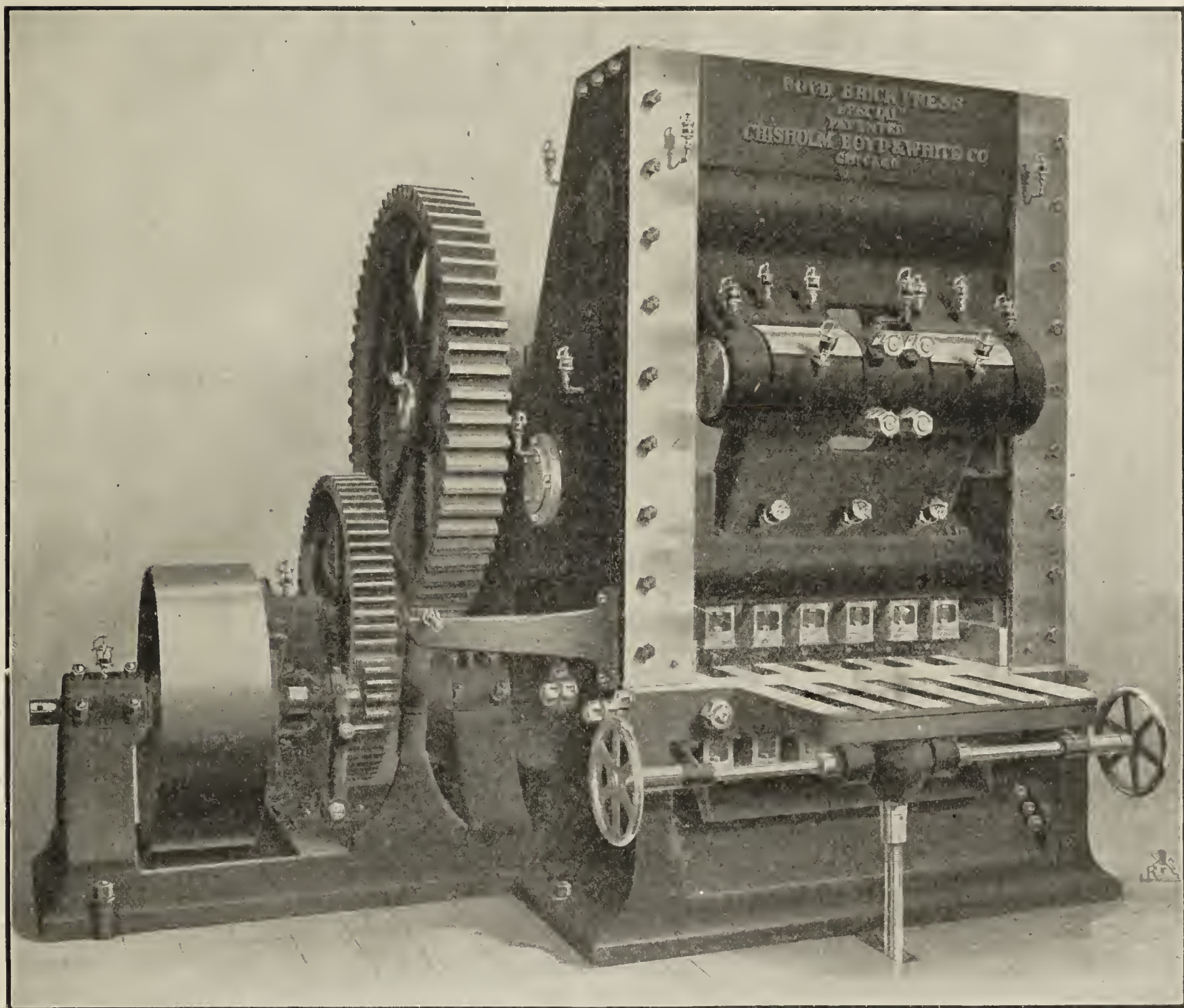
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Six-Mold "Special."



The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles to the art of brickmaking. Correspondence solicited.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

SAND=LIME BRICK MACHINERY.

BOYD QUALITY.

MODERN METHODS.

NO EXPERIMENTING.

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

Correspondence solicited.

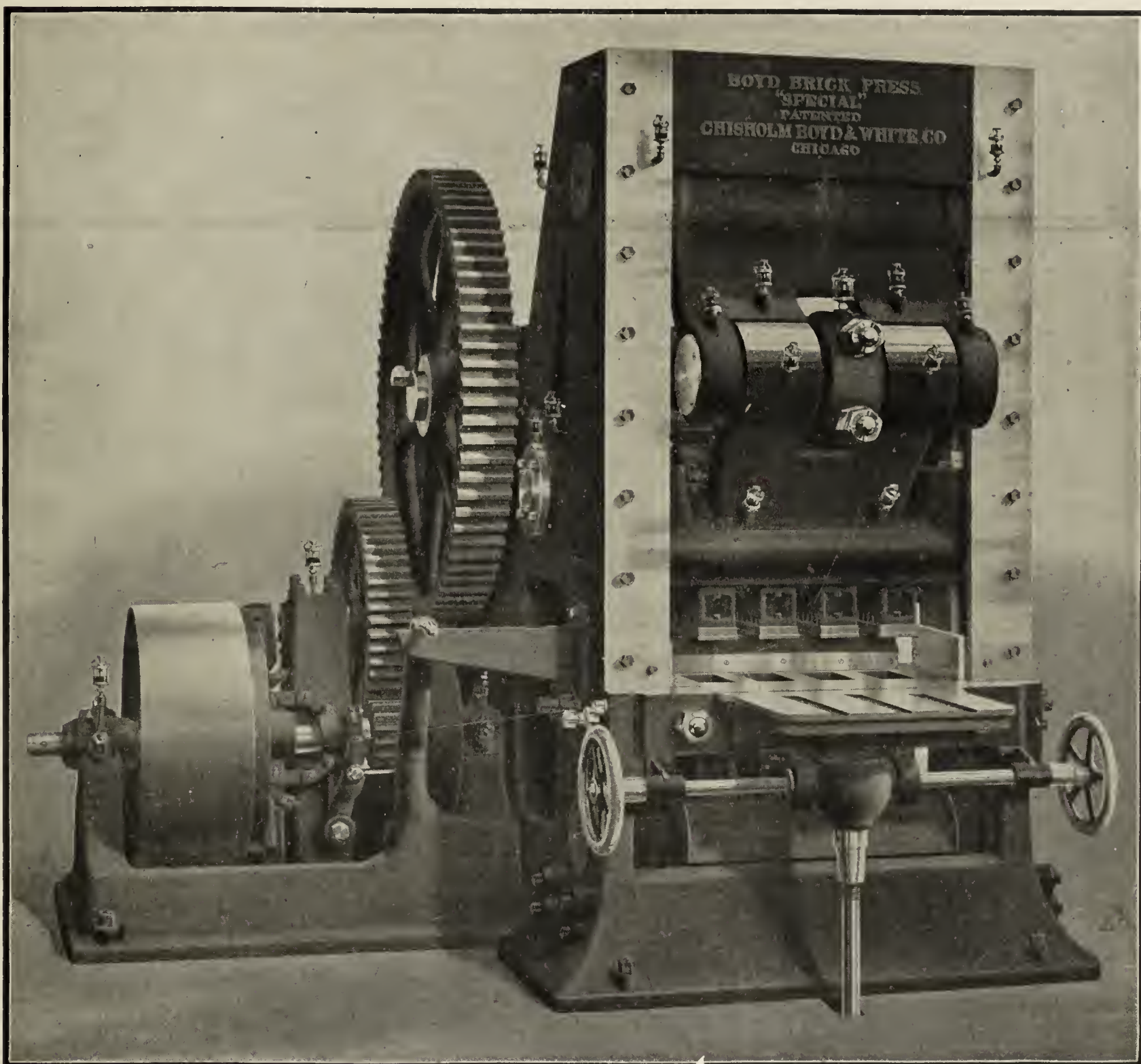
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CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Special."



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for General Catalogue No. 15.

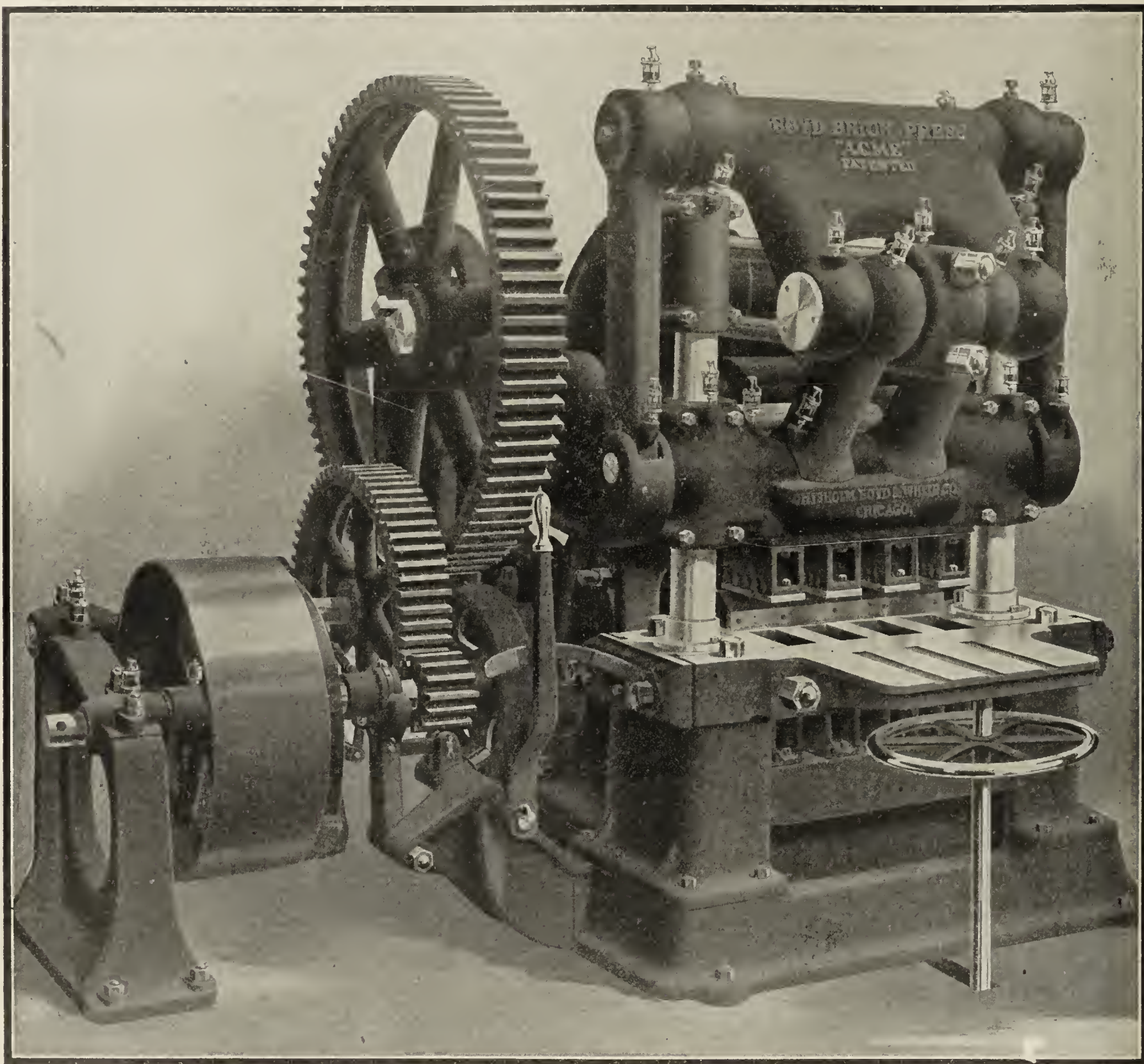
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Acme."



ITS NAME A GUARANTEE.

The Four-Mold Press above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

THE BOYD BRICK PRESS was the standard at the start, and is the standard now. Steady progress, merit and improvements have kept it at the front.

We will send to any responsible party a BOYD BRICK PRESS ON TRIAL under the broadest and safest guarantee. We take the machine back if not satisfactory.

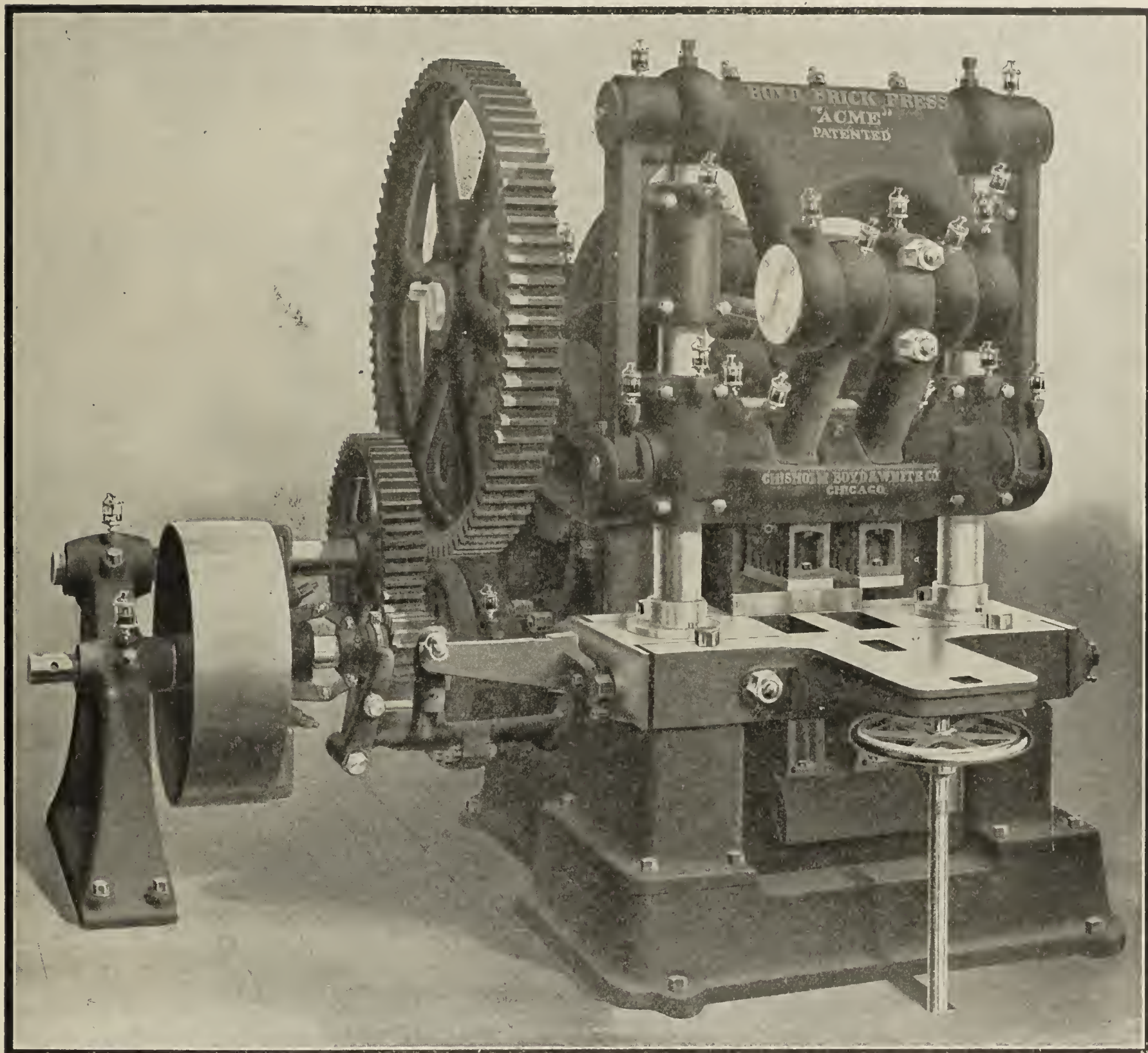
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Two-Mold "Acme."



THE TWO-MOLD PRESS, above illustrated, is especially adapted for Brick Plants of small capacity, and for making ornamental and shape bricks it has no superior.

BRICK PRESSES are too costly to experiment with. EIGHTEEN YEARS' practical experience back of each Boyd Press.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

CORRESPONDENCE SOLICITED.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

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The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

THE ONLY PERFECT BRICK PRESS

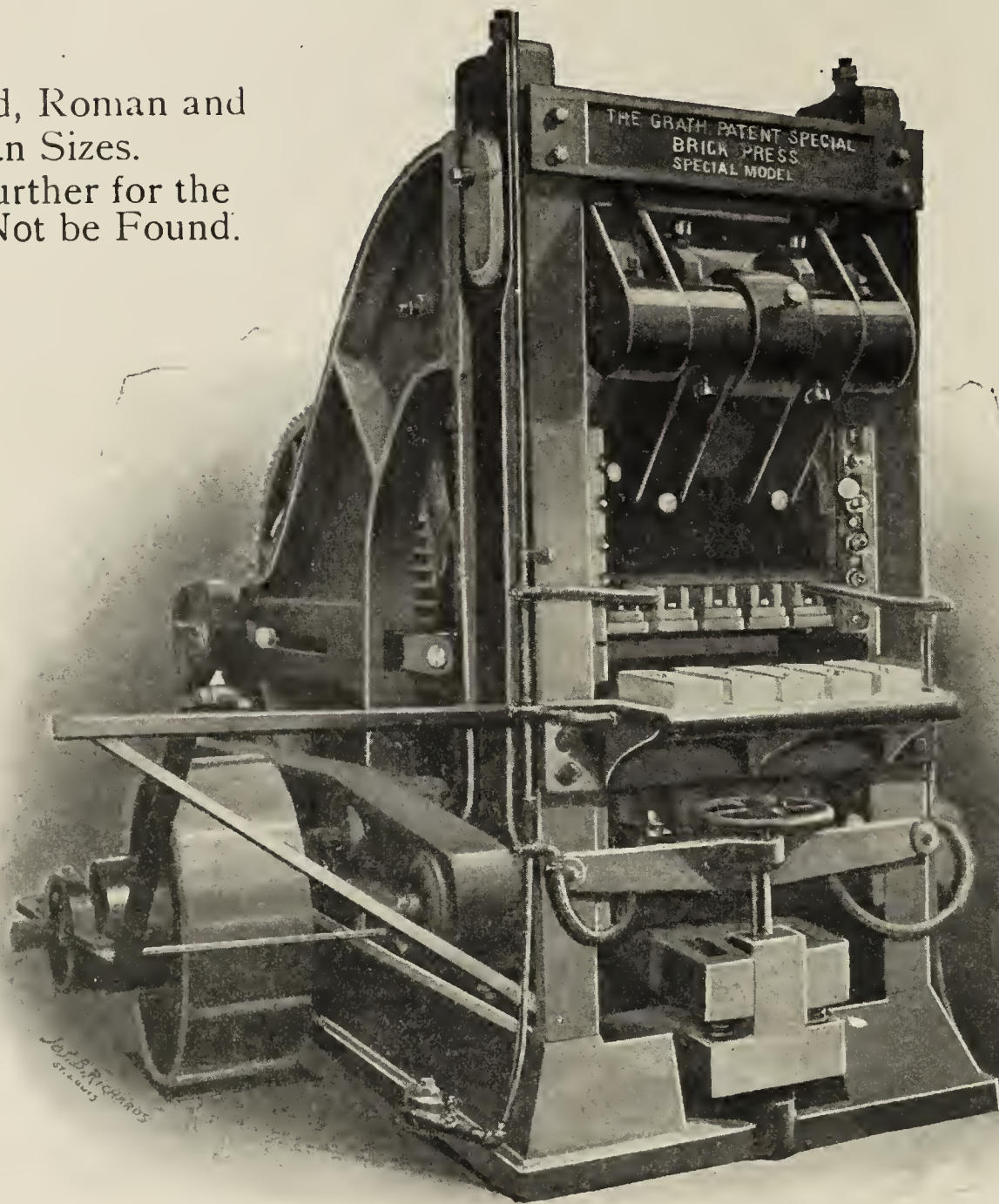
For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

Special Large Model Making Five Standard Size Brick.

For Standard, Roman and
Norman Sizes.

Seek No Further for the
Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufac-
turer
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not top heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

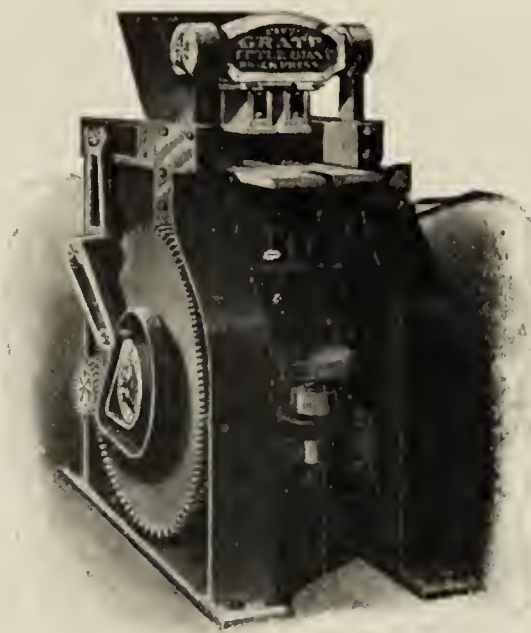
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

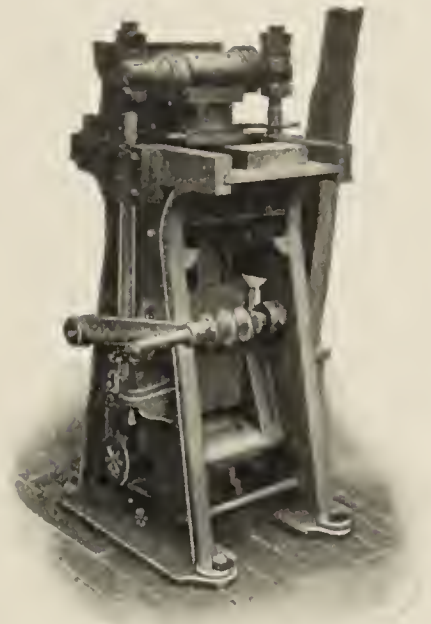
St. Louis, Mo., U. S. A.



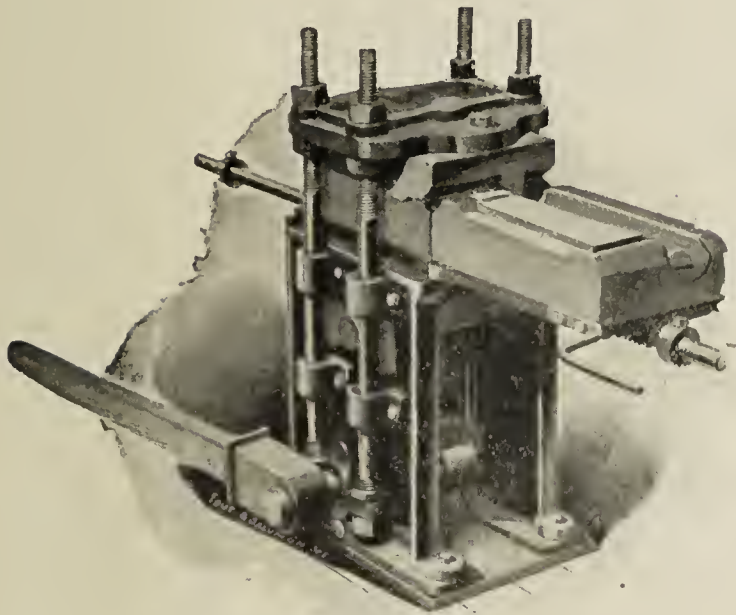
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



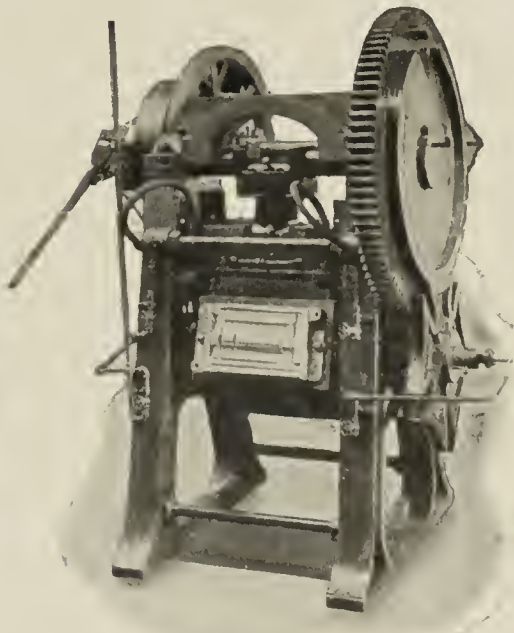
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



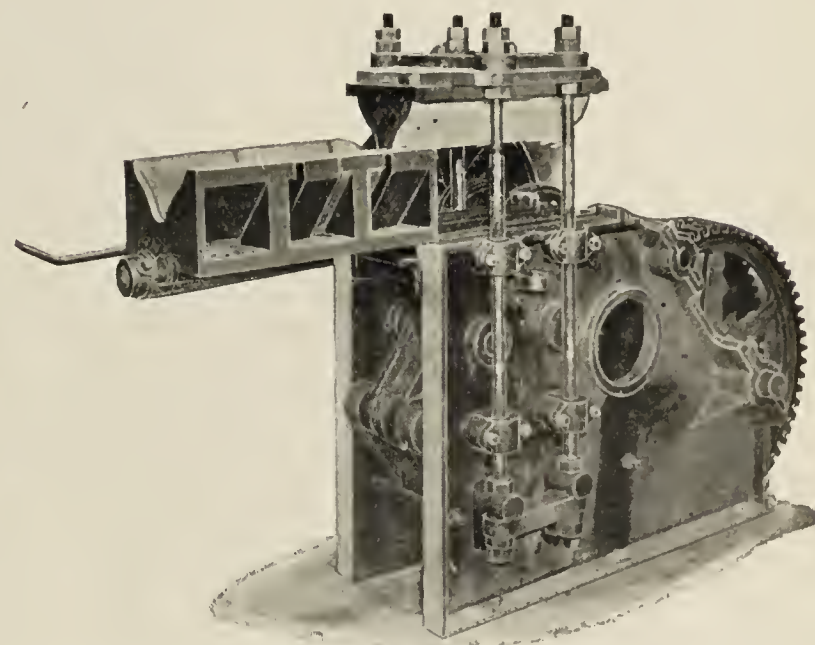
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

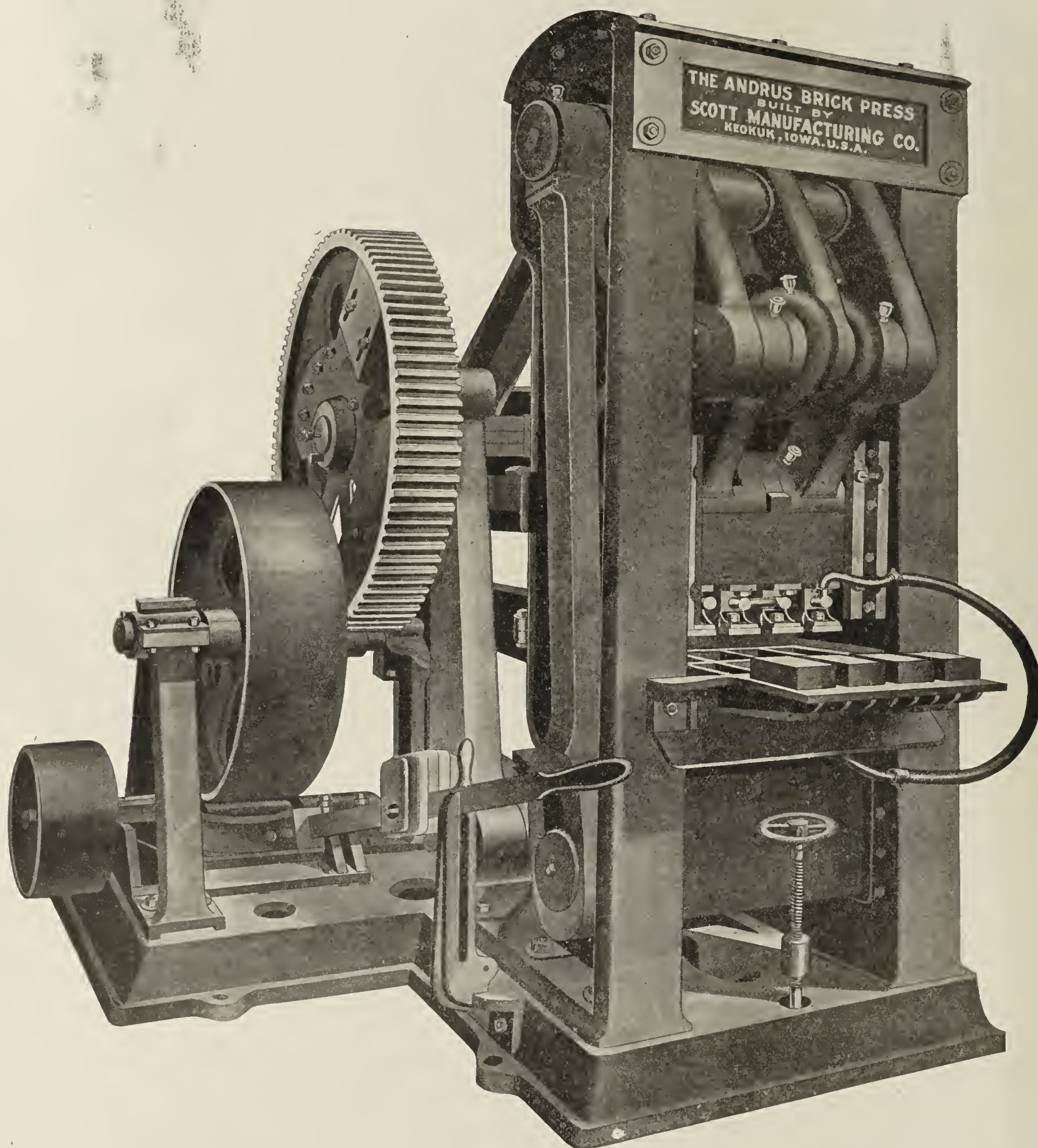
The New Grath Down=Draft Continuous Kiln.

Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the *ordinary single* down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get *advantage* of all *waste* heat from your burning chamber, which you *lose* and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in *same* manner as the direct, through the furnaces up the bag and down through the ware. *Simple* and *sure* in operation. GUARANTEED.

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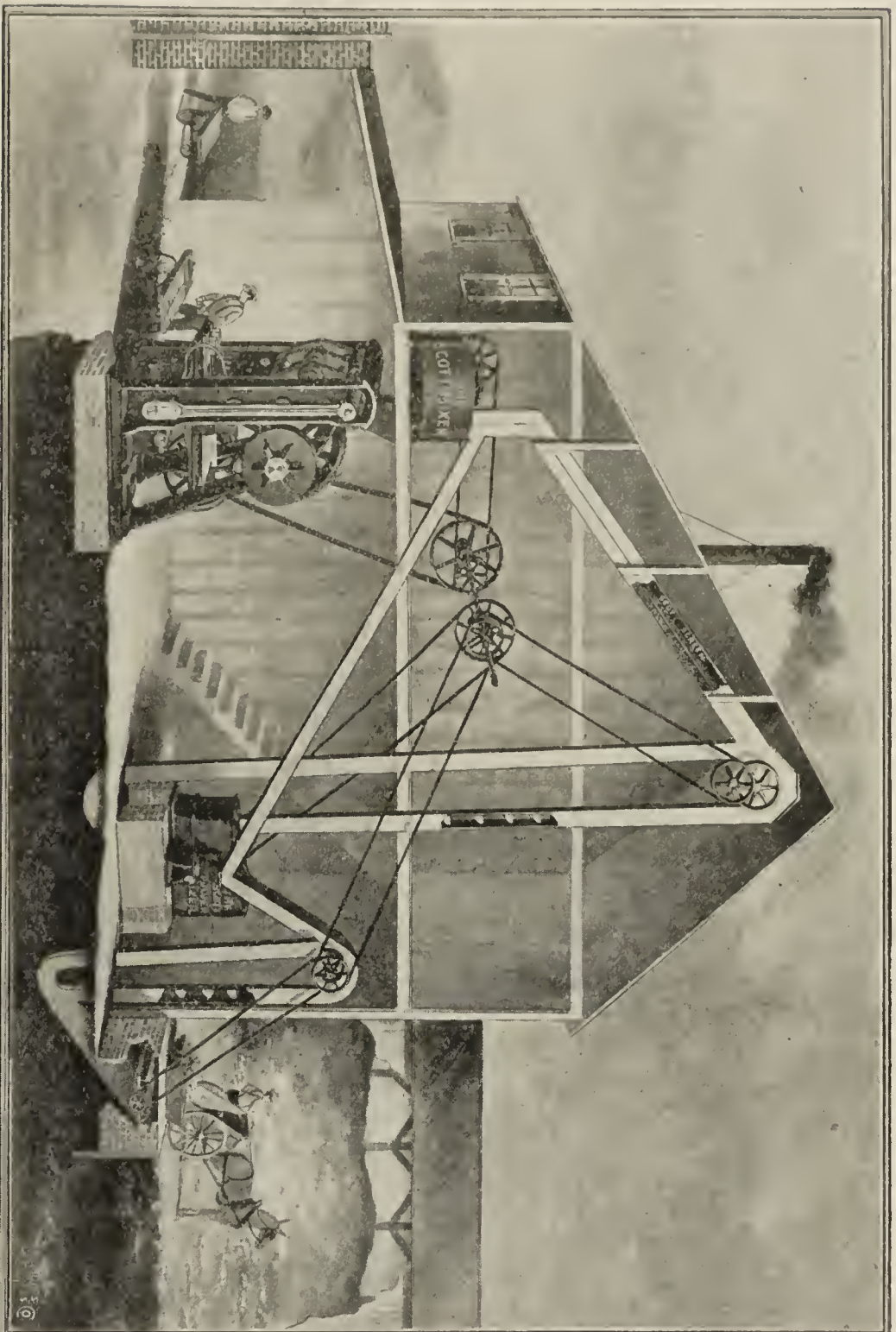


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OUR MODEL FOR 1907 PLACES THE ANDRUS
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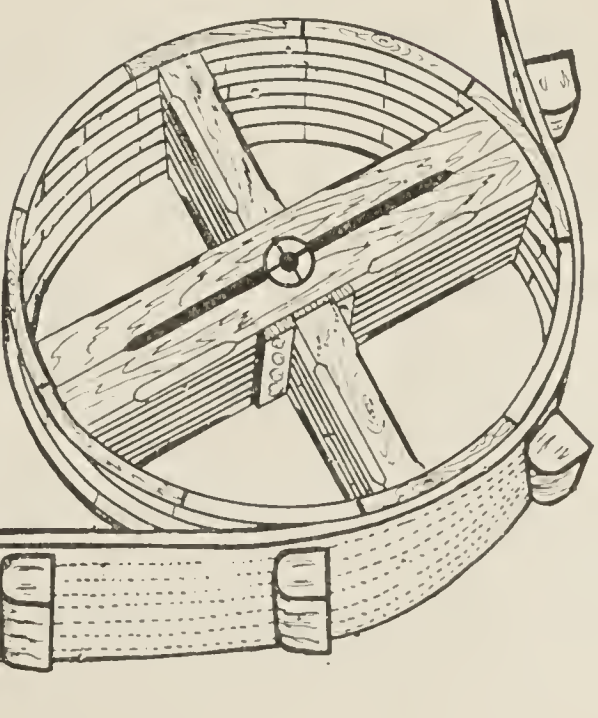


Scott Manufacturing Co.,

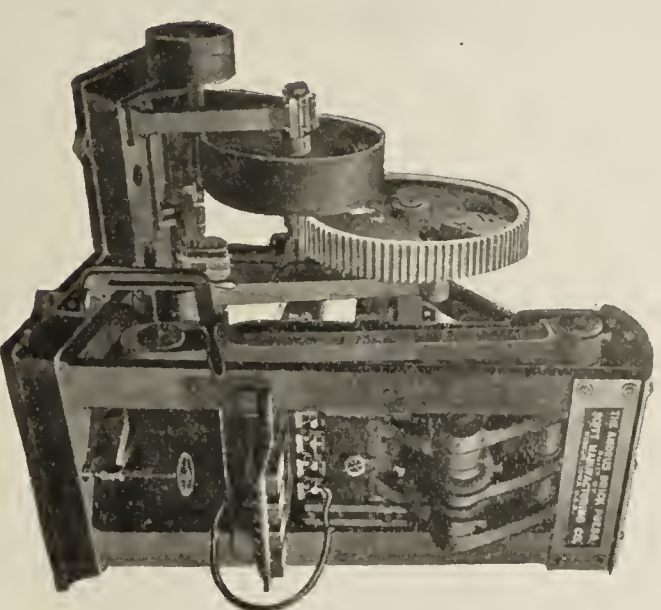
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*Did you ever see the
Scott 9-Foot Dry Pan?*



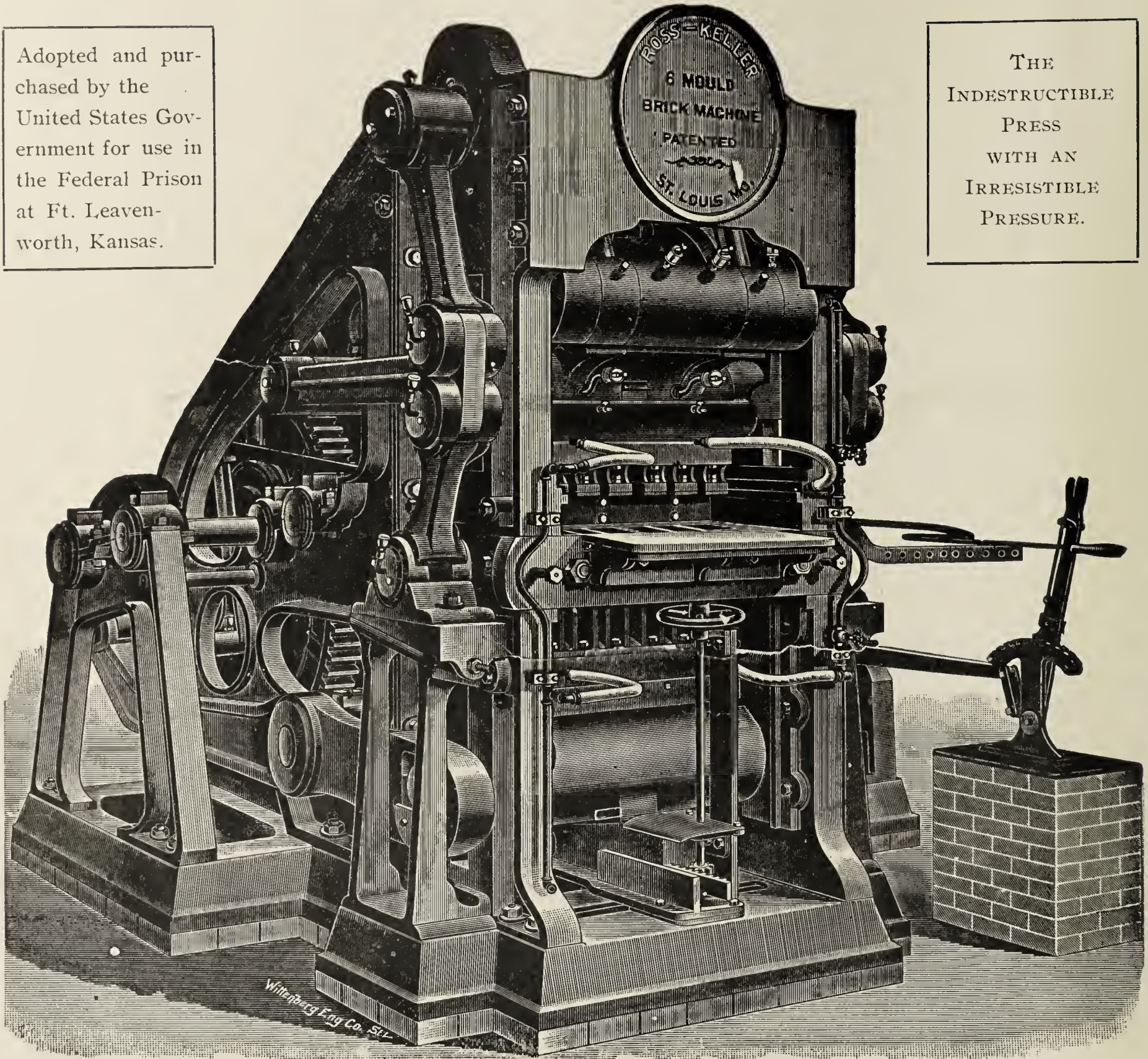
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This is the Press that Scott Builds.

Adopted and purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

THE
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WITH AN
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The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

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DRY PRESS BRICK MACHINES

**Reliance Dry Press
The Machine of the Future.**

OLD STYLE TOGGLE MOVEMENTS SUPER-
SEDED BY NEW AND BETTER
PRINCIPLES.

THE ONLY MACHINE not using the Toggle Movement.

THE ONLY MACHINE applying Pressure from the Bottom.

THE ONLY MACHINE making a Uniformly Pressed Brick.

Only Machine Making Brick Without Granulated Centers.

Every Brick is a Face Brick. 4 Mold Press 20,000 per day. 6 Mold Press 30,000 per day. Adjustment permits any pressure desired (a feature peculiar to the **Reliance**). Cheapest because having fewest parts. (Also cheapest to keep in repair.)

S I M P L E
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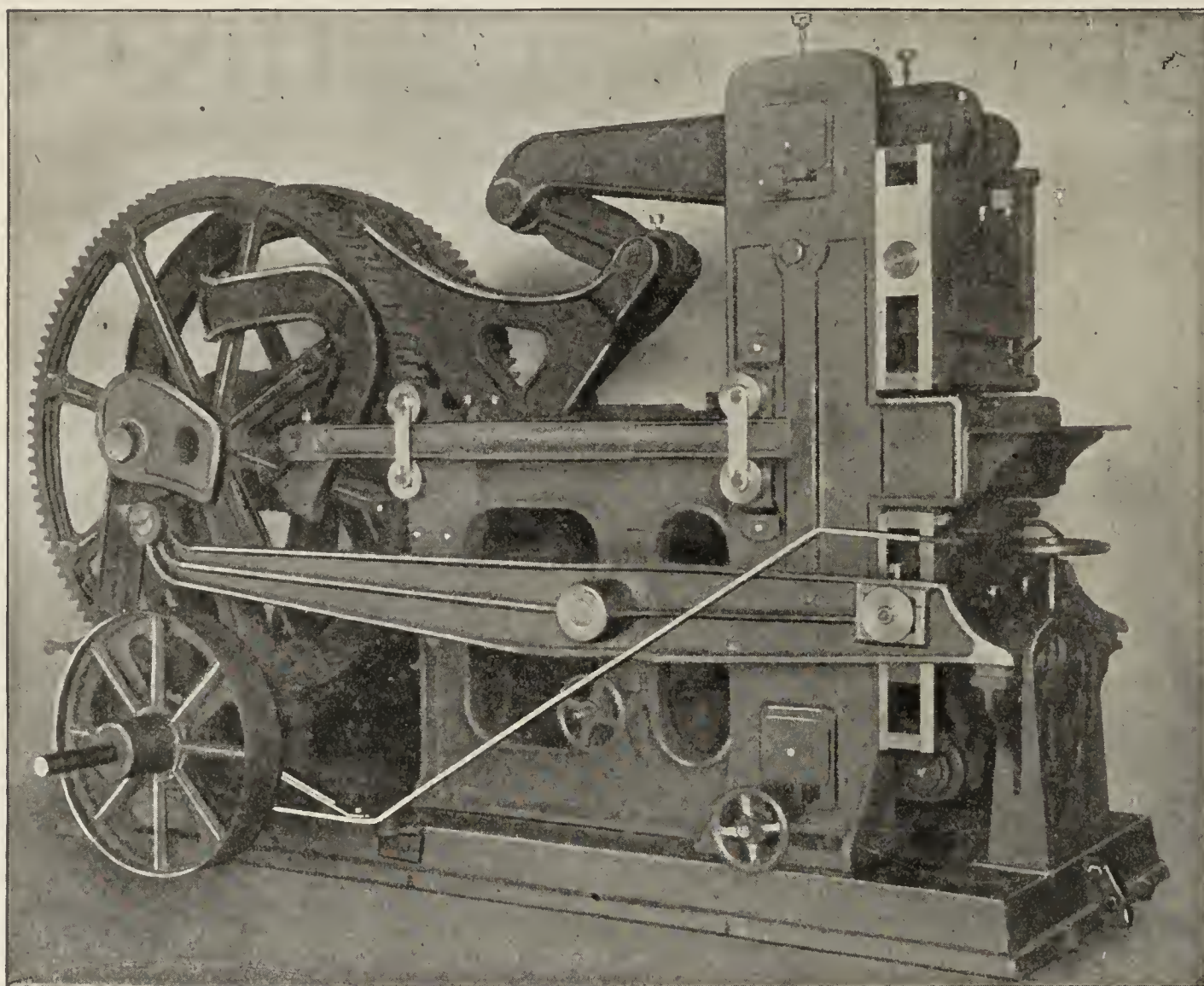
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THE NEW FOUR-MOLD FERNHOLTZ.

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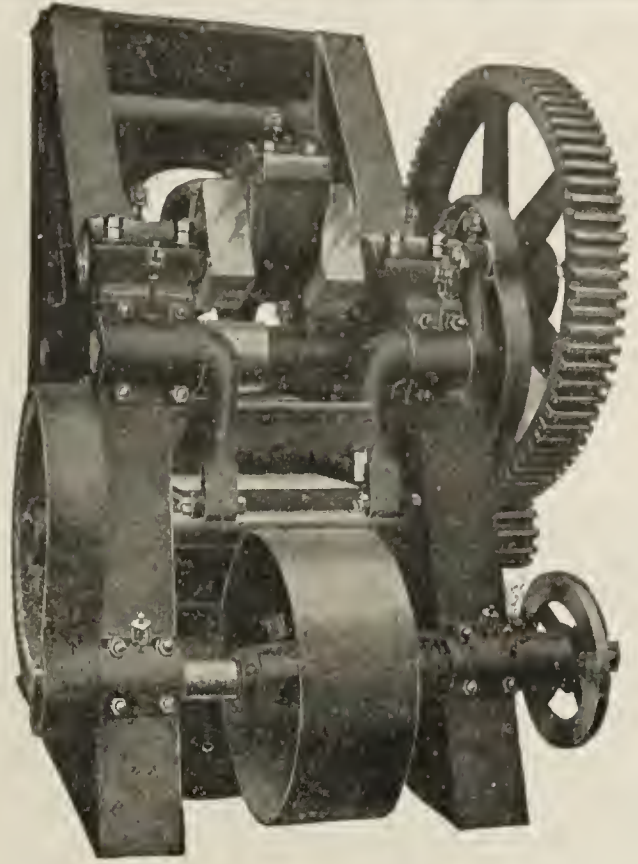
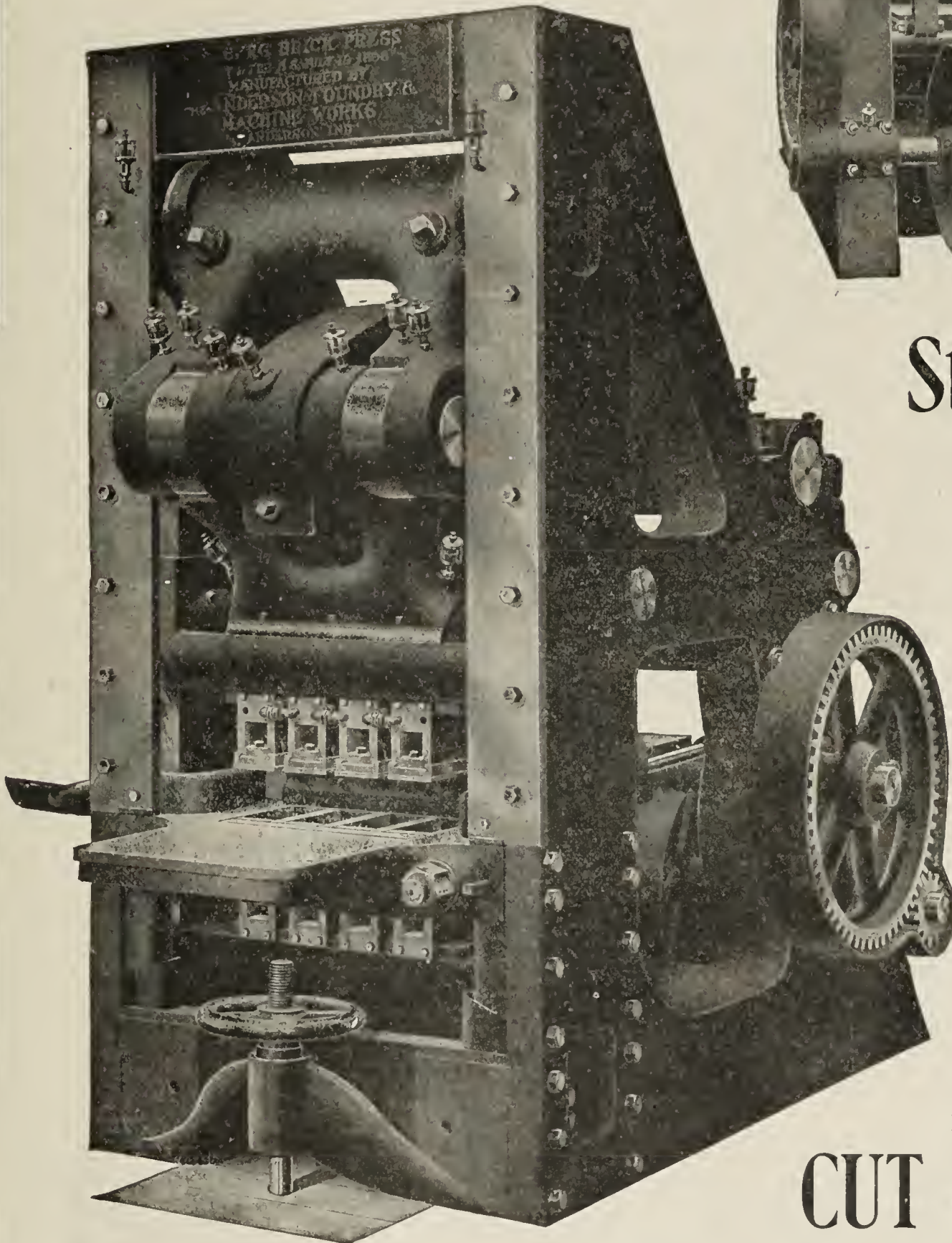
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| 1st. Because it exerts greater pressure and holds it on the material longer than any other Dry Press. | 4th. Because it costs less for repairs, and is so constructed that all parts are accessible. |
| 2nd. Because it takes less power to operate it—we use a six-inch belt. | 5th. Because it presses the material from both bottom and top, producing a uniform solid brick without granulated centers. |
| 3rd. Because it is fitted with the Fernholtz Patent Mold Box, the best made. | 6th. Because it is the only distinct cam movement press on the market. |

We manufacture Hand Presses, Pulverizers, Mixers and a complete line of brickyard supplies.

The Fernholtz Brick Machinery Company

Boyle Avenue and Old Manchester Road, St. Louis, Mo.

New Model Berg Brick Press



Back View.

Still in the
Lead
and
One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

CUT GEARING

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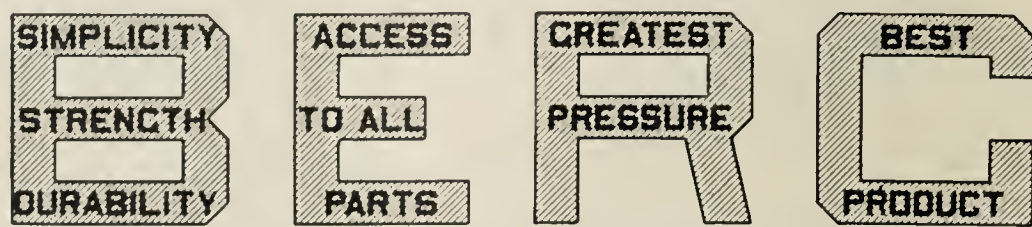
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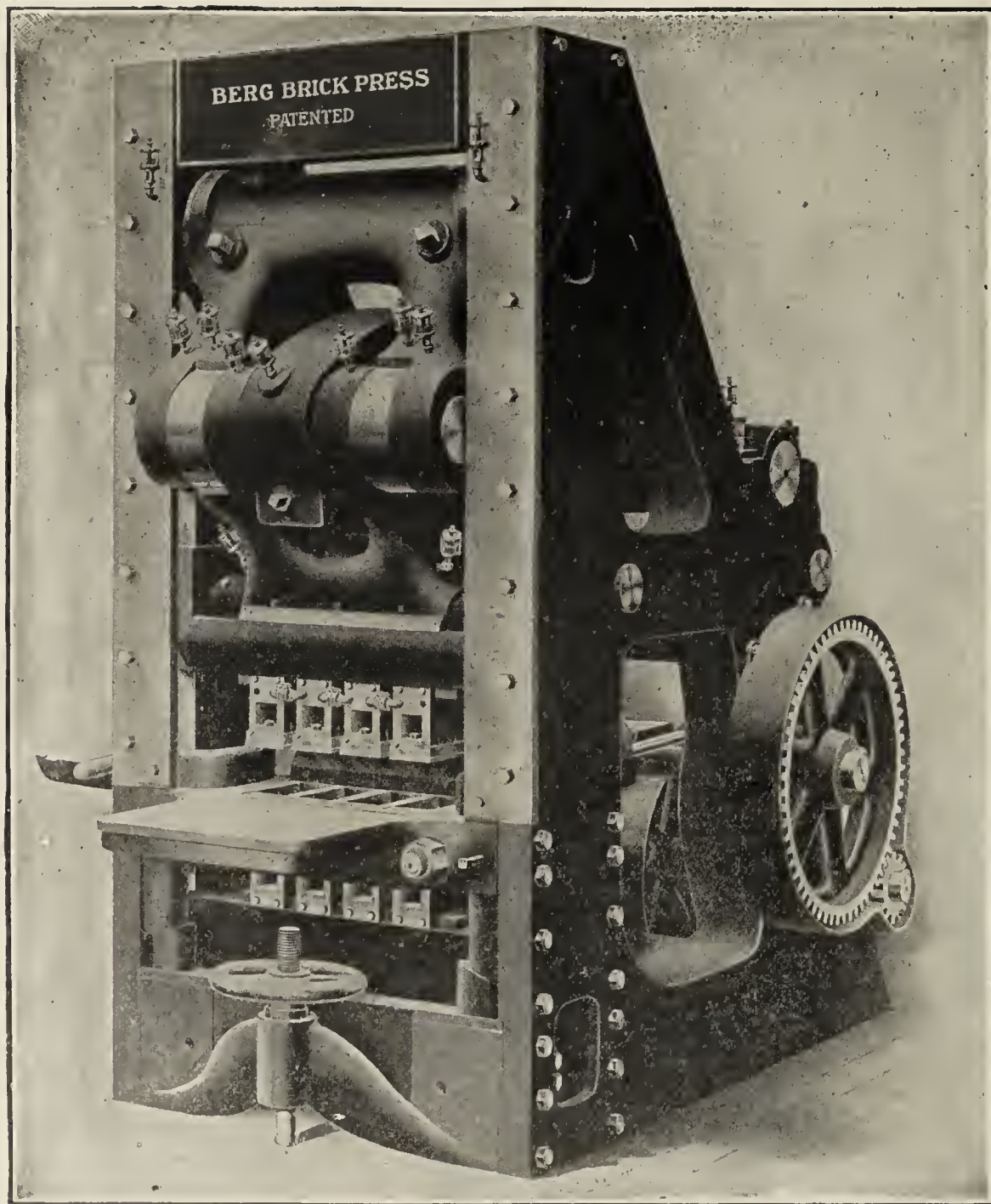
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WHAT'S IN A NAME?



The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick-
makers, and which many OTHERS
have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship. Fully Guaranteed* as to its *Success*.

Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make *Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick* and *Fire Brick*. Correspondence solicited.

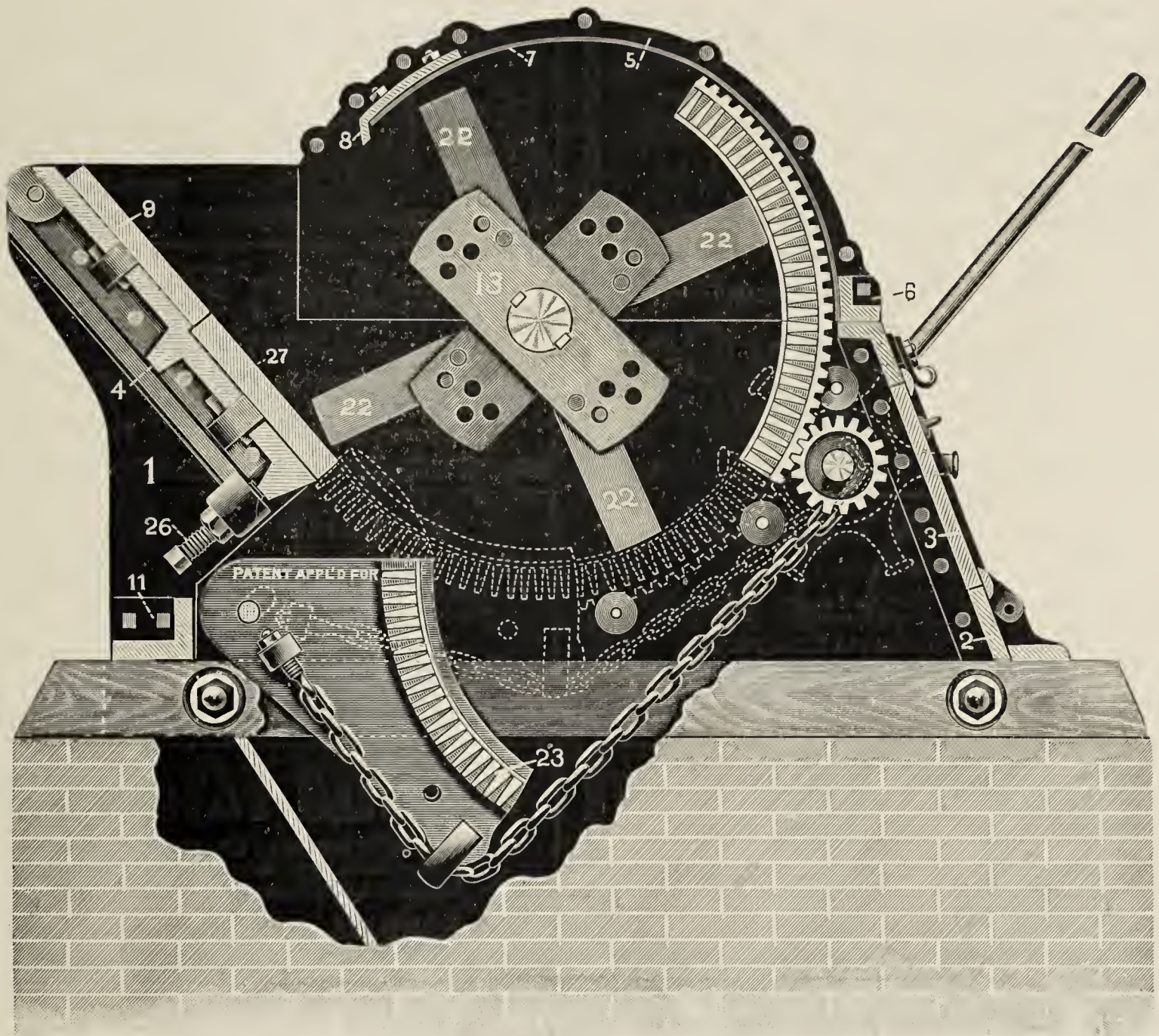
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Mention The Clay-Worker.

Manning Chambers, TORONTO, ONT., CAN.

The Williams Up to Date Shale Crusher

WITH DROP BOTTOM CAGE.



Williams Patent Crusher and Pulverizer Co.
St. Louis, Mo., U. S. A.

The National Paving Brick Manufacturers' Association

Will send you free, upon request, any or all of the following booklets:

"Directions for Laying Brick Street Pavements."

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WILL P. BLAIR, Corresponding Secretary, Terre Haute, Ind.

PRESTON BRICK COMPANY,

Manufacturer of

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McAVOY VITRIFIED BRICK CO., Philadelphia, Pa.

Is the largest and best equipped plant in the East for the manufacture of Paving Brick. All brick sold under a guarantee. Correspondence solicited.

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SHAWMUT VITRIFIED PAVING BRICK WORKS,

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Vitrified Shale and Fire Clay Paving Bricks and Blocks.

Burned in Yates' Patent Kiln.

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Street
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The Barr Clay Co.

C. C. Barr, Pres. • Streator, Ill.

Western Brick Co.,

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Western Pavers, Impervious Red Building Brick Wire Cut and Repressed.

Capacity, 60,000 Yearly.

Five Railroads.

DECKMAN=DUTY BRICK CO.,

Manufacturers of

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Factories at Collinwood, Malvern and Carrollton, Ohio.

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**VITRIFIED PAVING BLOCKS, CHOCOLATE-RED
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The Eastern Terra Cotta, Brick and Tile Co.

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**SIX FACTORIES
DAILY OUTPUT
400,000**

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How to Properly Construct Brick Streets.

Drop us a postal and we will send you free of charge
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TERRE HAUTE VITRIFIED BRICK CO.

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Sewer and Hard Building Brick,

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MANUFACTURERS OF ALL SHALE

PAVING BLOCKS and PIONEER BUILDING BRICK.

Our leading brands are CULVER BLOCKS, WABASH STANDARDS, "SPECIALS," for crossings on macadam streets, GUTTER BLOCKS, COLUMBIAN SIDEWALK BRICK and PIONEER BUILDING BRICK. Our material has for nearly fifteen years successfully stood the heaviest traffic of Indianapolis, Terre Haute, East St. Louis and dozens of other large cities of Indiana and Illinois. We ask investigation and comparison by those seeking the best paving material. Samples furnished on application.

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Manufacturers of the Highest Quality of

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Which are offered to the municipalities of the Central States under positive guarantee as to wearing quality. None better.

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WE OWN AND OPERATE EXTENSIVE DE-
POSITS OF THE VERY BEST GRADES.

Fire Clays, Terra Cotta Clays, Kao-
lin, and Fire and Moulding Sands.

Have been in the business for TWENTY-FOUR
years, and are prepared to meet every reasonable demand.
Unsurpassed shipping facilities. Prices and samples free.

The BLOOMFIELD CLAY CO.,

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MANUFACTURERS OF

BESSEMER BLOCK,

An unexcelled repressed shale paver.

Correspondence solicited.

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HAS the largest and best equipped plant in the United States for the manufacture of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation second to none, and this Company points with pride to its record for quality of material and its methods of conducting its business.

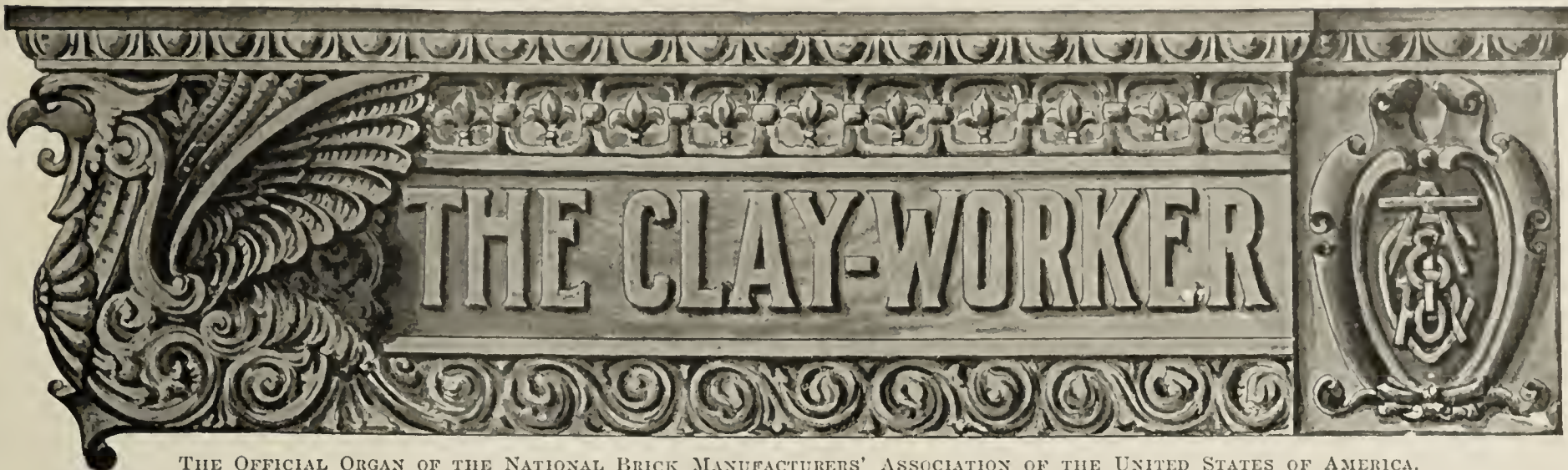
Correspondence respectfully solicited.



Do you see anything strange about the Heating S

YSTEM pictured above? Notice that all the piping is **one** level? This is the Heating System that cuts down the cost and labor of installation, and the expense of operation and maintenance—beyond any other you ever used or saw. This is the system in which remarkable provision for expansion is made; in which **every** length of pipe has exactly the **same** degree of flexibility. Another point of advantage over all other drying systems is that all pipes are shipped cut to the exact lengths, ready to be put together. Other features of superiority possessed by the New Heating System of The Standard Brick Drier are too numerous to be cited in this space. A fully descriptive booklet, entitled “Money-Saving Drying,” sent to any clay-working concern on request.

The Standard Dry Kiln Co., 647 S. Penn. St., Indianapolis, Ind.



THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVII.

INDIANAPOLIS, IND., FEBRUARY, 1907.

No. 2.



OFFICIAL REPORT OF THE TWENTY-FIRST ANNUAL
CONVENTION OF THE NATIONAL BRICK MANU-
FACTURERS' ASSOCIATION, HELD AT
ST. LOUIS, FEB. 6, 7, 8, 1907.

THE ST. LOUIS convention was in every way a record breaker. It was the largest in point of attendance in the history of the National Association, and in all respects was a most gratifying success. Even the god of weather was propitious, and the oldest inhabitant of that city cannot recall a week of such bright sunshiny winter weather in February as was enjoyed at St. Louis. The delegates came early and stayed late. They began arriving Sunday and, contrary to the usual experience, there were still a goodly number of them in the hotel on the following Sabbath. By Monday noon, the hotel took on a decidedly convention air, and there was an urgent demand for badges and number buttons. The first numerical roster was issued Monday night, and reached No. 109. The last edition was issued Thursday night, the 7th, and totaled 474. The last brickmaker to register was Mr. Robert Nesch, of Kansas City, who was delayed en route by a railroad wreck. He was given button 484. As is always the case, there were quite a number present who did not register at all, and these, with the ladies who came more than one hundred strong, brought the total attendance beyond the 700 mark. The banquet was the largest N. B. M. A. function ever given. Plates were laid for 831, and there were some who did not participate, preferring the theater or some other amusement. The St. Louis clayworkers covered themselves with glory. They were omnipresent throughout the week, extending the glad hand to every visitor, and they well deserved the

many compliments paid them by the appreciative visitors. While the Planters was crowded, there was little or no fault found with the service, which was excellent, considering the number of guests cared for. The side trips Thursday and Friday afternoons and Saturday forenoon proved most attractive, and demonstrated that the delegates were there "to be shown." The local committee was equal to every emergency, and met every requirement. For cordiality and open handed hospitality, they have set a pace that is going to be very difficult indeed to maintain, much less surpass. They generously presented the Association with a duplicate of the beautiful banner provided at Philadelphia, so St. Louis heads the first column of convention cities on same. It is a safe prophesy that it will again be inscribed on the scroll before the passing of another decade. When President Copeland called the first session to order, the convention hall was crowded, every seat being taken and many were standing in the aisles and exits.

FIRST SESSION.

Wednesday, 2:30 p. m., February 6, 1907.

President Copeland: The convention will come to order. As has been our custom, we will ask the Reverend Dodson, of St. Louis, to invoke the blessing of the Deity upon this meeting.

The Opening Prayer.

Rev. Dodson: Oh, God, the Father of us all, may our prayers at the opening of this convention be not merely a matter of religious duty, or the performance of a ceremony, but the natural expression of a sincere desire that all of our actions may conform to your laws. May we continue to develop our industries most prosperously; may we exploit the resources of the earth and unite our efforts to work for man's benefit. May the spirit of friendliness and helpfulness, may the good spirit of sweet reasonableness and fellowship guide the proceedings of this convention. May we be grateful that as business men and men working in all departments of life that we have



President John R. Copeland,
Birmingham, Ala.

not built and climbed up from the misfortunes of others. May we be glad and thankful that it is given to us to do something for our kind. May all the industries here represented grow more prosperous and may our prosperity, whether of individuals or of groups of men, be so exploited and used as becomes the finest and highest and noblest type of life in our republic. Amen.

President Copeland: Gentlemen of the convention, I am sure you will join me in looking forward to the pleasures of this occasion. As we all know from the program that has been prepared by our friends, the clayworkers of St. Louis, there is much in store for us here. I hope each and every one of you will enjoy yourself more than at any previous convention it has been our pleasure to attend. We are indeed fortunate to meet in such a great city as St. Louis, and I assure you that many of us know that we will carry away with us a fond remembrance of our convention here. In the absence of the Mayor, who cannot be with us this afternoon, I have the pleasure of introducing his Secretary, Mr. James G. McConkey, who will welcome us in behalf of the Mayor of St. Louis. (Applause.)

ADDRESS OF WELCOME.

Mr. James G. McConkey, St. Louis, Mo.: Mr. President, Ladies and Gentlemen—It had been the Mayor's intention to be present at this the opening session of your meeting, but by reason of an engagement over which he had no control, he was called to another part of the city and asked me to read

President Copeland: Gentlemen, with our membership covering as it does the various states in the Union, there is no one who would be more equal to the occasion of replying to this welcome of the Mayor of St. Louis than our friend, W. H. Hunt, of Cleveland, Ohio, whom I now have the pleasure of introducing to you. (Applause.)

W. H. HUNT'S RESPONSE.

Mr. Chairman, the Honorable Mayor of St. Louis and Gentlemen:

"And they said one to another, 'Go to, let us make brick and burn them thoroughly.'"—Genesis xi, 3.

The scriptural command has been obeyed in the state of Missouri and the finished product as exemplified by his Honor, the Mayor of St. Louis, has our unqualified approval. There has been here produced a "brick" of good form and "burned thoroughly." Sincerely, your Honor, accept my statement as a very high compliment indeed.

It was my good fortune to be a member of a delegation of Cleveland men who came to St. Louis to celebrate Ohio day at the recent exposition. Upon that occasion, as now, the honor fell to me to respond to the address of welcome by his Honor, Mayor Wells.

Veteran that we are among the trade organizations of the coun-



President-elect Wm. Conway,
Philadelphia, Pa.



First Vice-President M. E. Gregory,
Corning, N. Y.



Third Vice-President W. P. Blair,
Terre Haute, Ind.

the following letter, which will express his feelings better than I could:

MAYOR'S OFFICE, ST. LOUIS.

Mr. President and Gentlemen of the National Brick Manufacturers' Association of the U. S.:

I am just in receipt of information that my presence is desired at a very important meeting concerning the subway question (one now of great interest to the people of St. Louis) at the hour designated for the opening of your convention, and I will, therefore, request my Secretary to express to you my sincere regret at not being able to be with you as arranged.

Permit me to add, however, that while not being with you in person, I extend to you a most cordial welcome to the city of St. Louis, and express the hope that your visit with us will be most enjoyable as well as profitable.

The manufacturing interests you gentlemen represent are of great importance, and the industry is carried on in the city of St. Louis to a very large degree by many of our foremost and representative citizens, who will, I am sure, receive you in the cordial and hospitable manner characteristic of St. Louisans.

Very truly,

ROLLA WELLS, Mayor.

St. Louis, February 6, 1907.

(Applause.)

try, we know the hospitality of many cities. Never before have we been more warmly welcomed than by the chief executive who has just addressed us in this hour which marks the beginning of our twenty-first annual convention. So gracefully and heartily has been extended to us the good will of the people of this city that we may safely anticipate a genuinely pleasant visit.

While to geographical advantages may be attributed primarily the foundation of St. Louis by the early French colonists, yet that early settlement could not have reached its destiny had not Providence in its beneficence planted in the beginning seeds of honest industry and enterprise.

From a trading post to the fourth city in the Union has been an achievement within the span of slightly more than a single lifetime, and indicates the almost infinite force of co-operative energy properly directed. Those early pioneers were quick to see and profit by their opportunities. The commerce of America's greatest river vied with the resources of the inland territory in paying tribute to their business acumen. This early enterprise was accentuated with the passing years, aided by the youth and vigor of succeeding generations.

As a resident of the great state of Ohio, and upon an occasion like this, the feeling is almost irresistible to speak in praise of the distinguished men of Ohio, and to proclaim the achievements of my native commonwealth. However, today I unite with the clayworkers of America in paying tribute to the men of St. Louis, the state of Missouri, and that great section of our common country known as the Louisiana territory. (Applause.)

In statesmanship, in art, in industry, names innumerable recur to us to which we accord our respect and admiration. How true it is that our impressions of a city are quite like our impressions of

an individual, whom we may know by personal contact or by reputation. Our esteem for St. Louis is like that for the athlete, sound of body; the scholar, of clean, vigorous mind; the artist, sublime in his conception of sentiment and beauty. We must all reflect with unfeigned admiration upon the genius and vitality that so recently conceived, developed, and directed the world's greatest exposition, establishing at once a new era of importance in art and industry for the American people. Many men have gained fame in times of war, and in politics and statesmanship. It remained for a son of Missouri to render to his country a service unequalled by that of any other man of this day. We wonder at the genius that conceived that crowning glory of American industry and enterprise; at the great dynamo of force that carried forward successfully that stupendous undertaking. We take great pleasure on this occasion in paying our tribute particularly to the Director General of the Louisiana Purchase Exposition, and his associates in that world-famous undertaking. I would not refrain from speaking of a distinguished son of Missouri under whose direction the architectural features of that exposition were developed, Mr. Isaac Taylor, architect. He has added lustre to his profession, and further dignified a noble calling.

The members of the National Brick Manufacturers Association had, perhaps, a selfish motive in accepting the invitation of St. Louis to hold its twenty-first annual convention in this city. Where else may be witnessed greater commercial and manufacturing de-

tend the convention than any other member. He is now on the way, and I have a telegram from him which reads:

"Expect to arrive at Quarantine this evening."

CHARLES H. BRAY.

(Laughter and applause.)

Another one coming from the other extreme on the eastern coast, says:

"I will arrive this evening, if the train does."

W. G. TITCOMB.

(Laughter.)

Another comes from Frank Butterworth, of Danville, who is down on the program for an address on quite an important subject, says:

"Impossible to attend the convention, but Mr. Barr, of Streator, Ill., will take my place on the program."

Mr. Barr will take notice and govern himself accordingly. I want to announce that there will be a departure from our usual program. We will have a session this evening, the first evening session for a number of years. Prof. Orton will give a lecture on "The Occurrence and Preparation of High Grade



Secretary Theo. A. Randall,
Indianapolis, Ind.



Second Vice-President Lemon Parker,
St. Louis, Mo.



Treasurer John W. Sibley,
Birmingham, Ala.

velopment. Upon coal and iron our modern industry primarily rests. Without the various forms of fuel our present industrial development would not exist. Of almost equal importance and a vital accessory to the agencies of power and the products of iron ore is burnt clay, which is inseparably linked with the great forces that sustain our prosperity. No small part of the fame of St. Louis as an industrial center is her clayworking enterprises. Our ancient and honorable occupation has here enlisted some of the best men of our day; men whose business example is an inspiration for the achievement of higher ideals.

We have come to St. Louis not as strangers, but as friends, conscious of our host's attributes of mind and heart; believing that we will be stronger for having been thus permitted to assemble under such ennobling influences.

Again, Mr. McConkey, let me thank you in behalf of the members of the National Brick Manufacturers' Association for your cordial welcome. (Applause.)

Messages From Absentees.

President Copeland: I believe Secretary Randall has some telegrams to read.

Secretary Randall: While the attendance is very large, we will probably touch the high water mark in attendance from the appearance of the register, still there are a few of the old timers who are missed. There is one who is well known and loved by a good many who have attended previous conventions. He has the reputation of traveling farther to at-

Clays for the Market." I do not have to say anything for this lecture, but those who miss it will miss a treat. Professor White, Dean of the College of Engineering, of the University of Illinois, who spent several months abroad and is very much interested in brick architecture, will present an illustrated lecture on "Brick Architecture" this evening immediately following Prof. Orton's paper. The next on the regular program is the President's annual address. (Applause.)

PRESIDENT COPELAND'S ANNUAL ADDRESS.

Gentlemen of the Convention:

I feel particularly fortunate, and especially honored in having the distinction of addressing you as your presiding officer on this your twenty-first anniversary.

The twenty-first birthday marks an important epoch in the life of every man. It marks the mile post in time beyond which one traverses the broader road to full legal manhood.

In a strict legal sense a man is as big and important then as he will ever get to be. He is a full-fledged man.

And as the National Brick Manufacturers' Association has reached literally as well as figuratively the full size of manhood, it ought to, and undoubtedly is, a matter of special pride to us to know that the last year through which we have passed to reach this legal milestone of manhood has been a record breaking one, and that the members of this association have, as a body, flourished as they never did before.

Some have prospered better than others, of course, and each man

is naturally disposed to gauge the year by the measure of his own prosperity.

But taking the trade as a whole the brickmaking industry has enjoyed its full share of the great prosperity of the past year.

There have been some retarding influences at times and in local ways, but in the aggregate probably less than ever before as compared to the volume of business done. In other words, it has been a year in which prosperity reigned almost undisturbed; and the end of it finds us not on the crest of a wave with a yawning chasm of depression visible beyond, but with plenty of evidence of still more and greater things to come; for the American people as a whole have learned from past experience how to enjoy and use the prosperity better.

You will find evidence of this on all sides; find a tendency toward better and more substantial home building among the people, not only in the cities, but in all the agricultural districts. This, too, is the most gratifying sign of the times.

It is the homebuilders that are the backbone of the nation; and with the country at large turning a fair share of its prosperity into better homes, it not only argues well for the future safety of the prosperity, but it speaks of even more flourishing times for the brick industry.

Better homes bring among its first requirements a call for better building material. And when people begin to search for the best in building material they naturally bring up in time at the brick kiln. In fact, one could go on for hours pointing out the bright

out, this is our twenty-first birthday for one thing, and another thing that makes this subject impressive on my mind at the present time and place is the fact that we are now meeting in the home city of the most noted advocate of training schools for the young in our association, Mr. Anthony Ittner. (Applause.)

He has given a world of time and thought to this subject, of which you are well aware, and for that reason in addition to all the other logical arguments which could be brought forth in favor of such work I would like to see this subject made a star feature of the present meeting. And commend not only your attention to the paper which will be presented on the subject by Dr. S. C. Dickey, but desire to urge that you all take active part in the discussion that follows and keep your shoulders to the wheel for progress in this line. We are interested not only as public spirited citizens, but as an industry, in the future prosperity of the country and the proper training of the young to insure this prosperity.

Our first interest, of course, is in our own young and their training and equipment for carrying on the work when we drop out. Next to this we are interested in the training of the bricklayers; for the connection between brickmaking and bricklaying is such that the welfare of the brickmaking in the future depends in a great measure on the supply of competent men to lay them in the wall, so that there may be enough to keep the work moving and keep the cost within reasonable bounds.

Thus, aside from the direct interest, we are indirectly interested in the training of all the boys of the country; for the future pros-

SOME OF THE MEMBERS OF THE ST. LOUIS CLAYWORKERS'



Gordon McNeil, St. Louis.



C. M. Fitzhugh, St. Louis.



S. Mitchell, St. Louis.

spots that are visible in the progress of this country today, but you are all pretty well informed and probably duly impressed with these matters already, so there is no necessity for dwelling at great length on it.

When we count up the good things that have come to us in the past, and contemplate the promises of the future, there must come to all of us, and it is very fitting that it should come, too, at this our twenty-first birthday, a feeling that we have a responsibility and owe a duty in return therefor. We should have a feeling of responsibility for the welfare of the future. Feel that it is our duty in view of having been dealt so well with ourselves to prepare the way for those that come after, that they, too, may reap even more bounteously than we have.

In this connection, one's thoughts naturally turn to the young, to their welfare, to the preparation for their future, to their training and equipment for meeting and overcoming the problems that will arise.

As was said in one of the Thanksgiving editorials of our official organ, THE CLAY-WORKER. "It is meet that a man should sow for the future as well as reap the harvest of the present."

When a man attains his twenty-first birthday and has thoughts of home building, which every right thinking man has, he figures on planting fruit trees from which his children may gather a harvest just as his father planted for him; and plans for the future in many ways, not only for his own good, but for the generations to follow.

It is peculiarly imperative at this time that we give special attention to the subject of training the young. As has been pointed

perity of the country is in a large measure dependent on the training and equipment of the young man of today to shoulder the responsibility of the future. Therefore, let us give this matter special attention and hearty co-operation.

One of the puzzling problems prosperity has brought to us is that of transportation. Moreover, it is now not merely a question of uniform rates, nor reasonable charges for the movement of freight, but there is also an urgent question of lack of facilities through some cause or other for moving freight as expeditiously as it should be. It is not easy either to point out just what should be done, or what is the logical solution of the question; for if it were, it undoubtedly would have been pointed out ere this and some effort made to put it into practice. There has been more complaint this year than ever before about the scarcity of cars and the slow movement of freight.

A shippers' association has figured out that the carload shipments represented by the members of the association have traveled on an average of only about sixteen miles a day. This finding is somewhat remarkable, but it is much easier to find the rate that the average loaded car travels than it is to find some cure for this slow transportation. In fact, it seems impossible for all to agree even on the cause. Some shippers say it is the railroads' fault; some railroads say it is the shippers' fault; some say it is lack of terminal facilities; some say it is just lack of general ability on the part of the railroads to handle the business of the country. Some say one thing and some another, and Congress is being urged to do something to give relief. There is no question but what we need relief, but how to get it is the question. It is evident that we

need more transportation facilities, and to that end we undoubtedly should, as has been recommended heretofore, urge the powers that be to give a fair measure of attention and support to our inland water ways. Transportation by water may be slow, but it need not be as slow as sixteen miles a day; and if we can get shaped up to transport more freight by water the railroads may be better able to give us better service on the balance. Meantime, if any man in this meeting has up his sleeve or in his pocket an infallible recipe for curing transportation of its congestion we want to hear about it.

This brings us, gentlemen, to the close of another year. Old Father Time hurries us on; so it is but fitting of us to profit by our past experiences during the year past and gone, and try, each and every one, to do better during the next to come.

Let us in all sincerity, deep down in every heart, pledge here and now that we will, as members of the N. B. M. A. and as individuals, do everything possible for each other's welfare during the year to come.

It has been wisely said, "That in the human race there is lots of human nature." Should we see in a neighboring competitor an act which we are bound to admire, go to him and tell him of it with a warm, hearty hand-shake, and perhaps he will recall something bright and good in you which he has the courage to tell; and then there will spring from such a noble source much good which will tend to cheer us along the rugged path, and I dare say add much

the pleasantest memory of the mid-summer meeting during the World's Fair, and especially our hilarious trip down the "Pike" through the courtesy of our Hydraulic friends; and I also felt hopeful that my good friend Anthony Ittner would have his attention so occupied as Chairman of the Entertainment Committee that he would not insist upon my injecting any fun into this report, but alas, he is unrelenting and says I will be "handed a lemon" if I fail to evoke a titter here. That, however, might not be so bad, as I heard one of the prettiest ladies at the convention remark that she would not mind being handed a lemon if it was as sweet as Lemon Parker. (Laughter). For the past few years, by my so-called jokes, I have managed to evolve a surplus out of a deficit. I realize at this convention we are all in if not "from Missouri," and some folks up here are said to be hard to fool, so I am highly gratified, as well as relieved, to be able to report a gain for the year ending in receipts over disbursements, and we have added to that famous surplus \$141.94. Personally this is consoling because from the experience of the past few years this evanescent surplus had begun to make me feel much like the Irishman whose friend Pat said he died very poor because he lost his health chasing after a fortune and then lost his fortune chasing after health. (Laughter).

Following is a statement of receipts and disbursements:

ASSOCIATION WHO ENTERTAINED VISITORS CONVENTION WEEK.



M. F. Williams, St. Louis.



Fred Talbot, St. Louis.



W. F. Scott, St. Louis.

more to our pleasures than flowers on our graves or epitaphs on our tombs.

I have gathered much from this grand old association. It has done me much good. We have many kind hearted, good, noble, true men among us, and I am sure that so long as this association does that which is right and just we will continue to climb onward and upward, and keep pace with the advancement of other crafts and other professions.

May God in his wisdom guide us in our deliberations during the convention; may such good come to each and every member here, both as individuals and as an association, from this meeting. May your officers who are this day elect, go forward with renewed vigor and energy for our upbuilding for another year, with the assurance that they have your individual support and influence, and I am sure success will crown their efforts.

Again thanking you for your indulgence and assistance during the past year, and wishing you one and all godspeed in your every effort for all time to come. (Loud applause.)

Secretary Randall: The next in order is from another member from Birmingham; we will now hear the report of Treasurer Sibley. (Applause.)

TREASURER SIBLEY'S REPORT.

To the Members of the National Brick Manufacturers' Association:

Gentlemen:—When the invitation came for this convention to be held in St. Louis I was eager to vote twice for it because I had

RECEIPTS.			
Balance in Treasury, Account 1905.....			\$445.18
Membership fees, 126 at \$5.00, account 1906..	\$630.00		
Membership fees, 461 at \$3.00, account 1906..	1,383.00		
Reports, pamphlets, etc., sold, account 1906..	11.60	2,024.60	
			\$2,469.78
DISBURSEMENTS.			
Paid allowance for clerk hire.....	\$300.00		
Paid for programs, mailing, etc., per voucher	118.50		
Paid for badges, extras, per voucher.....	73.90		
Paid for convention reports, mailing, etc.			
per voucher.....	287.25		
Paid for numerical roster, per voucher.....	28.55		
Paid for pocket list of members, per voucher.	67.96		
Paid for engrossing certificates, etc., per			
voucher	25.90		
Paid for banner, per voucher.....	100.00		
Paid for miscellaneous printing, per voucher.	88.00		
Paid for assistant secretary, per voucher....	100.00		
Paid Ohio State University, scholarship, per			
voucher	250.00		
Paid for Secretary's traveling expenses, per			
voucher	250.00		
Paid for postage, exchange, expressage, etc.,			
per voucher.....	192.60		
Total expenditure.....		\$1,882.66	
Balance in treasury.....		587.12	
			\$2,469.78

RECAPITULATION.

Balance in treasury, account 1905.....		\$455.18
Total receipts.....	\$2,024.60	
Total expenditures.....	1,882.66	
Net balance in treasury.....		141.94
		\$587.12

Respectfully submitted,

JNO. W. SIBLEY,

Treasurer.

President Copeland: The next on our program, gentlemen, is the election and installation of officers. This is usually done by ballot, or by the Secretary being instructed to cast the ballot. Nominations for president are now in order.

ELECTION OF OFFICERS.

Will P. Blair, Terre Haute, Ind.: The National Brick Manufacturers' Association of this country has never failed to put in nomination, much less to elect to the presidency, a man of whom we have all felt proud. In the city of Philadelphia there has been born and nurtured a man who represents all that is best in our American civilization. In that city there was born and nurtured a character in keeping with all that is best in our history, one who is known and loved by us all, a man so tender in character and yet so stalwart, that we know he will preside as president of this Association with



W. D. Gates, Chicago, Ill.

dignity, with honor to himself, and to the satisfaction of every member. It is my great pleasure to place in nomination my friend and your friend, Mr. Wm. Conway, of Philadelphia, Pa. (Applause.)

W. D. Gates, Chicago, Ill.: I second the nomination and move the rules be suspended and the Secretary be instructed to cast the entire ballot of this convention for Mr. Wm. Conway for president.

Motion seconded by W. S. Purington, and carried.

President Copeland: The Secretary has cast the ballot and Mr. Conway is duly elected. The next is nomination for first vice president.

Mr. Lemon Parker, St. Louis, Mo.: It gives me great pleasure, Mr. President, to place in nomination a man who has been connected with this Association and who has been extremely helpful and diligent in caring for the interests of the Association. I nominate Mr. M. E. Gregory, of Corning, N. Y., for first vice-president. (Applause.)

Mr. H. C. Dunn, Erie, Pa.: I second the motion and move the rules be suspended and the Secretary cast the ballot for Mr. Gregory for first vice-president.

Motion seconded and carried.

President Copeland: The Secretary has cast the ballot

and Mr. M. E. Gregory is your first vice-president for the ensuing year. Nominations for second vice-president are now in order.

Henry Hasbrouck, Johnsonburg, Pa.: I want the pleasure of nominating here for second vice-president, a man who has strictly obeyed the scriptural injunction to "Make brick, make them well, and burn them thoroughly," and by so doing made a place for himself where we esteem him a square brick. In doing this, I offer you—I hope the gentleman will bear with a little joke—a lemon, but a sweet one, and one you will be proud to elect for second vice-president. I nominate Mr. Lemon Parker, of St. Louis. (Applause.)

J. W. Sibley, Birmingham, Ala.: I second the nomination and move the same action be followed as with the other gentlemen.

Motion seconded and carried.

President Copeland: The Secretary has cast the ballot and nominations are now in order for third vice-president.

R. G. Eisenhart, Horseheads, N. Y.: I desire to place in nomination for third vice-president a man who is not only a first-class brickmaker, but a man who has stood by this Association nobly. Unfortunately he is not very well known, but I know no better way for him to become acquainted than by electing him to office. I take great pleasure in nominating Mr. W. P. Blair, of Terre Haute, Ind., for third vice-president. (Applause.)

Secretary Randall: I, too, am from Indiana, and I hope Blair will squeeze through after his friend Lemon Parker and be elected. I want to see Will Blair go down the line—I beg pardon, I mean up the line. For many years, we had on our Executive Committee a noted Indiana man much like Mr. Blair, a man of sterling worth. He has left us, but I want to see another Hoosier on the list, and I hope Mr. Blair will be elected to this office. I second the nomination.

W. A. Eudaly, Cincinnati, Ohio: I move the rules be suspended and the ballot be cast by the Secretary.

Motion seconded and carried.

President Copeland: The ballot has been cast, and you have elected Mr. W. P. Blair for your third vice-president. Now, gentlemen, who will you have for Secretary of our Association?

Mr. J. M. Blair, Cincinnati, Ohio: There is a gentleman present with us today who in 1886 met with a party of forty or fifty clayworkers of this country, representative men of that time, and formed an organization. That gentleman by his persuasive eloquence impressed upon us the necessity of organization. He pictured at that time what would be the result if we would form a national association. He has finally come to the full fruition of his ideas by this convention here today. That man can stand now before this meeting and feel very proud that the labor he has expended in the way of organization and promoting and fostering one of the strongest organizations in this country has borne such fruit. I feel as though this organization cannot do too much for that man. We want him still to labor for us, even though we do not give him any salary or anything of that kind, but I want to nominate Mr. Theodore A. Randall for secretary for the twenty-first time, and gentlemen, you will do yourselves proud to re-elect him. (Applause.) I move we elect him by a rising vote.

Seconded by many.

President Copeland: Gentlemen, it has been moved and seconded that your old-time and tried friend Theodore Randall be re-elected by a rising vote. All in favor will rise.

The convention rose as one man.

President Copeland: Mr. Randall has been elected again, and the next in order is treasurer. Our noble treasurer has represented us so long from our grand old Southern State, and always maintains a balance. I hope some one will nominate him. (Laughter.)

Mr. Eudaly: Mr. Sibley asked me to do that. (Laughter.) He said he wanted to be elected by a rising vote if anyone else in the convention was so fortunate as to be elected that way. (Laughter.) I place in nomination Mr. Sibley, and I trust someone will make a motion that he be elected by a rising vote and that it be unanimous. (Applause.)

J. Fred Smith, Omaha, Neb.: I second the nomination and move he be elected by a rising vote.

Motion seconded by several.

President Copeland: I believe the ladies are included in this vote.

Mr. Eudaly: That was Mr. Sibley's request. (Laughter.)

Motion carried unanimously by a rising vote.

President Copeland: Mr. Sibley is duly elected, and I hope he will return next year with a dollar in the treasury for every vote cast over the present balance. I will ask Mr. Randall to announce the next.

Secretary Randall: We have another election, that of member of the Committee on Technical Investigation. I am

President Conway: Mr. President and Gentlemen of the convention and our lady guests, I assure you I much appreciate the honor you have conferred upon me. I feel as though this will be one of the most important conventions this Association has ever held. There is the largest attendance here, and that of itself shows how this Association is growing, and the importance of your deliberations when in convention assembled. I feel as though these conventions were really a trade school. These men used to meet and greet one another shyly, but now they come together and each man seems anxious to give information to his fellow-man. That shows the good fellowship that in itself makes these conventions so largely attended. It is this that has helped the clayworking industry, and it is that that will continue to make it grow and prosper. This good fellowship seems to grow with each convention. Last year at Philadelphia, as a member of the entertainment committee, I had the pleasure of welcoming these gentlemen there, and I assure you we did what we could to make your stay in our city pleasant. But, gentlemen, the St.



PANORAMIC PICTURE OF THE DELEGATES TO THE NATIONAL CON-

afraid we will have some difficulty in determining as to who we will elect to fill the place of the member whose term expires this year. As most of you know, we have a Committee on Technical Investigation, of which Prof. Orton is permanent secretary, and the balance of the committee consists of D. V. Purington, whose term expires in 1910, C. A. Bloomfield, term expiring in 1909, W. D. Richardson, term expiring in 1908, and Anthony Ittner, whose term expires today.

Mr. Bloomfield: I nominate Mr. Anthony Ittner to succeed himself for another term. (Applause.)

Motion seconded by many and carried.

Installation of Officers.

President Copeland: It is indeed with pleasure that I hand this brick gavel to your President for the ensuing year, and I wish each and every one of you a prosperous year, not only individually, but for the Association. Gentlemen, allow me to introduce your new President, Mr. Wm. Conway. (Applause.)

Louis people are going us one better, and I think there will be more pleasure as well as more good accruing from this meeting than from any previous convention. We are meeting at this time in one of the most progressive cities in the West. It was said that after the exposition St. Louis would have a set-back. That seems not to be the case. It seems to have given her renewed growth; she seems to grow faster than ever before. The importance of our conventions cannot be realized by those who do not attend them. Sometimes I am asked, "What do you do at the convention? What do you talk about?" To the man who has never attended one of these conventions, this seems a natural question, but after attending, it is not what you do, but "what don't you do." You do everything—you help one another in the manufacture of brick that it is possible to do. I am gratified to see at this convention so many of the young men. That bodes well for the future of the industry. It is the young men we are after. It is the young men who will follow us and pick up the work where we leave off. We are teaching them the importance of

the technical schools; Prof. Orton's work is growing, and I look forward to the day when there will be more of these clay-working schools in the country. I went into one of the sessions of the Ceramic Society to hear that discussed, and I feel that it will be one of the important things brought about by our Association. I will not take up any more of your time; we have a great deal of business before us. If I can only hold down Mr. Ittner and Mr. Eudaly and Mr. Gates, the young men will have a chance to say something. (Laughter and applause.) Again thanking you for the great honor you have done me, I now take pleasure in introducing to you our first vice-president, Mr. M. E. Gregory, of Corning, N. Y.

Vice-President Gregory: Mr. President, ladies and gentlemen, I thank you most kindly for the honor you have seen fit to bestow upon me today by electing me first vice-president of the National Brick Manufacturers' Association. I feel it is an honor any man should feel proud of. Proud, because the members of this Association represent the successful brick-makers of this country. I think if we will scan the proceed-

we see from year to year. It is a pleasure to meet with you, and it is a pleasure to think about you. I thank you, gentlemen, for the honor you have conferred upon me this day. (Applause.)

President Conway: Gentlemen of the convention, I now want to introduce to you Mr. Lemon Parker, of St. Louis, your second vice-president.

Vice-President Lemon Parker: Mr. President and ladies and gentlemen, I hardly know what to say. I have been so embarrassed by Mr. Sibley's remarks in regard to my name. It seems odd to me that you should think my name queer. I never met the gentleman, but I have heard of a gentleman whose name is Parker Lemon, and I thought that odd, while my own name does not seem uncommon to me. There were also some remarks passed over here in this corner about "squeezers;" now that word is not altogether uncommon to me. (Laughter.) In fact, the boys used to take my name in vain very often when I was a boy, so I really should not be so very much embarrassed after all. Gentlemen, I thank you for



VENTION, TAKEN AT THE FACTORY OF THE LACLEDE FIRE BRICK MANUFAC-

ings of our national conventions since the inception of the organization, we will find recorded there the names of the successful brickmakers throughout the United States. These brickmakers have come here from year to year and have been willing, not only willing, but anxious to tell how they accomplished the success they have achieved. This in itself will pay the younger men for coming to the national conventions. Only a few years ago I had the pleasure of visiting a brickmaker's plant. In talking to him, I asked him if he was going to attend the national convention. He said he did not have time. I went over his plant, and if that man had attended the National Brick Manufacturers' convention and the American Ceramic Society meetings for the last ten years, he would have enjoyed an income of \$5,000 to \$10,000 per year over and above what he has had. It will pay any brickmaker to attend these conventions. It was here that I first got the inspiration which has helped very much in my work of making terra cotta. I like to come to the conventions because of the association with these members, these kindly faces which

the honor you have conferred upon me by electing me to the office you have. (Applause.)

President Conway: I would like to introduce to you Mr. Will P. Blair, your third vice-president. He is so far back that I believe I will have to ask a couple of the ladies to escort him to the platform. I see my wife back there near him, so I will ask Mrs. Conway and Mrs. Eisenhart to present Mr. Blair to the chair. (Laughter.)

Mr. Blair was escorted to the platform by the ladies named and introduced by President Conway.

Vice-President Will P. Blair: Mr. President, ladies and gentlemen, by the help of the good ladies, I am able to stand on this platform and I believe that is all that is necessary on this occasion. It has been said that I am a stranger to you and that is why I suppose you want me to stand up here. In fact, one of the assigned duties of the third vice-president is that he shall keep still, at least for two or three years. Gentlemen, I thank you. (Applause.)

President Conway: Now, I have a difficult task. I want

to introduce to you the gentleman who, it has been said, has just reached his twenty-first year, so far as this association is concerned, this being Mr. Randall's twenty-first birthday. I take pleasure in introducing the gentleman to you now. (Applause.)

Cries of "Speech, speech!"

Secretary Randall (holding up an immense batch of manuscript): Mr. Ittner wants a speech and I believe I will gratify him. (Laughter.)

Mr. Ittner: Never mind, Mr. Randall, if that is your speech I will excuse you. (Laughter.)

Secretary Randall: Mr. President, ladies and gentlemen, it is with mingled feelings that I greet you on this my twenty-first annual election. As a boy, I looked forward with great anticipation to the time when I should become of age; now that I am of age, officially, my glance is retrospective rather than prospective. I do not know whether to feel glad or sad, because having passed the twenty-first milestone, I will not, in all likelihood, be able to repeat the performance. However, I will do my best. Samuel Johnson said:

You still have hoped what I should be
When I had reached majority:
And could I truly take the bun
When I should come to twenty-one?

Would I be like that Theodore
The one whom all of us adore?
And could a Randall hope to hold
A candle to that man of mold?

While one can't hope to be as great
As he who guides our Ship of State,
Smiling in his expansive way,
Hand on my heart, I dare to say,

With face up-turned, with pleasure lighted
Altho, indeed, I'm somewhat frightened
And all my wits are disunited—
I'll say the self-same word—

DELIGHTED!

(Laughter and applause.)



TURING COMPANY, ONE OF THE FINE PLANTS VISITED THURSDAY AFTER-

"Long expected one and twenty,
Lingering year, at length is flown:
Pride and pleasure, pomp and plenty,
Great achievements are your own."

It is nice to quote poetry like this. Indiana, you know, is the home of poets and litterateurs, and knowing you would expect something unusual on this occasion, I had the poet editor of THE CLAY-WORKER burn a little midnight oil so I might come to you with something out of the ordinary on this my twenty-first birthday, and here is his offering:

This is my birthday—twenty-one!
How swift the passing years have run,
Since in my feeble fist you placed
The pen that has your records traced.

Kind, kind and gentle, ever kind
To all my faults you have seemed blind;
Since first you took me in the raw
You've never been a mother-in-law.

Presentation to Mr. and Mrs. Randall.

Mr. W. D. Gates: Mr. President, it may be inopportune at this time, but I want to enter a protest right here. For some twenty-one years it has been the custom here, as you all know, for Eudaly and Purington, and Ittner and myself to get into the front seats and see who can get the attention of the convention first. Now, I came in here this afternoon, and I saw the spot-light over there which the young man was tle Willie shines, so I sat down there in front of it, and in a little while Mr. Eudaly came in and sat on my coat tail and I put my arm around him, and we have sat there that way all this time. He looked away once, and I made a motion; then he looked away once, and I made a motion and then a little later I let go of him for a moment and he made a motion, and this is the first time I could get away from him. (Laughter.) Mr. Hunt talked about coming to St. Louis, but it was not as St. Louisans I considered our hosts, but I considered them Missourians. I have been wanting to come to Missouri and be shown for some time. I always had peculiar ideas of this

State. I remember when I was a boy in the geography class how we bounded Missouri. It is bounded on the north by corn, on the west by the wild winds, on the south by the man with the fiddle, and on the east, separated and protected from the bunches of politicians and poets in Indiana and Ohio, by a little scum of Mississippi water and a part of the State of Illinois. What has occasioned my admiration of Missouri is the independent way they have, when a story is told them, of saying "Show me." It has come to be a condition of affairs in which all over the United States, it has come to be said, "I am from Missouri." So we come here, and when Eudaly or any of the old guard make a wild statement, all we have to do is to say, "We are from Missouri; show us." Now, of course, this is a reminiscent occasion; it takes us back twenty-one years. The first thing Randall said to me today was "You are No. 2," and then pinned this button on me. Then I met Mr. Dunn; he was labeled No. 1, and he patted me on the back and said, "Gates, we are back numbers." (Laughter.) It is a delicate proposition, and I came into the other convention, the American Ceramic Society, and sat down over there where there were a lot of boys—we are some of us going into fos-

tion of a birthday that affects us all. There is a man here who can look out over this vast audience and realize that he has had more to do in producing this condition of affairs than any other man in the country. He has had more to do than any other man in the country in the growth of this organization. I can safely say without fear of contradiction that without Mr. Randall we would not have had so large a growth. But there is another that I have even more respect for than I have for Randall. Randall has controlled the organization, but Mrs. Randall has controlled Mr. Randall. (Laughter.) So, there are two people whom we should honor very, very much today.

I have no set speech. I could not make one; it would be out of the question, but there has been a gathering together without any concerted action, absolutely voluntarily—many of the members heard that we had thought that there should be something to show the Randall family, to show Mr. and Mrs. Randall what we thought of them. There has been some action taken, and some friends have asked me, because I was holding Eudaly and he could not talk, to come here and say a few words in regard to this. It was the wish that this



NOON. PHOTOGRAPHED BY THE STAR PHOTO COMPANY, 713 OLIVE STREET, ST. LOUIS.

siliferous history—and there were a number of us who sat and took information from a lot of young men. When we met in Cincinnati so many years ago, a little handful of men, our wildest ideas did not extend to anything like the realization that we have come to today. Look at the charts hanging there on the wall; they are illustrations for one paper that was presented before the Ceramic Society by a young man, and we were throwing stones at the young man only a few years ago. We have got to realize that we are getting old. "Old man" Randall came into a meeting of the Ceramic Society the other morning, and "Old man" Randall said, "I have been doing the best I can, but there is a young Randall who has come up, and I want the young Randall to come into this society, and I want to step down and out," and the boys said, "No, we won't let you go; we want 'Old man' Randall, too," and they made him a life member, and "Old man" Randall had tears in his voice, and he could not talk. That is the situation. We are all reminiscent; we come with the idea that we will sit still and keep quiet; I came with that idea, and Eudaly tried to hold me, but I got loose.

There is a condition of affairs arising here in the celebra-

twenty-first occasion should leave something to Mr. and Mrs. Randall that should show to them, in a measure, in a little measure, the affection we have for them. There was no trouble in making the original proposition. The only trouble came in the selection. There was the hitch. We wanted something Mr. Randall could use and something Mrs. Randall could use, and they asked me what Mr. Randall could use. Some one suggested a water pitcher. I said, "No!" (Laughter.) My recollection went back to the time when I was down South, and Randall wrote me whether it would be advisable to hold a convention in the South. I said, "By all means, and there is only one place to hold it and that place is Kipling." So Randall came down to look over the place. Now, at Kipling there are two stations; one is the depot, with a shanty and the other is the water tank, and Randall got off at the water tank, and I was never able to get him interested in the Kipling proposition after that. (Laughter.) We wanted something that could be handed down to Mr. and Mrs. Randall's children's children, and after all it is not for the gift, it is not the token, but the affection that goes with it. We have made the selection as best we could. There is nothing false

about it. The only beaten brass about this is the speaker. (Laughter.) I want to call your attention to this, for it is appropriate; most of us are "knockers" and carry hammers, so we selected beaten silver. Every piece is beaten silver; we have Orton's word for it. (Laughter.) I can not say anything to Randall. I can not make a speech. I can only say, "Old Man" Randall, you have been with us twenty-one years. We can only tell you a little of the love we have for you. (Applause.)

Mr. Gates had spoken with much feeling, and as he ceased there were many in the audience aside from Secretary Randall and his family, in whose eyes there was a suspicious moisture. Messrs. C. A. Bloomfield and Anthony Ittner had brought forward and placed upon the speaker's table a beautiful silver tea service, which was presented to the Secretary on behalf of the older members of the N. B. M. A. and the American Ceramic Society.

A Member: You haven't any manuscript now, have you Randall? (Laughter.)

Secretary Randall: No, I have no manuscript. If I had, I could not read it. (Taking a sup of water.) There is a lump in my throat that won't go down. I cannot talk. I can scarcely say, I thank you. This is, indeed, a beautiful gift. It is silver and gold, and certainly friendship is the silver and gold of life. I cannot say anything more now. (Loud applause.)

President Conway: We will now hear from our Treasurer, Mr. Sibley, of Alabama.

Treasurer Sibley: Mr. President, ladies and gentlemen, it goes without saying that I thank you for your kindness, for I certainly appreciate the honor you have conferred upon me, but Brother Ittner has tacked on to this job such a proviso that it is not a sinecure by any means, and it has kept me on tenderhooks to pose as a humorist when everybody knows I am by nature very prosaic. I feel like the old darkey who had got notice from death that he was going to call for him Saturday night. He talked it over with his old woman and they concocted a scheme whereby they might fool Death. Accordingly, when Saturday night rolled around, the old lady was sitting by the fire, when a knock was heard on the door. The old woman said, "Who's dat." He said, "I'm Death, I came to take Sam Johnson." The old lady said, "He ain't home." "All right," said Death, "I'll take his wife." "Look here, nigger," said the old woman, "come out from under dat bed." (Laughter and applause.)

J. Fred Smith, Omaha, Neb.: I have here a gavel that I want to present to Mr. Ittner. It is to be used here for this convention, and then it is to belong to Mr. Ittner. There is a history connected with this gavel. When I was a boy I worked for a man by the name of Ittner, Benjamin Ittner, carrying off the brick. Mr. Ittner, in 1870, when I was a small boy, planted the tree from which this gavel was made on a piece of ground which I now own. About five years ago, we chopped down the tree when we wanted to build a house. I saved a piece of it, and I asked my boy a few weeks ago to take it to school, he is now in manual training school, and make it into a gavel. I now present it to Mr. Ittner as a token in memory of his brother and the brick industry as well.

Mr. Ittner: Mr. Smith, I thank you, and I shall always treasure this gavel among my dearest possessions, and I will keep it and turn it over to my children that they may turn it over to their children, in memory of my brother Ben.

Secretary Randall: The next in order, gentlemen, is an illustrated lecture on "The Importance of Trade Schools for the American Boy," by Dr. S. C. Dickey, of the Winona Technical Institute, Indianapolis. The members of this organization are very much interested in trade schools.

President Conway: Gentlemen of the convention, allow me to introduce to you Dr. S. C. Dickey, of Indianapolis.

Dr. Dickey: I desire to say that I am here today by the kindness of my good friend and neighbor, Mr. Randall. I was never prouder of my city than today when I saw you pay honor to this man who has devoted so much of his time and attention to the betterment of your industry. I was never prouder of my native State than to see you pay such just tribute to the Secretary of your grand organization, and it is through his kindness that I am here this afternoon. He wants me to tell you of the Winona Technical Institute. I can tell

you about it, but I could not do it so well as I can with the aid of lantern slides which have been prepared through the kindness of our director, and who will put the slides on for me. Several views of the Winona Technical Institute, including those shown in the January CLAY-WORKER, were then shown and further described by Dr. Dickey.

THE IMPORTANCE OF TRADE SCHOOLS TO THE AMERICAN BOY.

S. C. DICKEY, PRESIDENT WINONA TECHNICAL INSTITUTE, INDIANAPOLIS, IND.

Mr. President and Gentlemen of the Convention:

Not only is my subject, "The American Boy," an unselfish one, but my appeal to you today shall be to the unselfish side of your nature. I need not remind you that your own boyhood days are over; life, once lived, cannot be lived over again. Water falls from the clouds to the hillside; thence it flows to the creek; from the creek to the river and the river to the ocean. There it rises in vapors and is carried by the clouds, oftentimes back to its original starting point. That is nature. But there is no such corresponding law in life.

The old rhyme of our school days comes to me:

"Oh! were you ne'er a schoolboy, and did you never train;
And did you never feel that beating of the heart you ne'er may feel again."

Aged wrinkled faces beckon us away and boyhood days are o'er. But childhood is the same, and for every boy of twenty years ago there are two boys today to take his place. The streets are literally full of boys. I wish I had time to speak of my subject from the optimistic standpoint. The best place in the world for any boy to be born is in America, and in this twentieth century. I would love



Dr. S. C. Dickey, Indianapolis, Ind.

to compare the American boy and his opportunities with those of the boy in Africa, with the Italian, the French, the German, the Scotch, the Irish, and the English boy. I am no pessimist. I believe that this North American continent was hid away by Providence in order that it might be inhabited by the best people of all the ages and at the right time. I would not suppress immigration; for I believe the very best of all the nations of the earth are coming to our shores.

With this estimate of the American boy and his glorious opportunities, let me speak of some of his handicaps.

The first handicap is that of education. As Americans, we are justly proud of our public school question, and we might well take pride in it, as it has no equal the world over. But listen to some of the statistics as given by our National Bureau of Education. There are 5,400,000 boys and girls who enter the first grade of our public school. When they have reached the fifth grade—an age when the boy can sell newspapers and help earn his living—we have this number, 2,400,000. Eighth grade, 242,000. First year high school, 176,000; graduate or fourth year high school (most of whom are girls), 73,000. If you number all the young men and women in the colleges, state universities and technical schools of all four years, you have only this number, 114,000.

It will be seen from the above figures that only a favored few are able to take advantage of our public school system. I might speak of the causes, such as orphanage, intemperance, invalidism and lack of universality of the system.

But I wish to speak first of the handicap of the favorite boy, who has been able to take advantage of his educational privileges. I do not wish to speak of the rich man's son, for there are few handicaps greater than that of birth in the home of wealth. Not every rich man has the welfare of his son at heart as did the late Mr. Hutchinson, of Chicago; "Old Hutch," as he was formerly known. It is related of him that his son John, now president of a great bank in Chicago, was told by his father that he must pay his

board. "All right," said the son. A few days later the boy was missing and the father found that he had taken board with a neighbor at \$2.00 per week less than the price named by father. Sunday came, and John was urged to take his dinner at home. But no entreaties could induce him to stay. After several weeks the hard-hearted father could stand it no longer, and insisted upon the son returning to the home table. "All right," said the son, "providing you make the price the same as I am now paying." That boy was taught the value of a dollar, and on his twenty-first birthday his fond parent presented him with one million dollars. Not many rich men teach their sons self-control and self-appraisalment.

But I am speaking of the handicap, not of the rich young man, but of the educated young man, who decides he is not fitted for the profession, and who wishes to enter the mart of trade.

John Smith, the son of a wealthy surgeon, successfully graduated from public school and spent four years at Princeton University, at a cost to his father of \$1,000 per year. After graduation, John decided to enter business, and approached my friend, a great business man and pleaded for a situation. "What can you do?" was the question. "Oh, anything." "I cannot use you," said the employer. "You have been educated away from me." But at last, after many entreaties, John was hired at \$6.00 per week.

Another case: The son of a friend of mine graduated last

of skilled men on the mere remnants of the old apprentice system, and on the immigration of men, who were trained before they came here.

President Roosevelt, in his annual message, said: "It should be one of our prime objects as a nation, so far as feasible, constantly to work toward putting the mechanic, the wage worker who works with his hands, on the higher plane of efficiency and reward. Unfortunately, at the present, the effect of some of the work in the public schools is in exactly the opposite direction."

He then urges the establishment of trade schools as the hope of our nation.

I am happy to say that there is a great awakening on this subject and that the National Associations of Employers and the most thoughtful among the labor unions are advocating the establishment of trade schools. In the past, colleges, as we now have them, have been established by professional men. Knowing no other atmosphere than that of the profession, the curriculum has been selected to fit young men for the professions. But in addition to our colleges, business men from this date on, will establish schools of such a nature as shall prepare the students for the business task which awaits them in the business world.

I am under obligations to your worthy Secretary, Mr. Randall, and to your committee for this invitation to appear before you, and



THE VISITING LADIES AND THE ST. LOUIS ENTERTAINMENT COMMITTEE

June from a great university. I said, John, what are you doing? He replied, "I am in the employ of Blank firm, a great paper house." "What is your work?" "I push a truck from morning until night." "How did you happen to go into this business? Have you thought of it for some years?" "No, I had a friend, Mr. W., and I asked him for a job, and he found this place for me."

I ask you, my hearers, if somebody is not at fault here, including the young man's parents, teachers, guardians and friends, and the young man himself?

Now, let me speak of the handicap of the average boy who leaves school at the fifth or sixth grade. He sells newspapers; he works in the store, the shop or the factory as errand boy. At nineteen he has no aim in life, but something in his head cracks and he decides to be a plumber. He seeks a job only to be told by the employer that men of experience are wanted. At last he gets a job as helper to the "improver" commonly known as an apprentice. After helping him it finally dawns on Jack that while the improver will become a plumber in the process of time, he, the helper, will never learn the trade. This story is, alas, applicable to nearly all of the trades today. The old apprentice rule by which no tradesman could die with honor unless he had taught another to take his place, is obsolete today.

The public schools do not teach trades or even give training that leads toward the trade, and we are dependent for our supply

I have been requested to describe the Winona Technical Trade School at Indianapolis.

I have brought lantern slides, and by reason of the kindness of Mr. Randall, am able to show you our school at work. (Loud applause.)

Dr. Dickey then described the Winona Technical Institute which has 265 students, and which last June graduated 118, all but three of whom are at remunerative work.

The following national associations have adopted the Winona Technical Institute and have made annual subscriptions to the scholarship fund: The National Association of Lithographers, the National Typothetae of America, the National Founders Association, and the Tile Manufacturers' Credit Association. Negotiations are pending with the Metal Trades Association, the National Stewards' Association, the Carpenters' Union, the National Cutters, and a department of bricklaying is contemplated.

Importance of Trade Schools.

President Conway: I am sure we are all very much pleased with Dr. Dickey's talk, and I hope some one will make a motion to thank him.

Mr. Ittner: I rise to move a vote of thanks to Dr. Dickey.

He has given us an able and instructive address, and I hope the vote will be taken by a rising vote.

Motion seconded and carried unanimously.

President Conway: I was in hopes we would have Mr. Murrell Dobbins, of Philadelphia, to open the discussion on this subject, but unfortunately Mr. Dobbins contracted quite a heavy cold and was unable to leave home, but he has sent a paper to Mr. Randall which will be read for him. I would say before the paper is read that Mr. Dobbins became a member of the Board of Education, and through his efforts we have established in Philadelphia a trade school in connection with our public schools. There is taught in that school brick-laying, pattern making, house and sign painting, electric construction, electric wiring, plastering, carpentry, plumbing, pipe fitting, and metal work. A number of other trades will be taken up just as soon as they can get to them. A few nights before leaving home, another trade school was opened in connection with one of our public schools. It was a stormy night, such as you would have thought would have kept boys

We are gradually drifting away from the narrow vision which held the public school in thrall to a simple curriculum for elementary schools and a somewhat more extended curriculum for the secondary schools. We are beginning to understand that education is a vastly broader function and serves wider ends than we formerly conceived possible. We are beginning to analyze the social and industrial conditions in which the system of education is set, to ascertain at just what point the school may render the largest practical and permanent service to society. As soon as this point of view became prominent it was found that there were many young men above the age of fifteen and men of mature years who have gone into the various occupations of life without the necessary intellectual preparation and the necessary practical skill to fit them to grow in their work and to achieve the higher rewards which enlightened service legitimately should enjoy.

These men cannot be educated in the public day schools because these schools convene at a time when the men are employed as bread winners, and for the further reason that these men have passed beyond the stage of life where the sort of education offered by the ordinary public school is not sufficiently specific and practical to afford them in the briefest possible time the assistance they need in their industrial advance.

William Penn, the heroic founder of the great Commonwealth that bears his name, provided, in the frame of government for his



PHOTOGRAPHED BY THE STAR PHOTO COMPANY, ST. LOUIS, IN FRONT OF

and men at home, but the place was filled. There were a great many young boys there, and the director told me that most of them are employed at different employments in the day time, but they come in the evening to learn trades. While I was there, an old man more than sixty years old came and said he wanted to learn a trade. They then had a waiting list of four hundred for the evening classes.

Secretary Randall then read a paper written by Arthur D. Brumbaugh at the request of Mr. Dobbins.

THE TRADE SCHOOL IN AN AMERICAN CITY.

By Arthur Brumbaugh, Philadelphia.

The administration of an educational system for a great urban population is a complex and difficult task. Fundamentally the business of public education is to give to the people the kind of education which they wish to have. It is also the business of the school authorities to create by discussion an appreciation for such types of education as the public may not in itself realize the need of, but which proper judgment and extended experience combine to make significant in the training of the American citizen.

colony, as early as 1682, "that all children within this Province of the age of twelve years, shall be taught some useful trade or skill, so that none may be idle, so that the poor may work to live, and the rich, if they become poor, may not want."

Benjamin Franklin, whose philosophic insight made him one of the most useful and honored men of all time, bequeathed his small fortune to aid poor apprentices.

Stephen Girard, the merchant prince of the early years of the last century, who gave to orphan boys the greatest benefaction they ever have received, provided that the beneficiaries of his college should be made masters of things and not merely users of words; and trade education is a prominent feature of the curriculum of his great college. Pennsylvania, and especially Philadelphia, is rich in precedent for the founding of trade schools, open free to the youth of the city.

With these considerations in mind the Board of Public Education in the city of Philadelphia, inspired by the wisdom and energy of Mr. Murrell Dobbins, a member of the Board, undertook in August last the problem of organizing a new type of public school, open day and night to men above fifteen years of age, in which the trades are taught by skilled mechanics under professional supervision.

It was considered wise to provide a day school for the teaching of the manual trades, open to boys above the age of fifteen, who

have left the elementary schools because they did not find there the kind of training they craved, or because the ordinary type of secondary schools did not embrace within the scope of their activities such training as these young men desired.

Philadelphia, therefore, established a day trade school, with a three years' course, in which the English language, simple mathematics, history, commercial geography, business accounting and other related subjects of study constitute the intellectual side of the training. The larger part of the time throughout the entire course is, however, devoted strictly to shop work. The boys actually do a thing which later in life they will be obliged to do as their legitimate occupation. This day school has not as yet been largely attended, due in part to two considerations; (a) it was opened somewhat late in the school year and was not brought to the attention of parents and young men in time to permit them to arrange to enter the work; (b) because many boys had entered for the year other types of schools from which they did not find it convenient or expedient to withdraw at the opening of the trade school. But enough have enrolled in the day school to demonstrate the feasibility and the necessity of maintaining the school.

The evening trade school from the first had been largely attended. Something like four hundred men being in regular attendance; two hundred and eighty others have been obliged to remain until the present time upon the waiting list, and the Board of Education at

in the spring and who return to their native land in the autumn, is annually increasing. This is due to the fact that American boys have been deprived of the opportunity of learning a trade. The city trade school will, in a large measure, correct this growing menace to the American mechanic.

This school is opened five evenings in the week. Instruction is given in each specific trade, including bricklaying, carpentry, plastering, metal work, sheet metal work, plumbing, painting, electrical construction, blacksmithing, printing, and the other dominantly manual trades. Each department is under a competent master mechanic chosen by a competitive examination, which demonstrates not only his efficiency as a mechanic, but as a teacher of others. The first school is under the direction of W. H. Odenath, and the second school is under the direction of J. W. Moyer. Both of these gentlemen were formerly connected with the North East Manual Training School of this city, and have had extended experience in manual and trade education.

The public press and the community at large unite in enthusiastic commendation of this new departure in public education in this city, and the whole movement seems to be solidly and substantially set in the public mind as a necessary and permanent part of the work of the Board of Education. The students are most earnest and enthusiastic. Many of them, in fact almost all of them, display an eagerness to learn that is most commendable, and



THE HOTEL WASHINGTON, WHERE THEY STOPPED FOR LUCHEON AT NOON

a recent meeting decided that on Monday, February 4th, another evening school in the northern part of the city shall be opened to provide for those on the waiting list and groups of others who had not entered the first evening school by reason of the long distance and cost of travel. This second evening school has enrolled enough students to fill its class rooms and to ensure its success.

The pupils of these evening schools, without exception, are employed during the day. They were obliged at an early age to leave the regular school in order to aid their parents to earn a livelihood. The evening trade school is their one chance to acquire a trade. These pupils come, many of them, long distances on the trolley or afoot, after a day's hard toil, and spend their evenings in faithful work as apprentices to a chosen trade under skillful instruction.

The day of indentured apprentices is gone, and few boys at the present time are fortunate enough to have the opportunity of learning a trade. And yet, I hold that it is of the utmost value to society at large that every boy should have a trade. It is not necessary that he should depend upon his trade for his livelihood, but it is necessary that he should gain a practical insight and knowledge of some one of the ancient and honorable trades by which man has won his way to independence and to the highest progressive advances in civilization.

The number of foreign mechanics who migrate to our country

a visit to the school on any night finds these young men busily engaged.

These young men as soon as they master their trade find it easy to obtain employment in the city, and those who at the end of three years will have completed the course of study in the day school, and those who in less time will have perfected themselves in their trade in the evening schools will be eagerly sought for by contractors and builders throughout the city.

Perhaps no type of education in the city of Philadelphia offers a more important return in the industrial uplift of the community than does the trade school. When a young man understands that during his evening hours that otherwise he might spend idly, he can acquire under competent instructors a more skillful insight into his chosen trade, which insight will give to him a larger immediate compensation, he has thereby an incentive which guarantees his steady attention and his faithful application to his task. It is needless to add that there is no corrective discipline in the school, because each boy is so employed at his own work that he never thinks of interfering with anyone or idling the few moments which he prizes so highly and which are so full of possibility for him.

The cost of the school is not large as compared with the service which it renders. It is, therefore, an economic institution of learn-

ing, and fills a want which is urgent, but which the community had not heretofore in any appreciable way provided for.

The entire success of this school from the beginning is due to the tact, the insight and the persistent effort of Mr. Murrell Dobbins, who deserves not only the thanks of this community, but of every great industrial centre throughout the country, and he may be justly characterized as the Father of the Public Trade School in our American civilization. (Applause).

General Discussion.

Mr. Anthony Ittner: I want to make the same motion in connection with this paper of Mr. Brumbaugh's that was made in connection with Dr. Dickey's paper, that a rising vote of thanks be tendered him for his able and instructive paper.

Motion duly seconded and carried.

Mr. Ittner: I have a few words to say, and it will not take long. I want to say to the members of the affiliated associations that are here assembled that the highest ambition of my life is to live to see the day when any American boy with an ambition and a desire to learn a trade will have the widest

prentices are restricted, and those who are employed are taught by journeymen who are not anxious for them to learn the trade. The employers are anxious to get a man's labor at apprentice's wages and he does not pay the attention that a regular contractor would to these young men. I claim that a year's apprenticeship or tuition at a regular trade school under proper instructors is worth three year's under the present apprenticeship system, and I do believe the time will come when it will be a part of the curriculum of every school to teach the trades that can be taught, especially the building trades, bricklaying, plastering, plumbing, electric wiring, pipe setting, and such as Dr. Dickey has told us of today. I am sorry that I have not the words at my command to talk as Dr. Dickey does, but I am impressed with the importance of this matter. The seed is now sown; what we want is the harvest. We want this subject agitated at each annual meeting and I want you to take the matter home with you and agitate it there. What shall we do with the American boy? As I said a year ago the greatest asset of this country is the rising gen-



TIME, AS THEY WERE MAKING THE "SEEING ST. LOUIS" TRIP THURSDAY.

opportunity possible of doing so. I want to say further in this connection, that the man who is cognizant of the situation of the manner in which young men are barred from learning trades in this country and does not lift his voice in an endeavor to remedy the situation is particeps criminus. A particeps criminus is one who knows of crime and does not exploit it or try to do something to prevent, and so is a guilty party with the one who is committing the crime. Now, I say if you gentlemen become aware that there is in this country associations that prevent in some instances young men from learning trades, if you become cognizant of the facts, as you must after what has been said here, you are equally guilty with the party doing this mischief.

Mr. J. M. Blair: I would like to say a word on this subject. I am very sorry that Mr. Dobbins is not here today to express to you what he expressed to me last year at Philadelphia. I am glad to see that the subject mentioned by me in my address last year has borne some fruit. It is an important matter. The trades are deteriorating because the number of ap-

eration, and it should be a part of the public school system to teach these trades. I learned the trade of bricklaying under my father. In those days we had instructions from the foreman, and he made it a part of his duty to instruct the apprentices. Today, the less they do for the apprentice the better it is for the journeymen, for they know the moment the apprentices learn the trade they will take their places. Two years ago in Cincinnati, four apprentice bricklayers were made journeymen and twelve journeymen died. At that rate, what are we coming to? President Roosevelt touched on it in his message. It is of such importance that our President takes notice of it, and you, of all others, should be more interested in this question of cheap labor and concrete construction, and should see that more boys are taught the trades and taught properly, so our material will be put in the wall properly. As it is, the journeyman bricklayer cares nothing about it so long as he gets his pay. Teach the young men this business and they will take an interest in it. We should take this up at every meeting of our organization, and take it up in our

home localities and have it incorporated as a part of our school system. Right at the start the labor organizations and unions will object, but finally they will come in and agree that it is the best thing all around. The employers and journeymen and apprentices will all belong to the same unions and will all work together. That time will come; it is bound to come. There is an evolution in this country in all lines. It is coming along these lines, and we should join in pushing it along until it gains momentum and becomes a force in this country. The young men of America demand a chance and it should be given them. (Applause.)

On motion of J. Fred Smith, the session adjourned.

SECOND SESSION.

Thursday Morning, February 7, 1907.

President Conway: Gentlemen, you will please come to order. The first thing this morning is a paper by C. B. Platt, of Van Meter, Iowa, on "The Needs of the Hour." I am pleased to introduce Mr. Platt.

THE NEED OF THE HOUR.

C. B. PLATT, VAN METER, IOWA.

Mr. President and Gentlemen of the Convention:

In considering this subject I find that it insists on presenting



C. B. Platt, Van Meter, Iowa.

itself in the plural. Clayworkers seem to have *needs* rather than *particular* need.

I feel that you will all overlook any introductory history of clayworking which I may omit in this paper.

I trust also that you will forgive me if I fail to be interesting or to throw any new illuminations upon the screen of the clayworker. Success loves the sound of its own story, but probably even the most success-seasoned clayworker present has tired of being told of the step-burdened process of producing clayware. It may be even his eyes would brighten in anticipation of new fields to occupy and conquer, could evidence be shown that the clayworking process was to soon *start* at the burning end and finish with the forming. Unfortunately I can not inspire this interest. It is said, however, that Thomas A. Edison has appreciated this need, so there is hope.

That clayworking is so generally successful is due wholly to the fact that clayworkers, as difficulty-overcomers, are the real thing. Born to conquer, they wrest from one of the most wasteful manufacturing processes on earth, a competence and a fortune. Though immersed in a flood of waste they pass safely through and camp triumphantly on the shore of success. Waste is not usually of their making, but has been handed down from generation to generation.

Clayworking has many examples of most admirable business generalship; examples which are not confined to the most prominent. Some very tall oaks have grown from rather small acorns. Undismayed by repeated backsets in the journey from a daily production of ten thousand to a capacity swelled to meet the demands of a building-mad market, today sees the triumphant brickmaker perched upon that sun-kissed pinnacle of production—500 bricks a minute from the one manufacturing unit.

The brickmaker has passed with unshaken nerves through the experience of meeting in his field of competition the material which can be "made today, laid in the wall tomorrow;" he has not lost his nerve in this the "cement age," though appreciating the possi-

bility that every fireside has within its reach a cement block factory, and he still pushes to the front with the product that will not be downed—burned clay. He recognizes, however, that these competitive materials have a place in the market, based on more or less merit, and that whatever the degree, it is taken from the clay-working field.

Urgent market demand is not always the cause for the birth of an industry. The establishment of some six thousand clayworking plants in this country has not been due entirely to urgent market demands. Thousands of dollars have been planted in this industry unbacked by market and fathered by only the slightest knowledge of the materials or the general process of manufacture. This is because clayworking is supposedly a seventy-five per cent. profit proposition, in which there is room for waste and a chance to develop a knowledge of the business. All this is naturally conducive to an effort to get the business down to a basis of scientific economy, or a recognition of the real margin of profit.

The need of the hour is, beyond doubt, economy. Economy effected merely through operating speed, while in some instances eminently satisfactory, is not available throughout the field. Should all attempt speed economy there is no question but the need of the hour would soon be a market.

There is room for doubt as to the economy to be derived in departing from a production of twenty thousand daily, with its modest equipment requirements and simple drying methods to the intermediate point of production in the forty thousand daily capacity with its more extensive equipment requirements and its added administrative expense. Economy gained through increased capacity is not in direct proportion to the increase. The plant with a daily capacity of twenty thousand, or there about, having as it does at this time, means of effecting the most economical drying, through the use of natural dryers equipped with elevating truck systems and not burdened with heavy equipment cost and large administrative expense, is best qualified to effect economy of operation.

Since the economy of speed and continued operation is only available to those situated in large demand markets, the majority must look for greater economy and greater profits through a saving of waste. Waste is most marked in the production and use of power and in loss of heat in burning operations. Engineers believe that steam engineering has accomplished practically all that can be accomplished in the conserving of heat units in fuel burned under steam boilers. Be this as it may, the development of power through the agency of the steam boiler and its application through the steam engine is a wasteful process. Steam power plants, particularly of comparatively small rated horse power are seldom well managed, generally poorly equipped and a constant source of danger, delay and expense.

When available at reasonable rates, electric power is an attractive substitute for steam, in that it gives no concern or expense except during active plant production.

The gas engine, operated with producer gas, is a satisfactory and economical substitute for steam, available in all cases.

This system of developing and using power is worthy of careful consideration, regardless of any failures which may have been made in its use in this country. It is probably true that poor results are attributable largely to faulty installation or to poor system. We know that producer gas engines are being successfully used in Europe and in electrical power plants in America. Americans are growing somewhat shy of new sure thing propositions, that is, some Americans, which is well, particularly in certain lines, but when we find that entirely responsible concerns in America are taking up the manufacture of suction gas producers and gas engines and selling such plants under positive guarantees, both as to efficiency and reliability, we should give ear to their claims and seek through this agency a means of saving a most marked waste in power plants.

The saving effected in the suction gas producer plant is accounted for through comparison as follows:

"Some of the advantages of a suction gas producer and gas engine plant over steam are higher efficiency, greater compactness, fewer auxiliaries, less attendance and fuel, no smoke, no pressure, no condensation, no heavy stand-by losses, no danger, no smoke-stack, the sum of which means cheaper, more reliable and more satisfactory source of power.

"In actual practice the average thermal efficiency of a steam plant of 100 h. p., with varying load, is three to five per cent. With a gas engine and suction producer plant the efficiency is sixteen to twenty-five per cent., or in other words, a steam plant of 100 h. p. or under, will use six to ten pounds of coal per h. p. hour while a producer plant will use but one to one and three-fourths pounds.

"This great reduction in coal consumption is due to, first, higher efficiency in the producer than in the boiler; second, very much higher efficiency in the gas engine than in a steam engine, and third, the absence of condensation losses between producer and engine. The efficiency of a suction gas producer is seventy-five to eighty per cent., while that of a small steam boiler is fifty-five to sixty per cent. The efficiency of a small steam engine is only about six per cent. instead of twenty-five to thirty per cent. as given by a gas engine.

"The very best thermal efficiency obtainable in a triple or quadruple expansion steam plant does not exceed sixteen to eighteen per cent., while with the gas engine and producer plant a combined efficiency of almost double this may be obtained, even in medium and small sized units."

The comparison is still more in favor of the gas engine when we have to take into consideration poor water supply, which condition

is so conducive to repair and stoppage losses, to say nothing of greatly reduced fuel efficiency.

In the matter of first cost, the gas engine producer plant suffers somewhat in comparison with steam. A producer gas engine plant up to two hundred h. p., as required in brick plants, would cost approximately \$65.00 per horse power. This higher cost is not of much importance, however, when we find that responsible manufacturers of the gas engine equipment guarantee an earning on the investment of thirty per cent. through fuel saved.

Clayworkers are sometimes advised to install plain side valve engines in order to utilize the waste or exhaust steam in drying their wares. The drying of ware with exhaust steam is, of course, commendable when the installation has been made, but at best it is unreliable and only partially economical since practically half of the drying period is under live steam conditions. Clayworkers in the north have found steam dryers a source of much annoyance during the winter months and a source of much expense as well. There is no economy in creating a waste in order to use it. Steam used in drying is most economically demonstrated in driving fans for a kiln waste heat dryer. There seems to be no objection to steam in that case, provided no other power is available, and as long as it is necessary to so use the surplus heat from kilns.

Waste heat from kilns should be utilized where created and through natural draft forces, such as are present in well planned continuous kilns. The time is without doubt fast approaching when the successful operation of the producer gas fired continuous kiln will bring it recognition as the most desirable instrument with which to effect economy in burning. Producer gas as a kiln fuel is perhaps not as yet fully demonstrated as valuable, except in a well constructed continuous kiln. Experiments have been made with this fuel in down draft kilns which may not have proved any particular economy in its use, but these experiments were made under quite different conditions than maintain in a well planned continuous gas fired kiln and should have little influence in a decision for or against the continuous gas fired kiln.

The point most favorably effecting the novice, inspecting the operation of the continuous gas fired kiln, are, first, ease with which the heat is generated, maintained at stated temperatures and directed to any part of the burning chamber; second, cost of fuel and attendance per thousand brick and convenience in loading and unloading.

In connection with electrically driven machinery, or with producer gas power, the gas fired continuous kiln and the direct heat radiating dryer offers an ideal proposition for the waste-weary brickmaker. The direct heat radiating dryer has in it much to commend it in that it is always ready to do its work, one track or all, winter or summer, rain or shine, and it does not cost a cent while not in operation. Satisfied users of this system state that they are drying brick at a cost of fifteen to twenty cents per thousand.

The questions of applied economy have to deal with a wide variation of conditions. There is a very wide variation in product, in raw materials, in market conditions and in financial ability. There is, therefore, no plan that will be suited to all.

Steady operation, either during a limited period or throughout the year, under the minimum waste in the use of fuel, is the point toward which to work. The one question in this connection is, where is the demand point when it becomes advisable to give up the moderate equipment of the small capacity plant for the more expensive and complicated equipment required for the year around plant.

This point can only be satisfactorily settled through a complete acquaintance with local conditions and thorough, mature business judgment. (Applause).

General Discussion.

President Conway: Gentlemen, you have heard this paper. If there are any here who would like to discuss it, we will be glad to hear from them. Mr. Fiske, haven't you something to say.

J. Parker B. Fiske, New York, N. Y.: I had not planned anything at all to say on this subject. The paper which we have just heard certainly contains a great deal of food for careful thought. The paper might be summed up as relating particularly to the economy of production. It is undoubtedly realized by almost everybody that while the brickmaker is manufacturing brick today at pretty nearly the same cost as he did ten years ago, the cost of manufacturing almost every other article of commerce has been very greatly reduced. Undoubtedly, the one sore spot with the brickmakers today is the one that has been in all time, and that is the burning, and the burning of brick in the ordinary up draft or down draft kiln is attended with a very large waste of fuel, and a large waste of labor, and quite a large per cent. of by-products.

I was very much interested, a short time ago, in some literature I received from the gas producer people, and very much impressed with a fact that I had not thought of very much until I read it, that in certain lines of manufacture, the time is gone by when fuel is used direct. In the steel business there is hardly a plant where they are not using gas and using it with great economy and getting a better product,

and the same is true in other lines of business. The time is not far distant, I believe, when we are going to find in brick burning, that while we can not save a great deal of fuel, we will be able to control our burning a great deal better, and burn with less labor, and on the whole get more satisfactory results with the indirect use of coal; that is, the production of producer gas and the burning of our ware with that medium. The paper which we have heard relates very largely to the economy of production. There are certainly needs in that direction. One other thing occurred to me which I think ought to be mentioned in that connection, although, as I say, I have not prepared any particular remarks on the subject. This other thing relates to the marketing of our product. We are brought into contact with competition all over the country with the reinforced concrete people. They have organized themselves very effectively and are publishing a great deal of literature on the subject and spreading it broadcast all over the land, putting it in the hands of every architect and builder, to prove and show the advantages of reinforced concrete over brick. While they do not particularly mention brick, they do lay great stress on the reinforced concrete. I think perhaps while we can not attack the public quite so vigorously as the cement people are doing, for the reason that our product is old, and everybody is supposed to know a great deal about brick, I believe that one need of the hour is for the brick men to organize a campaign of education in favor of brick. The reinforced concrete people have met very



J. Parker B. Fiske, Boston, Mass.

frequently and have instituted a very interesting campaign, and in the meantime the brick men are doing practically nothing. So I think one of the needs of the hour is for the brick men to wake up on this subject. (Applause.)

Secretary Randall: In this connection, we had last night an illustrated lecture on "Art in Brick Architecture." Some of you did not hear it. I suggested to the author, Prof. J. M. White, of the University of Illinois, that he furnish me with photographs suitable for reproduction by half-tone process, and an elaboration of his lecture, to be reproduced in pamphlet form. I believe publications of that sort would probably cover the ground Mr. Fiske suggests. I think it would be well for us, as an association, to get out pamphlets of that sort. I think Prof. White's lecture would prove a valuable pamphlet for distribution, and if it is the sense of the association I will get out pamphlets of that sort.

President Conway: I think that would be a very wise thing to do. Certainly our competitors are doing everything they can, and if it is the sense of this convention, I think it would be well for Mr. Randall to get out pamphlets of this sort.

J. M. Blair: I move that the convention authorize Mr. Randall to spend a sufficient sum for that purpose.

Motion seconded and carried.

Mr. E. L. Cook, State Farm, Mass.: I think if a committee could go into this question and put it into pamphlet form,

the cost of brick construction as compared with reinforced concrete, it would be a good idea. The concrete people make a cheap wall as compared with a wall of brick, and the individual sees the difference in cost and does not go into the other conditions, the question of the safety of reinforced concrete in comparison with brick work. I think if we could get this up in pamphlet form and distribute among the members for free distribution, it would aid in the sale of brick.

Mr. W. D. Gates: I think there is one thing that will handicap you. You have not got the data. The information the gentleman wishes to print is not available. The government is at work now on a series of tests which they are making very carefully and very honestly, but at the present day there is no information that is authentic on this question. Colonel Marshall told us some time ago that he was using quite a good deal of reinforced concrete, but that he was using something that he knew very little about, but he wanted more information in regard to it. The government has not got the data now, so we can not get it. If this association did any experimental work in the way of tests, it would be valueless, because every one would say that the association was prejudiced, and the information would be of no value. The only people who can make the tests in the proper form is the Government of the United States. They have this in preparation now and they are going to make the tests. Mr. Sibley and I happen to be the members on the advisory board representing this association. As soon as authentic infor-



Charles Bloomfield, Metuchen, N. J.

mation is obtained, the association will get it, and it would be of great value to publish it, but it would be premature at this time. Colonel Marshall said he was using concrete, and when the commission asked him what he knew about it, he said he did not know much. He wanted to know some method by which he could quit work one day and start again the next day and get along without having a joint. Another necessary point was, he wished some one would tell him how to keep water out of his fortifications. In damp climates, where the air is saturated with moisture, the water goes through it. Mr. Sibley and I have tried to watch this work very closely. The Government of the United States is the only institution that is not engaged in furthering the interests of either the concrete man or the brick man, or any one individual. Dr. Holmes told me, I do not know that it was for general information, but he said he wanted to get a first-class clay man and put him in charge of that clay testing department. I believe he meant what he said, and Mr. Sibley and I are going to watch to see that he did mean what he said.

John J. Bishop, Memphis, Tenn.: For the present purpose, I wonder if we can not get from the German or French governments tests of this sort. They seem to have gone into these matters very thoroughly. Then we can supplement these later on with tests from our own government. We need something of this sort very bad. Coming up on the train I talked with a contractor, who told me that an architect had

got out the plans for a building of cement construction. He said the plan was to be resubmitted to the architect from the contractor, and that he had to get three engineers to draw him a plan, and the three engineers differed on the construction of that one little three-story building. If we could get these tests from the German and French governments, it might do for a while, and then back it up later on with the information that Mr. Gates suggests.

Marion W. Blair, Chicago, Ill.: It seems to me that we do not lay sufficient stress on the real cause of the popularity, so-called, of concrete. It is the cost of getting it in the wall. It is an unfair proposition for you to pay clay shovellers in the clay pit \$1.25 a day and then pay the hod carrier \$3.50 a day. It costs more than the value of the brick to put them in the wall. The place to work in this matter is to get some competition in putting the brick in the wall. Get more bricklayers in the field, so when you pick up the morning paper you will not see one hundred or more advertisements for bricklayers at \$1.75 to \$2.00 an hour. (Applause.)

President Conway: We seem to have threshed this subject out pretty thoroughly. Of course, it would be foolish to put out in print any statements that we could not substantiate. I think it will be well to take up the next number on the program. All those who attended the convention last year will remember we had an interesting talk on cutting eye teeth in the brick business. The gentleman who made that talk was requested to make further research in the matter, and we are fortunate in having him with us today, and he will now deliver his paper on "Cutting Eye Teeth in the Brick Business."

CUTTING EYE TEETH IN THE BRICK BUSINESS.

C. P. MAYER, BRIDGEVILLE, PA.

Mr. President, Ladies and Gentlemen of the Convention:

Judging from the subject, "Cutting One's Eye Teeth in the Brick Business," one may draw a conclusion that the brick business is like an infant. I believe you all know that the infant's troublesome period in life takes place during the cutting of the eye teeth. I have concluded that the brickmakers know that an infant has two eye teeth. Some have them cut through the gums at one and the same period, but generally at separate periods, therefore, one would also be led to believe that the brick business only has two troublesome periods. I do not know how many troubles other brick manufacturers have had, but I know that if my experience is taken as a criterion that there are many more than two, and if every troublesome period in the brick business represents the cutting of an eye tooth, then I would be ready to take an oath that all the brick business's teeth are eye teeth, and, judging from the number, I would imagine that it had a snout as long as a razor-back hog, and that while the eye tooth cutting process is taking place, that it also has a great number of gum boils.

I believe I can best do this matter justice by telling this convention my troubles in learning the brick business and how we overcame them. Do not judge me an ignoramus. My conception of the brick business was taken from an old Irishman.

In the spring of 1904 we began considering embarking in the brick business. We had a property which was overlaid with shale and red clay, and underlaid with the Pittsburg coal vein, and on the premises were drilled two producing gas wells, producing sufficient gas to run our plant, which is located and connected by rail with the great Pennsylvania and Wabash railway systems.

How the brick machine men obtained knowledge of our intention I cannot say, but soon after they began to buzz around like bees in the spring. I call some of them benefactors to the brick business; I would chance to call some of them necessary evils, and others a curse to the brick business, as they are ever around hunting new victims to induce going into the brick business, thereby making more competition for those that are already in the business. They will sell a plant outfit to one party and then encourage the second victim to go into competition with the first victim, not caring or asking about the business or getting on the market. I know in our neighborhood quite a number of plants that can be bought for fifty cents on the dollar invested. Probably the owners believed a sleek agent.

This recalls to my mind the remarks of one agent who, on one of his calls to see me, picked up a handfull of shale and filtered it through his fingers with these remarks: "Mayer, you have a gold mine here; this shale will make anything red, and that he had traveled from Maine to California and from Canada to the Gulf of Mexico, but that he had never seen anything equal to it before." Of course, there was a victim in sight. "We will agree to put a plant in for you, assuring that you can make and load brick on the car for \$2.00 per thousand." (And he pretended to be a Christian at that.)

We proceeded to build the plant, and by July, 1904, the plant was supposed to be ready to make brick, and then the gum boils began to show up. Try as the expert in charge would, no satisfactory brick resulted. The belting furnished, guaranteed to be equal

to the best in the land, seemed to have a particular hankering to stretch about one inch per hour. The dry pan pulverized more shale than the elevator was willing to convey. The elevator boot seemed to have been especially constructed to choke up, and usually before the machinery could be brought to a stop, did insist on burning the elevator belt. The pug mill had an inclination to make dry press instead of stiff mud brick, and at times showed its ability in making soft mud brick.

During the bucking spells of the machinery we would have the belt cutting operation take place. The carrying belt between the pug mill and the cutting machine wanted to take the place of the pug mill by persistent efforts in pulling off and mixing the under side of the clay column. The cutting machine, in addition to cutting brick at right angles and straight, was inclined to cut circular parallelograms, and also deposited little particles of clay on the face side of the mud column. Its evident purpose was to make employment for the finishing roll. The finishing roll, not wanting to be outdone, promptly pressed the particles of clay deposited on the face of the column into the brick, thereby giving the brick a small-pox appearance. The drying tunnels persisted in drying the brick on the top of the car and leaving the brick on the bottom of the car in a moist condition. The transfer car had been built so as to require at least three men to operate same, one to hold the transfer car, one to hold the turn table and one to handle the brick car. The green hands employed to handle the transfer car thought it was particularly necessary to wreck one car of brick out of each ten.

After many attempts at operating in which the contracting company had used two experts and the wasting of three weeks' time, we finally took charge of the plant, and after almost resetting every machine and reconstructing every elevator in the plant, we began to make red common brick in the latter part of August, 1904.

In the clay bank we began to work along the face of the hill, using mostly plastic clays, which made a beautiful red brick. The wet weather in the fall of the year made it impossible to grind the plastic clay any longer, and therefore, we turned to working hard shales. At that we mixed about twenty per cent. of fire clay (so-called) which we had excavated from the kiln bottoms. The experiment of mixing fire clay with the shales was to test our ability in making buff brick. We were at the time very anxious about the results, and when the kiln was opened the superintendent 'phoned to the office that the brick were white. Feeling elated over the results, I proceeded to the works at once, and you can imagine my surprise. When I arrived at the kiln it actually looked as if some negro had whitewashed the brick. On sight of same I realized that it was scum (and that the rattlesnake of the brick business had put in its appearance) and we forthwith baptized it eye tooth No. 1.

By this time we had learned that the consumption in the home market for brick would not keep the plant in operation for more than two days per week, and the attempt to ship into the Pittsburgh market met with defeat on account of the freight rate and expense of hauling from car to building where the brick were to be used. We baptized our defeat in the Pittsburgh market eye tooth No. 2.

Because of our defeat we concluded to embark in the face brick business, and then tooth cutting began in earnest and has been fast and furious ever since.

"That reminds me of a man named Smith who was an English sailor, and on one of his furloughs home, brought with him a bull dog pup for his son, and instructed his son to teach the pup the art of fighting. Six months later, on his next visit home, he found fault with the boy's method of training the dog and proceeded to show the boy how to train him. He got down on his hands and knees, pulled his cap over his eyes and turned towards the dog. This was a new subject for the dog which made him a little timid, but with the boy's encouragement the dog took hold of Smith's ear and held on. Smith called to the boy to take the dog off, but the boy answered by patting his father on the back and encouraging him to hold out if he could, that it would be better for the training of the dog. (Laughter.)

So with us, if we can hold out financially it would be better for our training in the brick business. And hold out we will.

Then we went to work with a determination to overcome the scum by experimenting and inquiring of many manufacturers, and that demonstrated how little is known about preventing scum by the average brick manufacturer, and the many peculiar suggestions to remedy the trouble was laughable. Some told us we dried our brick too fast; others said too slow; some said we kept our tunnel too hot, others said too cold; others advised more air and to increase the height of our stack, and that we were giving the soluble salt in the material too much time to dissolve. We began reading on the subject and experimenting on the suggestions, and finally succeeded in preventing the scum from appearing on the brick.

During our experience with the soluble salt, our gums began to swell anew. Another eye tooth made its appearance in the way of the different lengths of brick in the same kiln and almost side by side, a difference of from $\frac{1}{4}$ in. by $\frac{1}{2}$ in. in length actually appeared. This trouble we also successfully overcame with very little additional cost. Baptism No. 3.

By this time our gums began to swell anew, and what proved to be the most expensive eye tooth, and we baptized it eye tooth No. 4. It was in the development of what is commonly called coring, during the oxidation period. In that case we spoiled three kilns of brick equal to 750,000 brick, and representing a loss of \$4,000 before we had learned how to handle the kilns to overcome same.

I have sample with me showing the different stages of the development at different degrees of heat. Also showing the re-

suits when the kiln was improperly handled. Also a sample of the material completely vitrified when properly handled.

Any brick manufacturer having trouble with carbon and other various materials usually found with carbon may get some useful information by closely examining the samples.

By that time our gums began healing and we were satisfied that the eye tooth cutting was over, but later our gums began to swell again, and this time in the kiln building experience.

Two patent down draft kilns, constructed in 1904, had to be taken down in order to keep them from falling in. The kiln itself is all right, but bad workmanship and downright carelessness by the overseer appointed by the patentee, with bad kiln material, and our inexperience are to blame. This will only be a partial loss.

We became very tired having baptisms, and this we simply called eye tooth No. 5.

In our effort to make our building as near fireproof as possible we used steel roofing on dryer. The acids and steam escaping from the dryer and kilns has so completely devoured the steel that now it is possible to throw a dog through the roof at will. This we called eye tooth No. 6.

At the present time our gums are not only swelling, but the whole mouth seems to be in eruptions with what we call pitting of the brick. In separating the brick, set face to face, one brick seems to be delighted in destroying the good looks of the other, by pulling large chunks from each other's face, giving the brick a small-pox appearance.

The various remedies applied are as follows:

The belt stretching trouble was cured by substituting a Leviathan belt, which is entirely satisfactory.

Elevator clogging was stopped by putting in a 14 in. belt, and 7 in. by 12 in. elevator buckets, thus making the elevator capacity greater than the pans' output, and the trouble disappeared.

The trouble of the belt pulling off of the under side of the clay



C. P. Mayer, Bridgeville, Pa.

column was caused by a creation of a vacuum between the belt and the stiff mud column, and after many experiments and remedies applied, we discovered that felt or cloth, wool or cotton applied on the belt would prevent the creation of the vacuum, and we now use a patent belt covering that we have patented, which results in the preservation of the under side of the column.

The particles deposited on the face of the mud column by the wires are cleaned off by a system of blowing air at a ten ounce pressure, out of a knife-life device, across the face of the column, thereby removing all the particles.

We also have invented a device on transfer car brake, and by throwing a lever firmly sets the transfer car on the rails of the transfer track while the cars are being shifted off or on.

We also have devised a turn-table locking contrivance, by which the turn-table is locked to the transfer car, but released at will, and makes it possible for one man to transfer the brick instead of three men. This device also bars the way to mishaps to the brick while handled by the men. All of the above improvements have been patented and will be on the market in the near future.

After completely exhausting all the suggestions recommended for preventing scums and using many tons of precipitated carbonate of barytes, we succeeded in preventing the scum, but the cost was prohibitive, being 91 per cent. per thousand brick. We then began experimenting with different stratas of shale, separate one from each other, and to our satisfaction learned that only the lower stratas contained soluble salts, and since that time we refrain from ever using the lower stratas for face brick making.

During our experience with the different stratas of shale we also discovered that each strata of material had a different contraction during burning. We overcame this trouble by building a mixing bin, which holds one day's run. The material is dumped from the top of the bin in equal amounts of the different stratas, then fed on to a belt conveyor, then elevated to the pan and be-

comes completely mixed by the time it reaches the pug mill, consequently making uniform length brick.

To prevent the coring of the brick, we first prevent the carbonous and bituminous material from becoming combustible, by mixing same with 25 per cent. clay; then we heat them slowly with a mixture of one part natural gas to about twelve parts of air, which in appearance makes a yellowish fire. This mixture contains more oxygen than is necessary to feed the flame, consequently the oxidation of the brick begins at about 700 degrees and oxidation is complete at about 1200 or 1300 degrees. A blue-gray smoke is discharged from the kiln during the latter part of the oxidation process, which is very severe on the eyes and lungs, sometimes driving employees from the works. Vitrification takes place at 2000 and 2100 degrees.

At the present time we are troubled with pitting brick. We have tried every cure recommended and they have failed to prevent same. I would be pleased to hear from any manufacturer who has been able to overcome this trouble.

In conclusion let me say if you have an enemy whom you want done red, then advise him to go in the face brick business. You will have your revenge. (Applause.)

President Conway: Gentlemen, you have heard this very interesting paper, and there is no doubt but that the gentleman has had his troubles. If there is no discussion, we will pass on to the next, which is a paper by Mr. Charles Schneider, of Cleveland, entitled "Life in Brickwork." Mr. Schneider has made a specialty of laying brick in an ornamental manner, as will be seen by his buildings.

Mr. Charles I. Schneider: Mr. Chairman and gentlemen of the convention, it is indeed a great honor to confer upon me to represent my profession at your convention. I have



W. H. Hunt, Cleveland, Ohio.

been a student of brick work for some years, and in that time I have come to several conclusions, and it is these ideas that I have tried in a measure to transfer to paper. All about us, I know it is the same in St. Louis as it is in Cleveland, for I have been here a day and have noted it, we see brick work that seems to have no life, no animation. We may refer to them as dead walls. Therefore, I have taken as my subject, "Life in Brickwork."

LIFE IN BRICKWORK.

By Charles Sumner Schneider.

To the Members of the National Brick Manufacturers' Association:

It is in the interest of my profession and the great army of men who are seeking after truth and beauty in architecture, that I am speaking to you today. I shall be very glad if the opinion of one architect on the great subject of "Brickwork" will shed any ray of light upon the requisites of brick as a building material.

We architects, for the greater part, represent the consumers of your wonderful product, which forms the backbone to much of our construction today, but too often is not appreciated from its usages as an artistic medium.

I confess great ignorance upon the science of brickmaking in its intricate stages of molding, pressing, drying and firing, but take the liberty of expressing an opinion from an artistic standpoint upon the finished article, as it is delivered to us for the purpose of construction.

Architecture, the art and science of building, sometimes called the most noble of the beautiful arts—has had its birth, has passed through infancy and childhood, and reached at various stages of history what we believe was almost a state of perfection, but like

all other living arts, has seen its periods of greatness, mediocrity and decay. We believe in evolution, which is necessary to the progress in life, and ask whether architecture is being improved and developed in this age, or whether it has reached its zenith.

I believe that most of us agree that architecture, as all the arts, is being unfolded, evolved and developed. It is having its natural progressive growth, and the periods of its history, when it seems to have reached decadence, architecture has but passed through a diseased state, only to reappear with renewed life and vigor.

The art of architecture would be non-existent if it were not for the materials given to man by the Creator, to take, to mold into form and materialize according to the fancy and creative mind of the builder.

Some of these materials are employed in their natural state, such as stone, wood, marble and slate—with, of course, the necessary preparation of the raw material; other component parts of a building are manufactured products, made of constituent or elemental materials found in nature, as glass, steel, terra cotta, cement and brick.

The latter—brick—is indisputably one of the most necessary factors in building, and the science of its manufacture one of greatest importance.

All art must be filled with life and animation, if it is to live. If, therefore, life is essential to the success of architecture, it must necessarily follow that each of the constituent parts of a building must lend towards the giving of that important quality of life and animation. It is inevitable then, that brick work, filling, as it does, such an important place in the art of building, must have life.

I know of no medium that lends itself better to the giving of this property to an architectural construction than brick work. Architecture depends to a great degree upon the excellence of material used in this effort to express life.

The first essential quality is the healthy condition of the brick that is employed, and its ability to withstand the ravages of time and its natural enemies, the elements.

History reveals to us that well-made bricks—mark the word "well-made"—are the most durable building materials. But a short time ago I saw in the British Museum, bricks taken from the ruins of Babylon and Nineveh, which shows no signs of decay or disintegration, although made after the most primitive methods, of clay that was neither burned nor baked. With all of our modern knowledge and advantages in the power of steam force and other agencies in manufacture, our brick should be unquestionably better as to quality and durability, than the ancients could produce, but unfortunately, commercialism, the spirit of the day, frequently enters into the manufacture of the brick, and the result very often is a soft and short-lived product, which can not perform its proper functions in a structure.

Life, whether it be animal, vegetable or mineral, is of little use to the world, if it has an unhealthy and diseased organism, and we know that every brick in a structure has a distinct and individual function to perform and must lend life and animation to the building as a whole. Physical health must be lasting like that of the brick of Babylon and Nineveh, for this leprosy in brick work, which we so often see, is not only unsightly to behold, but in its various stages of decay and disintegration, is a menace to life and limb.

Life is present when body and soul are in unity. Having arrived at the necessity of strength of body, we might discuss the soul of brick, which is visually expressed by beauty in color and texture.

After durability, perhaps the most important quality in brick is that of color. Through the use of different clays, shales and other ingredients, brick are made in numberless shades of color, and the process of forming and firing brings out certain tones, which may or may not be of artistic merit. Each brick in itself may be one shade of color and the thousands that are burned with it may be its counterparts, or each brick may seem to be individual in its color and beauty. Every subtlety in shade and color seems to enter into the brick, from the uncertainties of the fire, and in its various degrees of light and shade, it conveys a harmonious effect, which makes the brick a living thing, where a monotony of one uniform shade produces a barren and lifeless effect.

Architecture is often referred to in the old and hackneyed expression of "frozen music," and how well that applies to buildings constructed of brick. Why not have a symphony in beautiful bricks as well as a symphony in beautiful tones? Music, indeed, would be uninteresting and monotonous, without the infinite varieties of light and shade produced by the musical instruments, and we derive the greatest pleasure from the harmonious blending of the whole coloring.

Too much can not be said of this variety in shade in a piece of brick work. It is not great contrast in color that is desired; it is not a mixture of bricks foreign to each other, or colors that are uncomplimentary that we want; we are looking for bricks of delicate shading in harmonious colors—bricks that are made from the same material, burned in the same kiln, but which take on different tones through the sometimes very minute differences in the clay or the process of burning.

As a rule, brick of a uniform shade are not desirable. They produce an effect of monotony and flatness and are devoid of brilliancy, which is so desirable a quality. A brick wall can fairly sparkle with color, animation and interest, if the brick are well chosen and the color well blended.

Some brickwork seems so full of life, that each individual brick appears to have a soul of its own, full of vivacity and color, a poem in itself.

We see buildings about us, where an effort at variety in color has led to the mistake of too great contrast, which gives a speckled

and mottled appearance and produces a feeling of restlessness. The gentle change and interchange in tones which produce repose are lacking, while this pronounced variety of color is vulgar and common.

The tones of coloring need not be of somber hue to be beautiful and artistic, for cheerfulness and brilliancy are most desirable qualities and can be attained by the wise choice of color schemes.

Certain conditions have much to do with the selection of brick from the standpoint of color. The design of the structure, its composition in all its detail, its relation to other materials employed, the character of the building and the general effect desired, must be taken into consideration. The surroundings, including the work of nature and the work of man, the degree of light and shade upon the wall, the amount of light needed in or about the building, the effect of strength to be attained and even the climatic conditions are matters of importance.

Buildings which designate force and strength must be constructed of brick whose color will assist in conveying this character. Light, airy and fantastic buildings may be built of lighter and alrier brick. Shaded courtways and narrow streets demand light colored materials, that the maximum reflection of light may be produced.

The traveler, in southern Italy and Spain and the northern coast of Africa, or the southern portion of America, finds many buildings constructed of white or light-colored materials, which produce a cool and airy effect. The further north he travels, he notes that the colder climate demands a darker and warmer tone of coloring. Thus, it can be seen that man must study this material from many points of view.

It is my earnest plea that the members of this great organization endeavor to bring more beauty in color into their products. I do not deny that we have today a great variety in brick—many beautiful ones of real artistic value—to choose from, but I feel that there is room for improvement and a chance for still greater achievement along this line. Experiments should be made constantly to improve upon the artistic properties of your great product. Consult art authorities—perhaps architects—about their opinions in brick and the value of color and toning. By all means, consult men of ability, who are real students of beauty in art, and not the man who is known by the number of buildings he is able to turn out annually, with little or no regard as to their sightliness.

One of the greatest products of the fire in recent years is that of terra cotta. I am informed that every progressive manufacturer of this material has his experimental laboratory, where new ideas for different color effects are constantly being tried and improved upon. This, I believe, is the reason why terra cotta has made such tremendous strides in the past score of years.

The lasting quality of the color in brick is of the greatest importance. It is subject to changes through the effect of time and the elements. Another unavoidable difficulty in many of our great cities is the color of brickwork being subjected to the black soot and dirt that fills the air. In Cleveland, my home city, which has the distinction of being one of the dirtiest places in the country, we are constantly contending with this objection, and find it quite essential to secure brick that are impervious to the absorption of moisture. As a result, a considerable degree of cleanliness is attained, as a portion of the dirt, at least, is washed off by the rains. Yet this does not guarantee an absolutely clean wall, for soot seems to accumulate to such an extent upon the face of the brick that nothing can entirely eradicate it. This, undoubtedly, is food for thought and study on your part. I leave it to you.

Besides the durability and color of brick, texture and finish also lend to life. These latter qualities are as necessary to beauty in brickwork as they are in a piece of fabric. We admire the beautiful weave and more or less regular disposition of the threads or filaments in a piece of cloth, and there is a subtle charm and depth about a beautifully woven fabric that we call "texture."

Thus is the texture of brick. The surface may be very smooth and true, or it may be very rough and crooked, but it must have texture in order to be beautiful. Brick may appear lifeless as a result of the lack of this property, just as a piece of fabric can be flat and uninteresting, without life, when the texture disappears from constant usage.

The texture of a brick wall may not always be apparent at a distance, but on closer inspection reveals that this quality really exists and is in part responsible for the beauty of the wall. Certain buildings demand a brick of smooth and uniform texture, while others are better if constructed of irregular and seemingly cruder material. Personally, I think that brick which are not too perfect and smooth possess more depth of texture and produce a more artistic result than the smoother or more finished product, which often seems to smack too much of the mechanical process of manufacture.

The brick of uniform shading and texture, laid as perfectly as possible, reminds one of the playing of the same tone on a musical instrument at regular intervals, without regard to meter or rhythm. This latter may be said to correspond in brickwork to the monotonous regularity of the position and form of each individual brick, where no bond has been expressed.

This brings us to one of the important factors in the effort at induction of life in our walls—the apparent bond, which includes the size and color of the mortar joint.

There are many methods of laying up brickwork, as we all know, but the great point in which they differ is in the honest construction with all the apparent frankness of an apparent bond, or the more ordinary method of concealing what is so necessary to the strength and real beauty of the wall. It is commonly known among builders that it is absolutely imperative to tie the face brick to the wall behind and no intelligent constructor would at-

tempt to lay this outer facing independent of the so-called backing.

The efforts in attempting to hide this essential bond to the extent of clipping the back corners of the face brick and laying a backing brick diagonally so as to act as a tie, are absolutely false and unnatural.

The metal bond, unsafe and unwise, is as unsatisfactory and absurd as the clipped brick bond.

Reason and honesty demand that the bonding of the face work to the wall behind be apparent. It not only aids in the construction of the building itself, but indicates honesty, which all true builders love. Truth has the greatest contempt for brickwork without this perceptible bond. Truth in architecture, as in everything, is beautiful and greatly to be sought for.

Thus, I am a believer in the true use of materials. Terra cotta, for example, should not be made to imitate stone, but should fill only the important place it holds in beautifying architecture.

Much of the beauty of the brick wall depends upon the visible bond. The brick may be wisely chosen, exquisite in texture and color, but the lack of any bond is responsible for the dull and flat appearance and inactivity of the wall.

The beauty-searching architect of today studies this point as carefully as the composition of his building and its design. It may result in the use of one of the better known bonds of Flemish or English origin, perhaps the still more interesting and delicate Cross bond, effecting a delightful diagonal criss-crossing of the vertical joints. The plainer and more ordinary American bond of placing headers every fifth or sixth course has truth implanted in it; the more expensive and intricate schemes of bonding as studied out by men of intelligence are often revelations of invention and beauty. There is no more interesting work in the study of a brick wall than this of the visible bond; it at once lends character, force and animation to a network of bricks, and the wall becomes more interesting even to the unconscious observer.



Charles Bray, Helena, Mont.

Life is animation and activity. Movement and activity can be expressed in the composition of a building; they can also be infused by the movement exhibited by the brickwork in itself. There are buildings of poor character in general design in which reclamation has been made by the intelligent method adopted in brick bonding, which created movement and consequently aided life.

This, in a measure, is sometimes due to the color of the mortar jointing, which we will now discuss.

The use of red mortar—so called "the bricklayers' friend" when used with red brick—is deplorable, for it not only kills the wall by the monotony of the uniform color, but it encourages poor workmanship among the bricklayers. This is true of any combination of brick with the same color of mortar, but I speak of red brick and red mortar particularly, as it is one of our commonest makeshifts in brickwork.

White mortar is conducive to life and draws out the beauty of color in the brick itself, while black mortar—though oftentimes advisable, especially where subject to dirt and soot—is apt to produce a dull and gloomy effect. This has been my experience in the use of both white and black mortars in various buildings constructed of the same brick; the former reveals life-giving qualities and the latter produces a dull and inanimate effect. Of course, mortar coloring must be studied out from the nature of the brick, the effect desired and the color scheme of the entire composition. Mortars of other colors than those mentioned are used, greys and browns in various shades being employed with more or less success. The English are partial to the use of cream-colored mortar, which does away with the sometimes too dazzling effect of very white mortar, and yet maintains its life.

The size of these mortar joints is of utmost moment. The day of the fine, delicate, almost invisible joint is nearly a thing of the past. The beauty of the mortar joint should not be hidden or kept as insignificant as possible, but made prominent enough to be seen from the distance. Especially should this be the case where apparent bond is employed.

Even in the striking, marking or raking of the joints, opportunity is afforded for study, for whether one form or another is used may aid our efforts towards brilliancy in brickwork.

Thus we can see that the most minute details of brickwork must be considered to attain life. Walls of poor material can be made beautiful by the wise methods of laying up the brick, the choice of mortar jointing, its color and width; while on the other hand, bricks of fine color and texture can have their natural beauty greatly impaired by the unwise choice of bonding and mortar.

It must not be overlooked that the durability of the mortar is as important a factor as the permanency of the brick, the ingredients used and the method of mixture in its making, of greatest consequence.

The ideal and soul-satisfying brick wall must be constructed of durable brick, beautiful in color and texture; laid intelligently and artistically with perceptible and well schemed bond in a complimentary mortar joint of proper thickness, a wall suitable to every esthetic taste.

Can we not ask the question as to who is responsible for success or failure in the creation of brickwork? I believe this responsibility is laid at four doors; namely, the material man or the manufacturer of brick, the client, the architect and the contractor with his force of bricklayers.

Art, in a sense, is the adaptation of things in nature to the uses in life. In adapting nature's gift of clay and manufacturing this raw material into forms fit for the use of man, the manufacturer of brick undertakes an artistic work and is a benefactor to mankind. He should endeavor to give the best that can be made, for his responsibility is great. The material man should seek to dispose of his product through the architect and not through the client, and these two latter—the architect and his client—must work in harmonious conjunction. There are so-called architects who allow a client to choose a brick without an effort to advise him. They are not true to the ideals of the profession. The client who decides



W. D. Richardson, Columbus, Ohio.

such a momentous question without the advice of his architect is assuming undue liberty and responsibility. There is also the client who selects a brick in spite of the advice and protests of his architect, which reveals lack of confidence on his part. The architect, assuming that his client has given him the liberty of exercising his rights, is indeed a responsible being. He must select his material wisely, study carefully the scheme of bonding and the color of the mortar joint, with the size and striking of that joint, and this, together with the innumerable details of construction, make his responsibility a very heavy one. Much rests with this man, who holds the key to the success or failure of the wall.

The careful and skillful workmanship of the bricklayer has much to do with the success of a brick wall. If there is an art in the manufacture of brick, there is also an art in bricklaying. It is a deplorable fact that intelligent and competent bricklayers are at a premium, and the piteous attempts at brickwork which one sees about him on all sides are silent witnesses to the great struggle that is being waged to secure good workmanship. The bricklayer is too apt to consider his work altogether from a standpoint of mechanical precision and perfection, rather than its study from an artistic point of view.

The contractor is usually held accountable for his brickwork, though forced dependence upon his men morally places the responsibility of excellent workmanship at the craftsmen's door.

I cannot leave this vein of accountability without calling attention to one thing which seems to be menacing the beauty of all our great American cities. The owners of buildings become to a great degree responsible for the preservation and beautiful appearance of this brickwork for years after all other parties have completed their work. The brick wall may be a glorious success in every way, with the stamp of approval upon its corner stone, but in passing this beautiful bit of handiwork some day, what do we see but "the man with the paint-pot" covering its walls with a

substance absolutely foreign to such material. When we inquire the reason for the concealment and destruction of so beautiful a thing, we invariably hear that it is to freshen the walls from the dirt and soot. Paint has its place in the world and where it belongs, long may it live! But paint was never made to cover over burned clay products and no amount of dirt and soot should ever be sufficient cause to cover up brickwork. I believe it can be said that I have never seen a brick wall so soiled and black that it deserved a bath of paint. Time, which softens all art, only adds to the beauty of brickwork, as the bricks and jointing blend together in greater harmony and bring softer toning and, consequently, more artistic feeling to the wall. How the softening influences of time have beautified the brickwork of old England and Holland! Brickwork that has stood for many centuries reveals to us what glorious walls can be constructed when men build with wisdom, and following generations allow the pristine beauty to remain unmolested by the artifices of man. How often do we see the cottage along the obscure country lane with its plastered walls, surrounded by a quaint little garden, with but one large brick chimney rising from the beautiful thatched roof. This chimney stands as "a sermon in brick" to the manufacturer, client, architect and bricklayer, and we cannot study its simple perfection with too much earnestness.

Let us all strive towards the great achievements of master-hands and master-minds, in which beauty and truth are implanted, and which will live and become more beautiful with time. (Applause.)

General Discussion.

President Conway: We have heard this very interesting and instructive paper, and I think, while he is not a member of the convention, an architect who has kindly come here to instruct and help us in this matter, that it is due him that this convention pass a vote of thanks for this paper, and in the name of the convention, I wish to thank Mr. Schneider for his paper and for his kindness in coming here.

Mr. W. P. Blair, Terre Haute, Ind.: I am going to make a suggestion to the convention. I do not want to take the time to discuss this paper now. Owing to the noise in the back part of the room, a few of you were unable to hear this paper as clearly as I, who sat almost under the reader. Of all the papers that I have listened to that have been presented to the National Brick Manufacturers' Association, I think I have never listened to a paper that appeals to every individual member as the paper just read. (Applause.) And later in the day, I expect to offer a motion to the effect that our secretary be instructed to print, at the expense of the association, a copy of this paper for distribution to the members. (Applause.) I am going to do that for this reason: I think after you have read the paper, you will agree with me that in that paper you have an expression of what you have all longed for. The brickmakers of this country do not work for the mere dollars and cents that is in their business, but they want to uplift and elevate the use of their product, and it is that that has appealed to me in the paper just read, and that is why I shall, later in the day, offer the motion referred to.

W. D. Richardson, Columbus, Ohio: I feel with Mr. Blair that though we may be pressed for time, we can not let this matter rest with allowing our president to offer his thanks to Mr. Schneider for the paper, and that we ought to show in a formal way the appreciation of this convention for this contribution of Mr. Schneider's. It is quite the most instructive and valuable I have ever heard on the subject. I want to say one word in regard to the advice given by the paper, that I wish it not only might be read by every brickmaker in the country, but by every architect. I think, perhaps, speaking as an old face brick manufacturer, that there is a larger per cent. of the face brick manufacturers who agree with Mr. Schneider than there are architects who agree with him. It is such literature as this that I wish might be read by the architects who are less artistic than Mr. Schneider.

Mr. E. L. Cook: Why is it not possible for our association to furnish matter to the different scientific and architectural papers, relating to our business. The reinforced concrete people are furnishing matter to the scientific papers and all papers interested in any degree in their work, and I think we might start in on the same line and furnish matter not only to the brick magazines, but also to the scientific papers. The men who are having buildings built are the men we want to reach. (Applause.)

Mr. Gates: I am afraid of butting in on this matter, but I think right here it might be well to make a motion that the secretary be instructed to have a goodly edition of this paper printed in pamphlet form, and that the individual members see that it is well distributed. Mr. Schneider is a man for whom I have the utmost admiration and respect. He is one

of the particularly bright young men who is using burned clay and to whom we must look for the best use of our products. I move that the secretary be instructed to issue this paper in pamphlet form.

Mr. J. P. Fulcher, Nashville, Tenn.: Second the motion.

Mr. W. P. Blair: I am satisfied that if the brick manufacturers of this country will have an opportunity to read that paper and study it, it will result in a demand for thousands of copies. Each individual firm throughout the country will reprint it for themselves, and circulate that paper from one end of the land to the other, and I expected to have gone into the presentation of the matter a little later when we had more time. I heartily favor this motion.

Motion carried.

President Conway: The next on the program is a paper by Mr. James E. Howard, of Watertown Arsenal, Mass., on "The Strength of Brickwork and Brick Piers," which he will illustrate with lantern slides.

STRENGTH OF BRICK AND BRICK PIERS.

BY JAMES E. HOWARD.

Mr. President and Gentlemen of the National Brick Manufacturers' Association of the United States of America:

The results of tests of brick and brick piers, which I have the honor to here present, are selected from those which have been made in the testing laboratory at the Watertown Arsenal.

to their composition and age. In general, the properties of constructive materials are found to present many variable elements, some of which are under control and some are not.

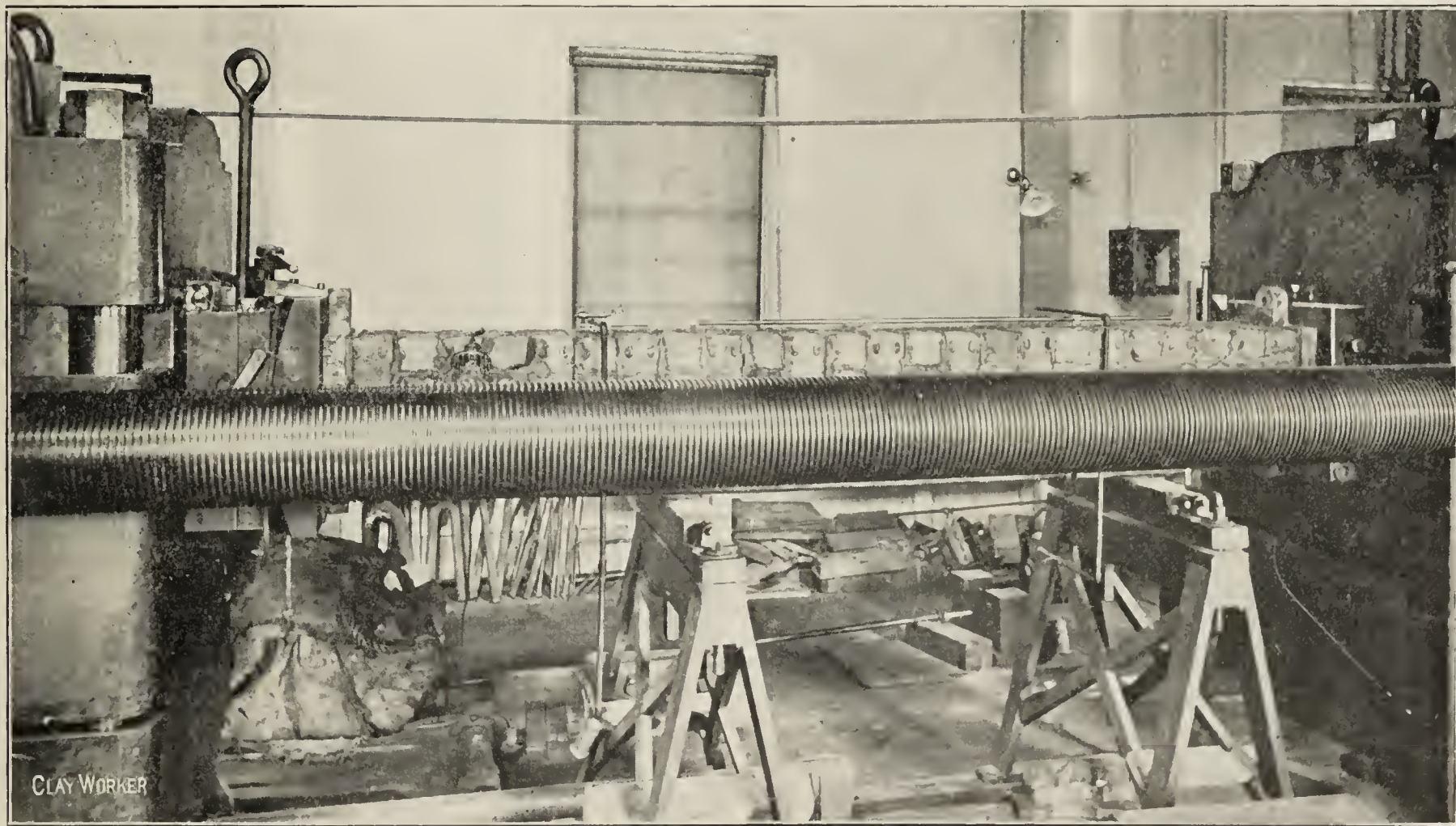
Passing at once to the subject of individual brick, values for the coefficient of expansion by heat have been observed over a range from .0000020 to .0000074 per unit of length per degree Fahrenheit. An ordinary value would be in the vicinity of 30 to 40 ten-millionths, that is, somewhat less than steel, which has a value a little above .0000060.

In making these determinations the brick were heated in water baths, basing the value of the coefficients upon the contractions displayed in passing from the bath of boiling water to one at about freezing temperature. It was necessary to use the measurements taken on falling temperatures to eliminate the effect of the swelling of the brick due to absorption of water.

The brick usually swelled and were longer on the gauged lengths when in water at 33 degrees Fahrenheit than originally, when dry and in the air at 68 degrees. Moreover, after having been through the hot water bath and returned to the cold one, their lengths were found still further increased.

When a brick, saturated with water, is frozen it expands, due to the action of the water therein. The amount of such expansion in going from 33 degrees Fahrenheit down to say 25 degrees, measured on a length of six inches, has been found to range from a few ten-thousandths of an inch to above one-half a hundredth of an inch. Not infrequently, freezing a brick saturated with water is attended with a permanent increase in its length.

The elastic properties of brick have been observed, measuring the compressibility of the material as loads are applied and determining the permanent sets, when such have been acquired. Light hard and salmon brick are most compressible, hard burnt and vitrified brick least compressible.



A Brick Pier in the Testing Machine With Micrometer for Measuring Compressions in Place on the Upper Side—Watertown Arsenal Testing Laboratory

In this laboratory various kinds of constructive materials are tested, the results of which are published annually by the Ordnance Department, United States Army, in reports entitled "Tests of Metals and Other Materials for Industrial Purposes," congressional documents for public distribution. Twenty-five volumes have thus far been published.

From these reports, and from current tests which will appear in subsequent volumes, certain results have been brought together, results which are thought to be representative of their respective kinds of material, as qualified by the explanatory remarks relating to them.

Bricks are possessed of those physical properties which are common to other materials of construction. That is, they have strength to sustain loads, elastic properties whereby their dimensions are slightly changed during the period of loading, springing back to their original shapes, or nearly so, when the loads are removed; they expand and contract with changes of temperature, and it appears that their volumes are slightly affected when saturated with water, swelling minutely but perceptibly when wet.

Properties inherent in individual bricks are reproduced in piers constructed therefrom, modified, however, by the properties of the mortar in which the bricks are laid, and mortars vary according

The moduli of elasticity, deducting the permanent sets in computing these values, range from less than 1,000,000 to a maximum of 10,000,000 pounds per square inch. Permanent sets, when they occur, are usually of small magnitude. From this it follows that the curves of compressibility are nearly straight lines; that is, in individual cases the amount of compression of a brick is nearly proportional to the load which is placed upon it.

The compression of the brick, in the direction in which the load is applied, is accompanied by an expansion in a lateral direction which, as well as the direct compression, is a measurable quantity. The usual ratio of lateral expansion to longitudinal compression falls between the limits of one-fifth and one-tenth.

Density of structure is shown by the amount of water which a brick will absorb. Usually the absorption is reported in percentage, by weight. A better method seems to be to judge of the voids by the volume of water absorbed. Water enters a porous brick very promptly, less rapidly in the harder ones, but complete saturation is not accomplished even at the end of a week's immersion. Additional water is absorbed by exposure in a bath of hot water.

The compressive strength of brick extends over a wide range in values. The weight per cubic foot of the material, its density

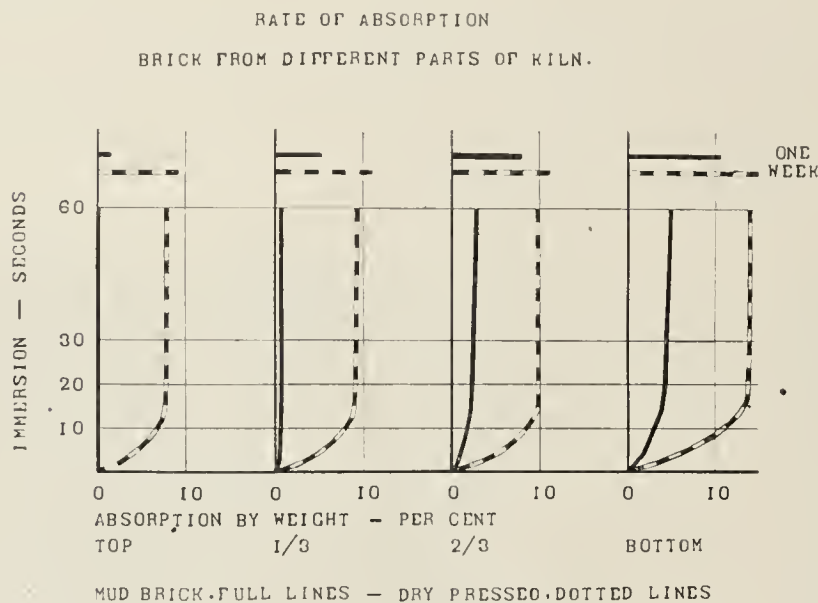
of structure, modulus of elasticity and compressive strength are mutually dependent features, and all are influenced more or less by the conditions of manufacture. The records of tests on compressive strength are numerous and generally available to all. Reports of tests of metals, 1894, and following years, contain many such results. Nearly 500 State, Territorial and other libraries are designated depositories for congressional documents, where these volumes may be examined by those who do not have them personally.

A number of lantern slides have been prepared to illustrate features connected with the properties of brick, brick piers and other materials of construction, which will now be thrown upon the screen.

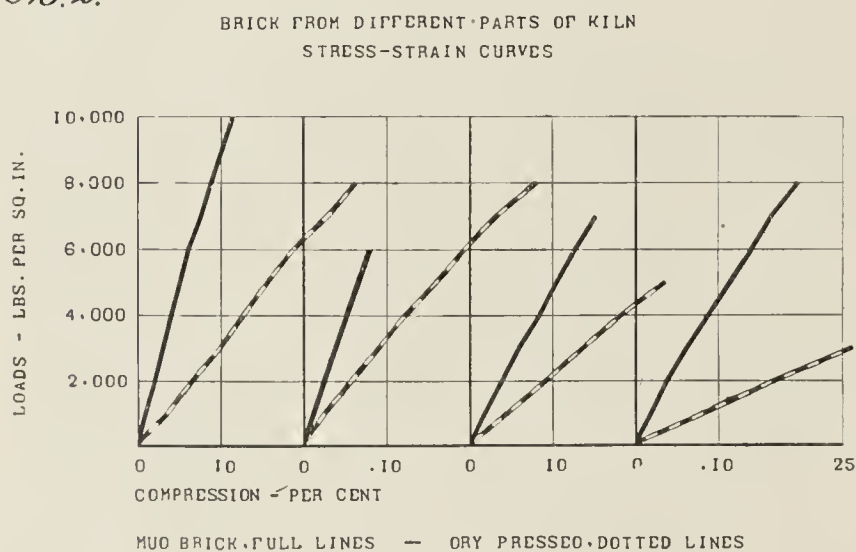
No. 1.—The rate of absorption of some dry pressed and mud brick, which were burned side by side in a down draft kiln, is here shown.

The mud brick are shown by full lines, the dry pressed by dotted ones. These samples were weighted at frequent intervals during the early stages of immersion. It appears that a considerable part of the water eventually absorbed entered some of the samples during the first fifteen seconds of immersion. After this time absorption went on slowly. The upper horizontal lines indicate the amounts which were absorbed at the expiration of a week's time.

No. 1.



No. 2.



The lesser amounts of water absorbed by the brick from the top of the kiln over those farther down will be noted.

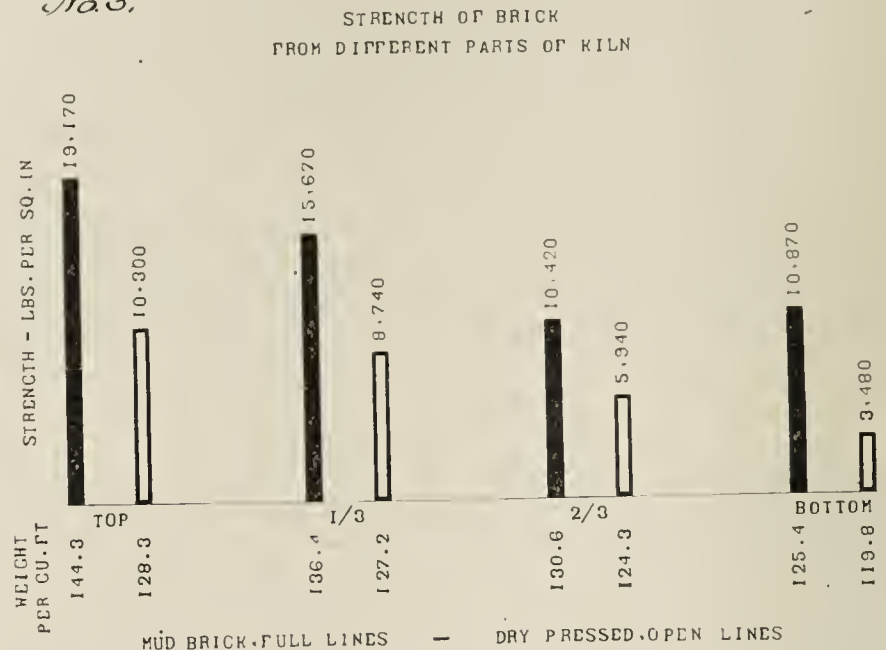
No. 2.—On this diagram are shown the stress-strain curves of the samples of the preceding slide. The greatest degree of rigidity is displayed by those from the top of the kiln becoming more compressible as they are taken from the lower parts. The order in which these curves are plotted is the same as in the preceding slide, with reference to their position in the kiln. It will be noticed that the mud bricks from the bottom of the kiln displayed as much compressibility under a load of 4,000 pounds as the corresponding brick from the top displayed under twice the load.

No. 3.—The variation in compressive strength is equally pronounced, according to position in the kiln, as shown by the diagram now upon the screen. The weights per cubic foot of the material are entered along the lower edge of the diagram. The highest strength corresponds with the greatest weight. This is characteristic, also, of other materials of construction, high resistance and high density of structure being found in the same samples.

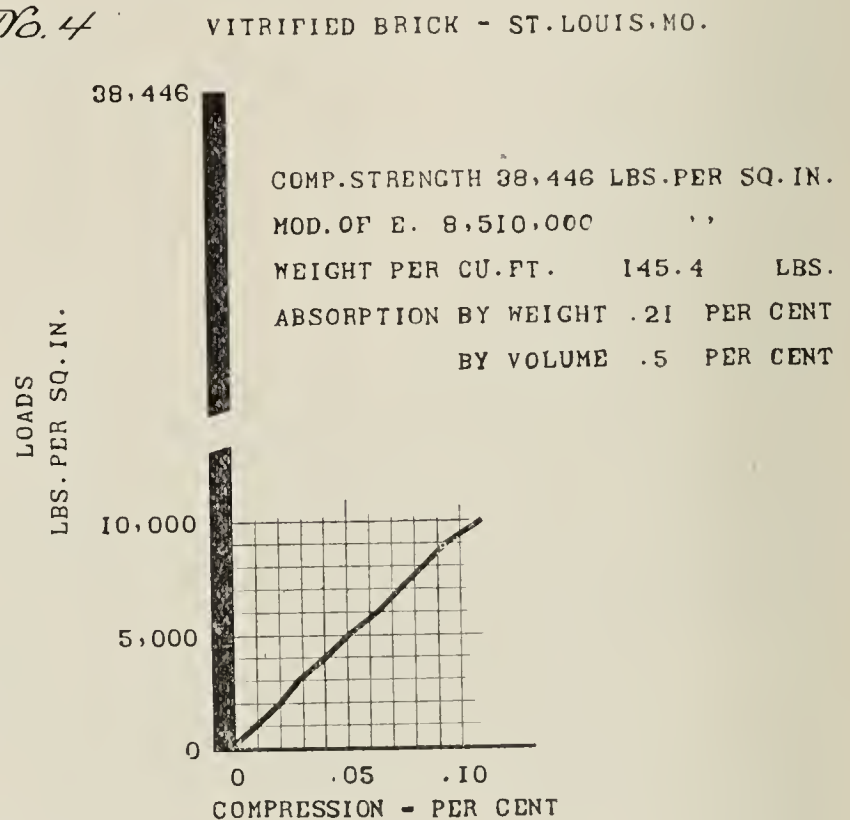
No. 4.—The properties of a remarkable brick are shown on this diagram. So phenomenal was its compressive strength that it is fully deserving of a special diagram of its own. To St. Louis' belongs the honor of producing this brick, which far exceeded in strength any brick heretofore tested at Watertown Arsenal. This sample was tested on end, and reached a total load of 376,000 pounds on a surface 2.45 inches by 3.99 inches in cross section dimensions. Fragments of this brick have been brought here for inspection, and are held in great respect.

No. 5.—The laboratory records were gone over, and from them were selected the results which appear on the diagram now on the screen. These tests represent the highest of their respective classes. They are what have been attained, and are presented as standards of excellence. The granite of 51,990 pounds per square inch compressive strength came from a quarry in Asheville, N. C. Ordinary granites range from 20,000 to 30,000 pounds per square inch. The cement rock represents the stone from which a natural cement is

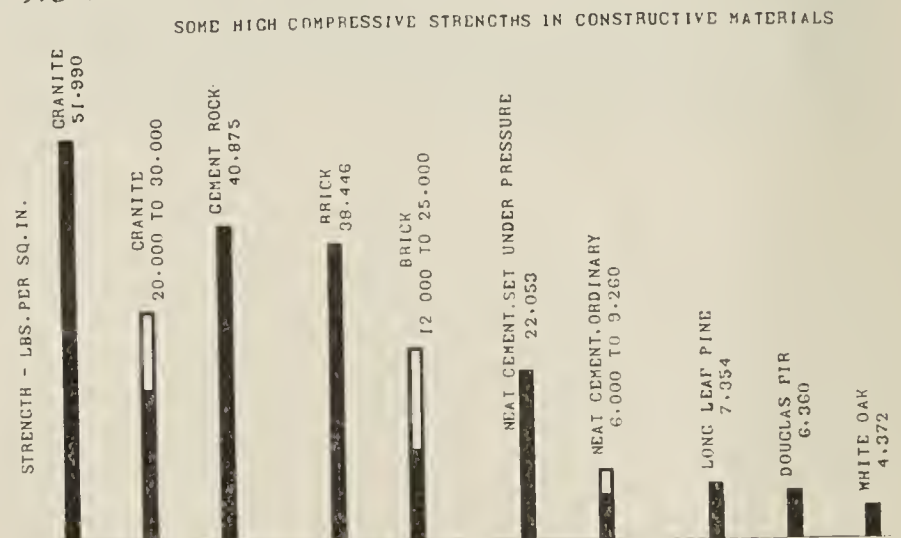
No. 3.



No. 4



No. 5



obtained, from the State of New York. The brick of 38,446 pounds strength has just been described. Ordinary values for hard burnt brick range from 12,000 to 25,000 pounds per square inch.

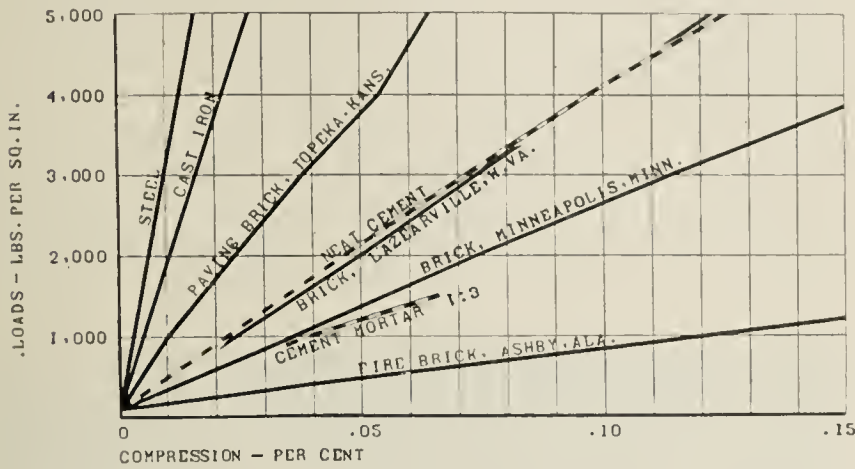
Portland cement, set under pressure, attained the maximum strength yet observed. This sample was exposed to an initial pressure of 14,000 pounds per square inch while setting. The strength stated on the diagram was displayed by the cement at the age of fifty-seven days. The strength of ordinary Portland cement, tested neat, ranges from 6,000 to 9,260 pounds per square inch.

The strength of the white oak stick seems low taken in comparison with the strength of the long leaf pine and the Douglas fir wood. In small pieces white oak has shown a compressive strength of 9,000 pounds per square inch. The figures here given refer to a post of commercial size.

No. 6.—The stress-strain curves of several representative ma-

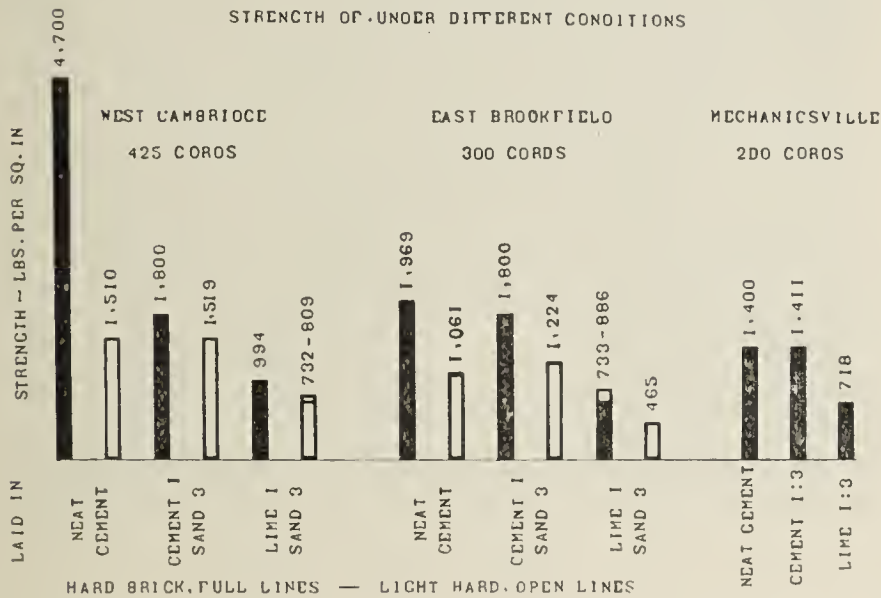
No. 6.

STEEL, CAST IRON, BRICK, AND CEMENT.
STRESS - STRAIN CURVES



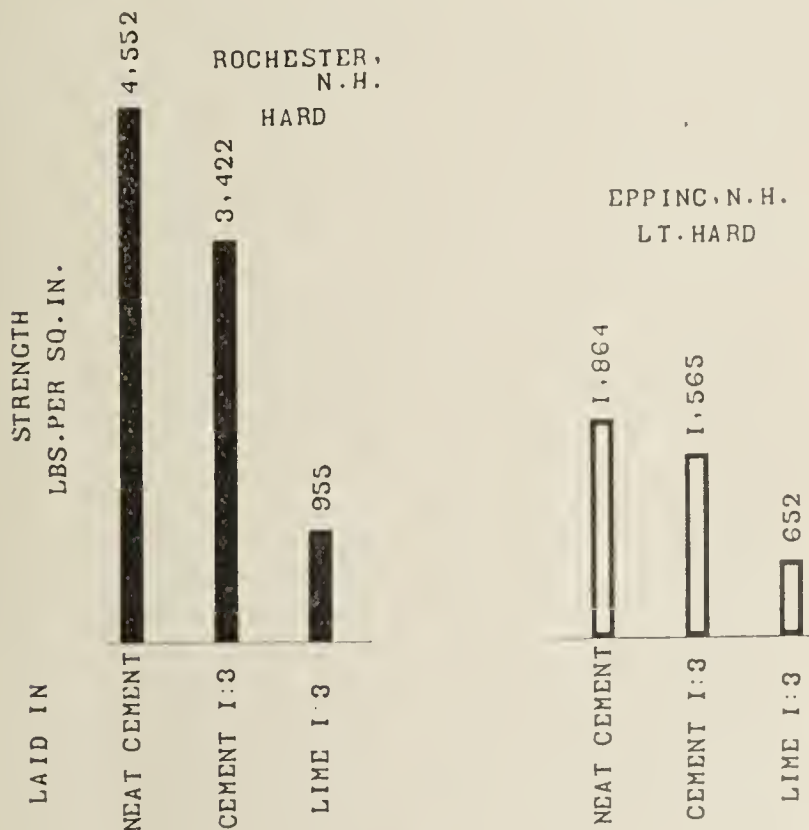
No. 7

BRICK PIERS
STRENGTH OF UNDER DIFFERENT CONDITIONS



No. 8.

BRICK PIERS - WATER STRUCK BRICK.



materials are shown on this slide. Steel and cast iron are here plotted for reference purposes. A paving brick from Topeka, Kan., occupies a position next to the cast iron and steel. Then follow the curves of neat Portland cement, a brick from Lazearville, W. Va.; then a brick from Minneapolis, Minn., and the curve of a cement mortar of one part Portland cement and three parts sand, and at

the lower part of the diagram appears the curve of a fire brick from Ashby, Ala. This diagram shows the range in compressibility which may be met with ordinarily. The number of curves might be extended, but other grades of material would occupy places between the curves of the paving brick and the fire brick.

No. 7.—The strength of brick piers will now be referred to. The diagram on the screen shows the results with piers made of hard and light hard sand struck brick laid in different kinds of mortar. Brick from three yards are represented, the amount of fuel used being 425 cords, 300 cords and 200 cords respectively, per million brick. One grade only was received from the yard where the smallest quantity of fuel was used, which was classified as hard.

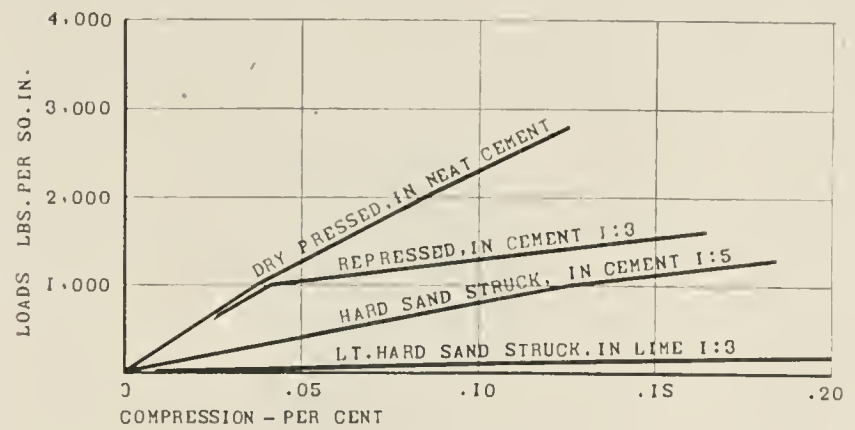
The range in strength from the hardest brick, laid in neat cement, to the weakest light hard brick, laid in lime mortar, is seen to be very great. In respect to the compressibility of the piers under loads, the difference is greater than shown by their ultimate strengths. It is desirable to use neat cement or a strong mortar in laying hard brick, in order to attain maximum strength and rigidity. Rigidity is regarded as an important factor in construction as well as strength.

Lime mortar should not be used when either of the considerations just mentioned are essential.

Two values are shown for two of the piers. The brick from these yards were panelled on one side, and the higher strength in

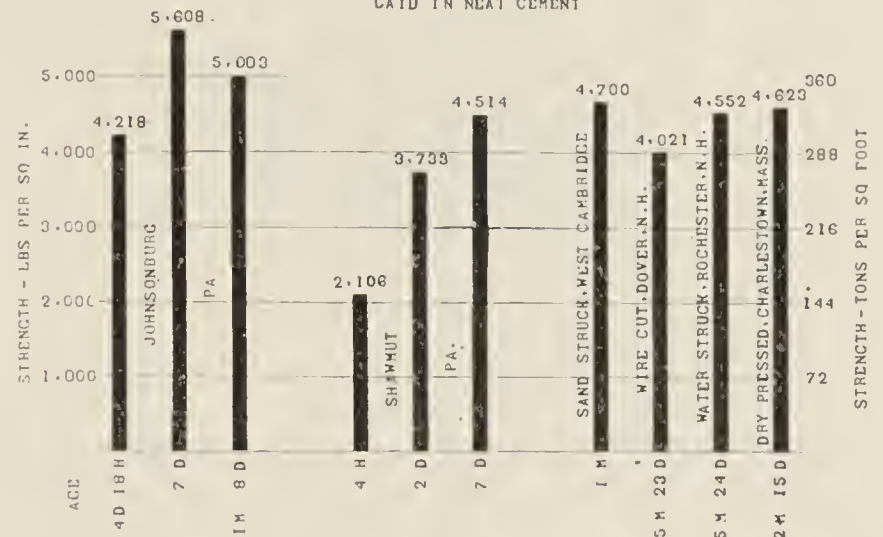
No. 9.

BRICK PIERS
STRESS - STRAIN CURVES



No. 10.

SOME STRONG BRICK PIERS
LAID IN NEAT CEMENT



each of these piers belongs to duplicates in which the panels were filled with neat cement before laying.

No. 8.—Some piers made of water struck brick appear on the diagram now before you. One yard furnished the hard, another the light hard brick. The influence of the mortar on the ultimate strength of the pier is again well shown. It seems a wasteful effort to use a weak mortar in which to lay a pier of hard, strong brick.

No. 9.—The curves of compressibility of some piers are now shown on the screen. An earlier stress-strain diagram showed corresponding results on individual brick and other materials. On the present diagram the most rigid condition pertained to the pier made of dry pressed brick, laid in neat cement. A pier of repressed mud brick appears next in the order of relative rigidity, then a hard sand struck brick pier laid in less rich mortar than used for the repressed brick, and most compressible of the group is the pier of light hard brick which was laid in lime mortar. The characteristics of these piers depend chiefly upon the quality of the mortar employed.

From this exhibit it may be seen how unfavorable is the action in a wall, the face of which may be laid with one class of work, while the backing is of another.

No. 10.—In order to illustrate the strength which may readily be attained in brick pier construction, the results of some strong piers have been brought together on the diagram now presented.

The four piers represented on the right of the screen are taken from earlier tests, the results of which are among the published records of the laboratory. The other six represent piers built and tested just prior to the time of this convention. These latter ones were intended to be strong piers, a result which was realized in the tests. They were about eight feet in height each, nominally twelve inches square; they had hollow cores, and the brick were laid on edge in neat cement.

The ages of the piers are entered along the lower edge of the diagram. One pier, the youngest of the series, was tested the day it was laid. The test began about one hour after the last brick was in place and was finished three hours later, or when the pier was four hours old. It developed a compressive strength of 2,100 pounds per square inch. The mortar had not hardened, and unusual compressibility was displayed. The total load on the pier reached 118 tons, a load far in excess of any which could be expected to be placed upon it in constructive work, at so early an age.

Horizontal lines represent pounds per square inch on the left of the diagram, and on the right side, tons per square foot. One pier reached a strength of 360 tons per square foot, another exceeded this load. The allowable load prescribed by the building laws of some cities, fifteen to thirty tons per square foot, seems a very low limit in the presence of piers possessing the ultimate strength which these displayed.

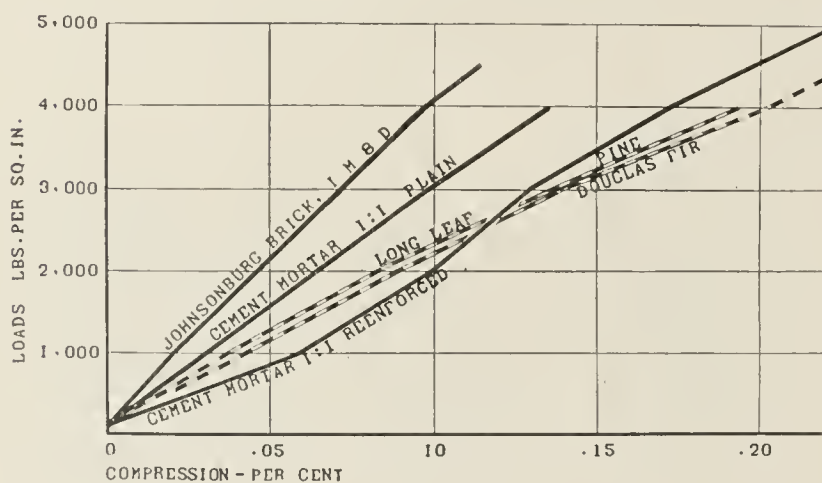
No. 11.—The stress-strain curves of one brick pier, two mortar columns and two wooden posts are shown on the diagram now placed upon the screen. These curves stand for strong examples of their respective kinds. These illustrations and others which have gone before were selected, in many of the cases, to indicate what seems best in constructive materials. Examples which could safely be followed where strong and safe construction is needed.

No. 12.—A few slides will be introduced pertaining to the testing laboratory, the methods of testing and types of fractures common to piers. A partial view of the main testing room is here shown. The large emery testing machine is the principal figure of the illustration. On this machine all the full-sized tests of columns and piers are made. The machine has a capacity of 800,000 pounds, and columns upwards of 25 feet in height may be accommodated.

No. 13.—This slide shows a brick in position in the testing machine, on which a micrometer is mounted. The brick is loaded on end in order to obtain a gauged length ample for the determination of its elastic properties. The compression readings are taken

No. 11.

BRICK PIER, CEMENT MORTAR AND WOODEN COLUMNS
STRESS-STRAIN CURVES



by means of the arc and pointer on the micrometer. Using the micrometer on the flat side of the brick, in a cross-wise direction, enables the lateral expansion of the material to be ascertained.

No. 14.—Some columns and piers prepared for testing are shown by the photograph now on the screen. It happened that a larger number of concrete columns were in readiness for testing at the time this photograph was taken than brick piers.

No. 15.—A brick pier is here shown in position in the testing machine. The pier is tested to a horizontal position. End plates with side rods are used to put the material in compression, to a limited degree, during transportation to the machine and adjustment therein. The load, necessary for this purpose, is less than 100 pounds per square inch. The usual gauged length is 50 inches, on which the compressive movements are observed. The micrometer is shown in place on the pier.

The compressions are observed for increments of 50 or 100 pounds per square inch under advancing loads and permanent sets determined after each increment, proceeding in this manner until the ultimate resistance of the pier is approached. The progressive development of longitudinal cracks and the increasing frequency of snapping sounds give warning of close approach to the breaking load.

No. 16.—One of the lines of fracture of a pier, after having passed the period of ultimate resistance, is shown by the present slide. The half-bricks, into which the pier has been separated by a longitudinal crack, have buckled upward along a portion of its length.

No. 17.—On the present slide appears the photograph of a pier having a base 16 in. square, drawn in to 12 in. by 16 in. at the

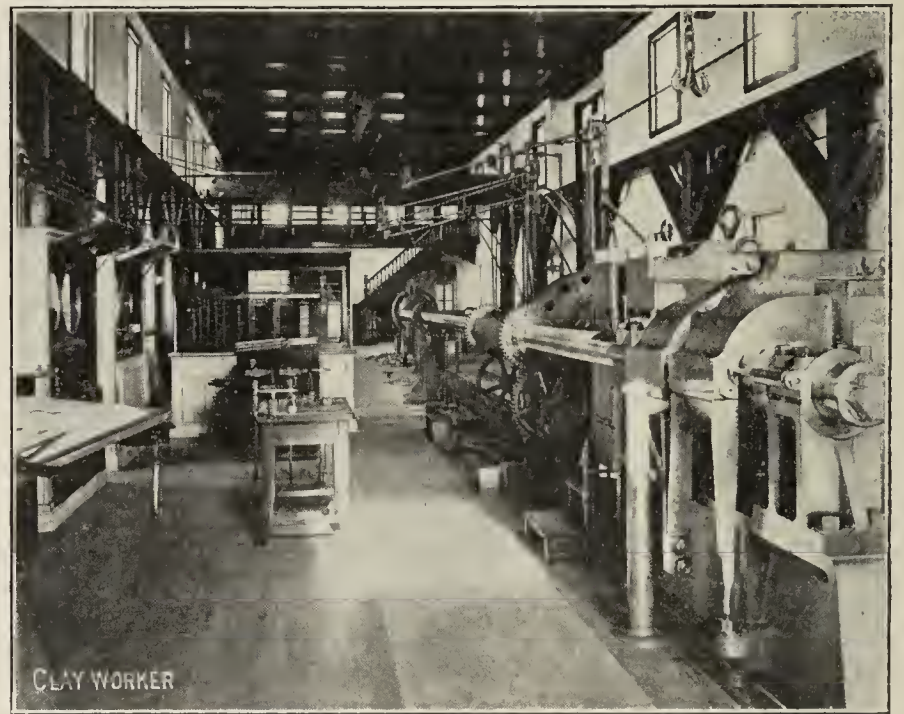
upper half. Lines of fracture will be seen in the base portion. It has been found that a pier, smaller in one dimension, resting upon a larger base does not display so high a strength as a pier of the smaller size having a uniform cross section throughout its length.

No. 18.—The usual type of failure of a brick pier is shown on the present slide, the last of this series of views. Longitudinal cracks develop, separating the bricks into halves or smaller fragments, which cracks gradually extend over a considerable part of the length of the pier. The lines of fracture are chiefly transverse fractures of the individual brick. The yielding of the mortar promotes fractures of this kind. The use of a mortar having substantially the same rate of compressibility as the brick, regularity of shape of the individual brick, laying them on edge or laying several courses without breaking joints, each favors the transverse resistance of the brick and may be expected to favorably influence the ultimate strength of the pier. (Applause.)

General Discussion.

President Conway: Gentlemen, this excellent paper is now before you for discussion.

A Member: I would like to ask Mr. Howard if he has any records of tests showing the comparative tests of brick and



Main Room of The Watertown Arsenal Testing Laboratory,
800,000 lbs. Emery Testing Machine.

cement, and between concrete and reinforced concrete. I think it would be of great interest to the brickmakers to know how our products stand in competition with concrete piers. I believe it would make a good showing. In these days when the architects and engineers are trying to use concrete in every conceivable form, I think this would be of interest.

Mr. Howard: Anticipating that such might be the case, I brought with me a number of slides on concrete columns. Slides, which I had the pleasure of presenting at the Atlantic City meeting of the Society for Testing Materials, and which I am willing to show here if time permits.

Mr. W. P. Blair: I suggest that we take the time. I would like to ask Mr. Howard one question. What data have you giving these tests of brick columns, etc., showing the length of time they were laid up, indicating the character of mortar in which the brick were laid.

Mr. Howard: All this data is shown in the annual reports of Testing Material, which are available through the libraries and they may be obtained by application to the authorities at Washington. In these volumes, full details are given. In the selection of these few samples, I have been rather embarrassed to know what to use, rather than not to get enough together. They extend over several thousand printed pages, it may be said. The whole series of tests reach into the thousands of pages, but those pertaining to brick piers and brick tests from 1894 to the present time. The tests have been very numerous, and all I could expect to do in that connection is to invite your attention to the salient features which we have discovered from time to time. The full details would require days to present.

(Mr. Howard then showed a number of very interesting slides, illustrating tests of brick work, cement columns, etc.)

Mr. M. E. Gregory: I would like to move a vote of thanks to Mr. Howard, and also to the Government authorities at Watertown, Mass., for kindly sending him, and that Secretary Randall be authorized to have copies of this paper printed in pamphlet form for distribution, for I think it one of the best acquisitions to our records we have ever had.

Motion seconded by Mr. Victor Cushwa and carried.

Mr. Gates: There is one thing I want to call your attention to. I was surprised to see one of the illustrations which Mr. Howard said did not show good results owing to the poor mixture. Gentlemen, let us not forget that concrete has its proper place, but the one great drawback to my mind is in the improper mixture. Two things you must bear in mind, one is the proper mixture, and the other is the proper material. The mixing is done by the cheapest labor that can be had and it is the weakness of the material that wrecks the building.

Mr. Cook: Is it not possible for us to investigate from the data we have at hand and the data that can be obtained, to make investigations and make research ourselves? We are not all paving brick manufacturers, but we are nearly all of us interested in common brick, and I think it would be well for our Association to spend money in this direction and put our investigations in pamphlet form so it could be used by our members in different districts.

Brick Wanted for Tests to Determine Strength.

Mr. Howard: We are in possession of a full laboratory, and one of the objects of my visit to this city is to collect material for testing purposes, so I should be very happy to forward any investigations of that kind which pertain to the strength of materials, and if any member can put me in the way of obtaining representative materials, various classes of brick, individual brick, or any constructive material, it will be a great pleasure and satisfaction to receive them and test them and return the results to the parties who are co-operating with us. We have tried to cover a great many constructive materials and are still making tests.

Mr. E. L. Cook: Can you give us any information as to the comparative value and strength of brick compared with concrete?

Mr. Howard: I think a careful study of the examples I have given, and the examples furnished in our tests of materials will enable you to get all that information. It is all there now. Of every class of material, and there are hundreds of pages, and it is available for any one interested enough to go after it.

Mr. Gates: Speaking of making these tests and investigations ourselves. If we went to work and spent all the money we could in work of this sort, everybody would say we were prejudiced. These tests are being made by the only people that can give them weight. They have the money and they have the weight, and we are going to be able to use them.

Secretary Randall: The members must bear in mind that this is Government work, and that Mr. Howard comes to us by the direction of the officer in charge of the testing station, at the Watertown Arsenal, Watertown, Mass. Mr. Howard has given an able presentation of this subject, and he has advised us of the fact that the Government will take our materials and test them and make reports to our members. It is a most excellent situation. The Government is doing great work in this connection, and if you will avail yourselves of it, you will profit thereby.

President Conway: I presume we will have to adjourn and take up the balance of our program in the morning.

On motion of Mr. Eisenhart, seconded by Mr. Christopher, the convention adjourned for the day.

THIRD SESSION.

Friday Morning, February 8, 1907.

President Conway: The convention will come to order. We have a great deal of business before us this morning, and we must get to work. The first paper of the morning is a paper by Mr. Ross C. Purdy, of the University of Illinois, Champaign, Ill.

SOME EVIDENCE OF HOW A PAVING BRICK SHOULD BE BURNED.

BY ROSS C. PURDY.

Last year Prof. Edward Orton, Jr., read a paper before this Association in which the fact was first announced that in a paving brick, maximum toughness was not always developed with maximum density. In fact, his data proved that some clays deteriorated in toughness or strength after a certain degree of vitrification had been attained. The most surprising fact developed in his research, however, was that maximum toughness or strength was developed, in the case he reported, when the bricks had been burned to a density known as number two or "alley" grade of paving brick.

Having had opportunity in connection with the State Geological Survey of Illinois, to make similar investigations on Indiana and Illinois paving brick and finding that in some cases the evidence obtained corroborated Prof. Orton's, this was deemed an opportune time and place to present the facts brought out in our investigations in advance of the issuance of a State Survey bulletin on paving brick, now in course of preparation.

A representative from the Survey visited the various paving



Ross C. Purdy, Champaign, Ill.

brick plants of Illinois collecting from each factory a barrel sample of crushed clay as it issued from the screen chutes. A hundred and fifty or more of the bricks that were being made at the time of sampling were marked and allowed to pass through the usual process of drying and burning. These marked bricks were placed in several parts of a kiln so that different grades of hardness in each case could be secured. After the bricks were burned the survey representatives re-visited the plants and with the aid of either the superintendent or manager, classified the marked bricks into four grades on the basis of difference in color and degree of vitrification, as follows: 1, soft burned; 2, "alley" or No. 2 paver; 3, No. 1 paver; 4, overburned.

In Indiana the several grades were selected from the stock piles by the survey representatives in the presence of either the superintendent or manager of the factory. It is understood that the bricks thus selected were made at about the same time, so that the Indiana bricks, like those from Illinois, may be considered as having been made from the same run of clay. In other words, the difference in strength of the several grades cannot be said to be due to difference in the clay used at different times. After drying, ten or twenty bricks of each grade, as the number on hand permitted, were rattled according to the N. B. M. A. specifications; five to ten of each grade broken in the transverse test, and three reserved for the crushing test. Three bricks were taken from each lot used in the rattling test, re-weighed, soaked in water and their percentage of absorption determined according to the usual engineering practice.

The rattling test was conducted in four stages of 450 revolutions each, thus permitting a study of the rate as well as the total loss in each instance. The wear suffered by the bricks in the first quarter (450 revolutions) of the rattler test is considered as being due largely to chipping, the more brittle brick losing more than the less brittle.

Results: In the following table is given the data obtained in the several tests:

Sample No.	Total Rattler Loss at End of Each Quarter				Absorption in per cent.	Modulus of Rupture.
	450 Rev.	900 Rev.	1350 Rev.	1800 Rev.		
K1	b.....17.37	28.56	39.96	46.06	11.2	....
	c.....13.28	21.46	28.20	33.91	6.1	1630
	d..... 8.43	11.50	14.08	15.82	0.9	2535
	e..... 9.42	16.15	21.77	26.99	1.2	1420
K3	b.....18.54	29.53	38.35	46.21	10.0	995
	c.....11.34	17.45	21.23	24.61	3.5	2100
	d.....12.69	19.01	22.49	24.89	1.05	2350
	e.....11.07	18.58	23.11	26.42	0.7	2700
K4	b.....19.69	30.60	38.17	45.12	12.2	980
	c..... 9.22	14.47	17.00	19.94	5.0	2360
	d..... 9.91	14.18	16.87	19.11	1.16	2250
	e.....14.83	18.92	broken up		0.6	1890
K8	b.....20.13	27.31	37.32	45.56	9.9	585
	c.....11.32	17.62	24.23	28.09	7.8	1035
	d.....10.17	14.99	18.46	20.23	3.1	1440
	e.....12.54	18.66	.....	.....	1.6	810
K9	b.....14.25	23.61	31.94	39.53	10.2	705
	c..... 8.90	14.28	18.00	21.71	6.3	1080
	d..... 6.42	9.71	12.38	14.84	2.51	2050
	e..... 6.09	9.31	11.75	13.74	0.8	2050
K10	b.....23.09	32.75	40.81	46.53	9.1	1375
	c.....19.89	28.20	32.91	35.74	2.0	1910
	d.....22.55	29.80	35.29	39.36	1.1	2340
	e.....19.01	26.74	32.04	36.06	0.8	1880
K11	b.....28.92	45.08	56.76	67.08	13.1	685
	c.....13.64	20.14	25.31	29.83	2.9	1510
	d.....13.49	20.08	24.50	28.13	1.9	2260
	e.....14.49	23.54	30.81	36.69	2.7	870
K13	b.....16.13	25.90	33.56	41.61	9.3	1240
	c.....14.48	22.68	28.97	34.72	6.9	1280
	d.....12.86	19.58	26.21	31.50	1.7	1620
	e.....14.43	21.58	27.54	31.55	1.1	1500
K15	b.....14.50	20.89	25.44	29.48	7.7	1776
	c.....10.24	15.42	19.01	21.79	1.0	2365
	d.....10.34	13.93	16.72	18.44	0.8	2600
	e..... 9.07	14.53	18.67	22.00	0.1	2870
F1	b.....19.32	29.31	38.88	46.67		
	12.70	19.81	25.08	30.15		
	 9.13	13.89	17.64	20.84		
	 9.75	17.20	23.32	28.35		
K5	b.....17.78	28.22	36.98	44.90		
	c.....12.61	19.46	24.29	28.74		
	d..... 7.78	12.53	16.34	19.36		
	e..... 8.19	12.16	15.22	18.06		

Curves were drawn showing the relative percentage absorption, total percentage loss in rattler and comparative modulus of rupture in the transverse test.

Briefly, the following facts were demonstrated:

1. That with some clays maximum toughness is developed in the No. 2 or alley brick. This checks Prof. Orton's determinations.
2. That in some clays the range of maximum toughness extends over a range in density from the No. 2 to the overburned.
3. That in other clays maximum toughness is not developed until maximum density or vitrification is attained.
4. That again, in some clays, toughness increases with increased density, even up to what the manufacturers would term "overburned."
5. That in general the results of the transverse test demonstrate the same relation of strength to density as is shown by the rattler determinations.
6. That the four grades selected by the survey representative in co-operation with the manufacturers were fair samples of four grades of hardness in every case.

Practical facts developed:

1. That a clay, when exploited for its paving brick possibilities, should be tested at more than one degree of hardness.
2. That the clay which shows the maximum resistance to abrasion loss in the rattler, together with the maximum range in density at which this maximum strength is developed, is the most valuable for paving brick purposes.
3. The clay having a short range of density in which maximum strength is developed must be burned slowly, and extra precautions taken to attain even distribution of heat in the kiln.
4. The product from each factory should be classified according to the following considerations:
 - 1st. Maximum strength.
 - 2nd. Range of density in which this maximum strength can be attained.

For illustration: The brand of brick that suffers a rattler loss of only 15 per cent might be put into class A.

The brand of brick that suffers a rattler loss of only 15 per

cent. through a range of density ordinarily described as ranging from a No. 2 grade to over-burned might be classed as A-1.

The brand that suffers a rattler loss of 18 per cent. might be classified as B.

The brand that suffers a loss of 18 per cent. over a range of density from No. 2 paver to over-burned might be classified as B-2.

5. It is urged that for information of engineers and inspectors as well as an aid in securing more liberal and consistent specifications that a series of tests similar to those here described be made and an official value and grade be placed on each brand of paving brick now on the market. If a given make of paving brick classed A-1 according to the foregoing suggestions is specified, then the engineer and inspector would know that they were as safe in accepting what is now termed a No. 2 paver as they would be in passing the No. 1 paver.

Summary:

1. The tests here reported demonstrate a very practical method of exploiting new clays as to their paving brick possibilities.

2. Not all clays have a range in density over which maximum strength is obtained.

3. There is here presented what appears to be a very satisfactory method of grading or classifying the several brands of paving brick now on the market.

General Discussion.

O. N. Townsend, Zanesville, Ohio: I would like to ask Mr. Purdy a question. I suppose in the city of Chicago and other cities in Illinois, Indiana and Ohio they test their brick according to the standard N. B. M. A. test, but so far there are only three different per cents. for loss by abrasion where the N. B. M. A. test is mentioned. Baltimore, 22 per cent.; Columbus, 18 per cent.; and Chicago, 20 per cent. I am told that



O. N. Townsend, Zanesville, Ohio.

is about to be reduced some, and there does not seem to be any uniformity about it. With your tests and researches, Mr. Purdy, what would you judge was a fair loss by the rattler test in an attempt to make it uniform?

Mr. Purdy: I believe there ought to be a scale adopted by this Association and also the engineers, whereby a larger loss would be allowed in some cities and a smaller loss in other cities, and also in some streets of lighter and heavier traffic. Mr. Christopher suggested that idea last year, and I believe it is a good one. I believe there ought to be also some notice taken of the fact that a soft, under burn is as good as a No. 1 paver in some cases. That should also be included in the reports and specifications.

Mr. W. P. Blair: Mr. Purdy has made us so many suggestions all the way through that I do not know that we ought to occupy the time that it would require for a full discussion. His paper is a very interesting one, and the series of tests that he has made from time to time are, I think, good. These tests apply with equal interest to the building brick manufacturers as it does to the paving brick manufacturers because they are along the line of determining the quality of goods produced, and our engineers and contractors are paying more attention to that question all the time. There are some very peculiar facts developed by these tests. One single remark made by Mr. Purdy appealed to me with greater interest than anything else, and that was his assertion that slow burning was likely to produce a denser brick. Now, I ques-

tion that assertion as a general statement. I think if you burn a brick slowly that there is just a chance that you are likely to overdo the matter just as you may overdo the matter in any other ware. You can burn a paving brick slow enough so that in the end it will be worthless, although you will have reached a maximum degree of heat necessary in a perfect burn and thorough vitrification. In other words, the various degrees of heat that are applied to different clays must be somewhat different in application with every particular clay. There are clays that require pretty rapid burning, say, up to 1,000 degrees. You must raise the heat slowly from 1,000 to 1,400 degrees, and after you reach that point, you can burn them off very rapidly even should 2,000 degrees be required. But if you undertake to burn the same clay very slowly up to 1,950 degrees, when you have burned the kiln off, you will find that you have a brick that would not be marketable at all. It is the chemical conditions and changes with which you have to contend in the burning of clays that very greatly go to make up the quality of brick. Clays differ from each other and require different burning and different treatment. Another matter, I note he classes certain brick as "alley" brick. I am not clear whether these are regarded as slightly overburned or underburned. Most manufacturers class their No. 2's as being either No. 2 hard or No. 2 medium hard. Either No. 2 hard or No. 2 medium hard are regarded as good "alley" brick, but not often sold in a mixed condition. It is a better practice to separate them. Again, there is a stage of burning



W. G. Titcomb, Providence, R. I.

where the brick are the toughest after they pass the No. 1 stage. To illustrate: Take a brick after it has burned up to 2,000 degrees, F. The next 200 degrees F. will make the brick more brittle, but when you reach 2,300 degrees of heat then it becomes tougher again, and you can scarcely take anything off that brick in the rattler. That I have found to be the case from samples taken from more than twenty manufacturers of paving brick throughout the country. The brick passing a certain degree of hardness that is accomplished by burning to 2,100 degrees, the next 200 degrees will make the brick very brittle; then when 2,200 or 2,300 degrees is reached, there comes a brick that is toughest of all, still that brick is not what we like to see in a street and is excluded from No. 1 grade. It has become porous and developed a spongy condition, and yet you will not get as much off that brick in the rattler as you will when it has reached the stage that we call No. 1. These are what we might call eccentricities in the conditions of burning, and we know that with all these tests that this Association and the manufacturers have made, there are many problems and many conditions that we know little about.

Mr. Purdy: The overburned brick in most cases were spongy, or had just begun to be spongy, i. e., this had just entered the stage that Mr. Blair has described; they were overburned, according to the manufacturer's estimation. In each case the manufacturers picked out their No. 1 and No. 2 and

overburns. We made several other tests other than the ones we have reported here. One of the tests we made was to take these brick in the four grades of hardness and test them for porosity in different portions of the brick. In the No. 1, the porosity of the brick was not as great on the outside of the brick as in the center. Likewise in the soft burned the center core was a little bit more porous, according to the absorption test. In No. 1, it was considerably more porous. In other words, the scale that is on the outside was considerably more vitrified than the center of the brick. I have not the figures here, but the porosity in some cases was at least twice as much in the center as it was on the outside, showing that the heat had not penetrated through that core.

Mr. Blair: Let me ask a question. Your conclusion was that the heat did not reach the core, but there is another conclusion I would like to have from you in order to throw a little more light upon your explanation, and that is this: There may be two conditions, a condition resulting from slow burning and one from fast burning. Would not outside vitrification take place and the inside of the brick be more porous in fast burning? Again, where slow burning was the case, was not the brick found to be very porous throughout, although the same maximum degree of heat was reached in such case? Was the condition reached by too rapid burning on the inside, or was it by slow burning, or was it by the method of burning that produced vitrification on the outside? Now, there would be three unlike conditions of burning, and it would produce the same thing of which you speak. The porosity would be greater on the inside of the shell that is thoroughly burned, or it might be less, or it might be the same, or the conditions of burning might be different, and that would make the brick different again. What would be your conclusions? What would you say?

Mr. Purdy: What can I say? Our only tests in that line have been these. We have burned the brick one time more rapidly than another. The more rapidly we would burn the brick the greater this differentiation from the inside to the outside. You know I was associated with Prof. Orton for many years and we burned a good many brick. We found we had to lengthen the burn considerably in order to obtain uniform vitrification throughout each brick.

A Member: This has been your universal experience then?

Mr. Purdy: I traveled from the north to the south of Illinois, and in all the plants I visited I found that the inside of the brick was underburned and the outside vitreous, and they found that condition of affairs when they burned them too rapidly. It takes a long time for heat to enter clay. This is due to the fact that clay absorbs the heat slowly, and it takes time for the heat to go through the brick, especially when they are laid one upon the other. You must take time to get the heat into your clay wares in order to produce homogeneous structure. The evolution of gases produce vesicular structure. Vesicular structure, however, can be produced in clay wares without the evolution of gases, at least not sufficient to produce a diminution in weight of the wares. Glass is formed during the burning of every clay, whether it be a fire-clay or shale. This glass will be vesicular or not, that is, honey-combed, depending upon the rate at which the clay is burned. There are two defective conditions developed by rapid burning. First, non-homogeneity of density, and second, vesicular or honey-combed structure.

Harvey Haigh, Catskill, N. Y.: We burn brick at Catskill in a down-draft kiln and in a continuous kiln for six days, and while some seem to differ with Mr. Purdy, really it don't seem so. I want to give you my experience down in Catskill. If we would go too fast to that point you speak of we would not have as good a brick. Just to prove that, in our continuous kiln, we sent a barrel of brick to Prof. Orton from our continuous kiln and we sent a barrel from our down draft kiln. They were marked A and B, and the Professor did not know which kiln they came from. In the continuous kiln they are burned slowly; you cannot pass beyond the heat in flashes as you can in the down-draft kiln. When those tests came back it showed a little over one per cent. in favor of the continuous kiln. Now, I attributed that to the slow burning. You can, I am satisfied, go too fast, and if you go too fast, you

damage your structure, that is up to the point where Mr. Blair commences to give his brick its proper density in the burn.

W. S. Purington, Galesburg, Ill.: We are now only half way through yesterday's program. I am satisfied that we can hold this delegation here on this one subject two or three hours, but there are so many who are not interested in the paving brick question. I realize that Mr. Purdy's paper is one of the best papers we have had, and I think if he would come before the paving brick manufacturers at one of their quarterly meetings, it would be of great value to the paving brick people, but I do not think it advisable to continue this discussion because there are not enough of our members who are interested in it.

Secretary Randall: If the paving brick people will meet in Champaign, Mr. Purdy might favor them with a lecture.

Mr. Purdy: If they meet in San Francisco and pay my expenses I will meet with them. (Laughter.)

President Conway: We will push on to the next, a paper by Mr. E. L. Powers, on "Permanent Improvement of Public Highways."

Secretary Randall: Before taking up this next paper, I want to make a suggestion. Our time is limited, and I think it would be well in future discussions to limit each speaker to five minutes, and that no member be allowed to speak twice on one subject without the unanimous consent of the convention. If we will do this, we may be able to get through



E. L. Powers, New York City.

our work with this session. The next paper on the program is by Mr. E. L. Powers, the editor of the Good Roads Magazine. He had confidently expected to be here and deliver his paper in person, but when he found he was unable to come, he sent his paper, which I will read for him.

PERMANENT IMPROVEMENT OF PUBLIC HIGHWAYS.

BY E. L. POWERS.

Mr. President and Gentlemen of the Convention:

All who are assembled here are more or less familiar with the history of the development of the public highway. Roads are a growth from the primary paths made by men and animals. As civilization developed the paths were made wider and more permanent in order to accommodate increased traffic and facilitate the transportation of men and commodities. This question of primary transportation has always been one of the most important in connection with civilization, and today is more than ever one of the greatest questions of the hour.

The value of good roadways was recognized in European countries centuries ago, and as these countries boast an older civilization than ours, so do they boast of a larger mileage also of permanently improved highways than we have here in this country. Were the roads of this country to be taken as an index of our civilization—a standard sometimes used, I fear that the estimate made of us as a progressive nation would fall far below that which is due us in many other respects. Is it not, therefore, incumbent on us as a people to buckle on our armor and do more for the improvement of our highways?

It was little more than a century ago that the United States began the construction of a road which was to be a thousand miles

long. This road is now known as the "Old National Pike." After building a number of miles of it, however, the development of railroads began, and this, with other forces then at work, stopped the further permanent highway building so far as the national government was concerned. Highway improvement work which has since been done was for many years very much scattered, and it is only recently that the value of permanent highways has been appreciated. It was some twenty years ago that the organized forces back of the bicycle began a campaign for road improvement in this country. Through literature published at that time public interest was aroused in the subject and the work of improvement began. The movement has since made progress from year to year, the cause having for its champion the automobilist, the farmer and other road users. The question is now becoming better understood, and all classes interested are beginning to appreciate the value and economy of highway improvement. While twenty years ago few would have dared to advocate highway improvement in town or country, today thousands of advocates are at work in an effort to secure better transportation facilities. The co-operation and interest of the purchasers and of carriers, of merchants and of consumers, has been enlisted, so that better and more permanent streets and highways are being demanded. Road improvements laws have recently been enacted in several of the States, and during the present session of the legislatures new bills are being introduced, many of which will no doubt become laws.

The principle of State aid to the county and the township, in the permanent improvement of roadways, has now become well established. In no less than twenty-two States in the Union some form of State aid or co-operation has been adopted. Two or three States alone have appropriated millions of dollars, while in a half a dozen or more commonwealths hundreds of thousands of dollars have been set aside for this use. At least eight of the States have allotted tens of thousands of dollars for the purpose of looking into the question of roadmaking and maintenance, and are asking questions about the kinds of material, and their value in the actual work of highway construction. The United States government is also aiding in the work of giving expert advice, and building object-lesson roads under the supervision of the Office of Public Roads, established in the Agricultural Department. So far about \$23,500,000 has been voted by the twenty-two States mentioned to help improve their highways. Such appropriations may be accepted as evidence of the strength and extent of the influence working for this cause; but that we have hardly more than begun the work is shown by the fact that all these appropriations taken together equal but twenty-eight cents per capita of our population, or about three cents a week for each family in this country. These sums, of course, include nothing of the amount spent, or being spent, for the permanent improvement of the streets of municipalities. The outlay for paving and highway improvement in these municipalities has increased in far greater ratio to population than has that for country highways. A suggestion as to what this means may be found in the fact that the city of New York has 5,000,000 square yards of pavement, and relays about 1,500,000 square yards of this each year.

The movement for better highways must grow from this time on at an accelerating rate, because in those States which have undertaken to make roads better, only about 3 per cent. of the mileage has been improved and, as already stated, less than half of the States of the Union have begun helping to improve the highways under some plan of State aid. The movement is sure to grow because, while people have been so busy with the matter of production that they have had little time to give to details of cost and of the profits that improved transportation will bring, they are now beginning to scrutinize these things; are examining railway, steamship and other means of transportation, and are awakening to the fact that they have been, and are paying, a very high charge for the primary carriage of their products. They are beginning to see that to get along with poor roads is literally to throw money away.

Highway improvement must go on because people are beginning to understand that good highways will cost them nothing, that such thoroughfares in town or country will pay a liberal sinking fund to replace their cost, and will in addition bring a fair dividend; therefore, they are a profitable investment.

The plan of issuing bonds for road improvement in counties, cities and towns has been widely adopted, and this method of raising funds is growing in popular favor. Prudent people who have money to invest are good buyers of such bonds. In every case which has come under my observation where roadways have been improved, there has been a great increase in the value of abutting property.

The writer does not pose as an expert in the kind of materials to be used in street and highway improvement. These are engineering problems which require careful study and experiment, with due regard to local conditions. The material that is best adapted for one place may not be suited to another. The ideal roadway, we are told, is one that offers little resistance to traction, and at the same time presents a hard, dry surface at all seasons of the year. It is for you, gentlemen, to say what part your material will play in this great work of highway improvement.

We may congratulate ourselves on the fact that men of keen, alert minds are studying these problems of permanent highway improvement, eagerly determined to do their share of the work of meeting the demands of this great field, and to win their share of the compensation that must of necessity follow. The country can well afford to pay liberally, for all the cost will be returned many times over by the immense saving in time, in labor and in convenience; in meeting the demands for quick and easy transporta-

tion, good at all seasons of the year and for all kinds of traffic. (Applause.)

General Discussion.

Secretary Randall: The discussion of this subject was to have been led by Mr. H. S. Grimes, a well-known paving brick manufacturer, of Portsmouth, Ohio. Being unable to come, he has sent a paper on the subject, with a letter which I will read.

My Dear Mr. Randall:—

I fully expected up to this a. m. to be with you at the convention, and it is with much regret that I now inform you I will be unable to attend for two reasons: One is the anticipated death of a very warm friend, which is liable to occur any moment, with no possible chance of recovery, and the other is, my assistant in the office was called to Chicago yesterday on a very important business matter. This leaves me in such a shape that I made up my mind I would have to let the convention go this time. However, we will be represented at the convention by Mr. Carlyle and the two Mr. Peebles, of Portsmouth.

I am enclosing you the remarks that I may have made and that I may not have made. You can read the same, if you see fit, or give them to some other good looking man to read (as handsome as yourself, by the way.) Kindly give my regards to Mr. Ittner. I fell in love with Mr. Ittner over at Philadelphia. He is a man that goes ahead and does things, and those are the kind of men I like.

Again regretting my inability to be with you, and hoping the convention will be a great success (and there is no question but what it will be under your able management) I am,

Very truly your friend,

H. S. GRIMES.

Portsmouth, Ohio, Feb. 4, 1907.

I will ask Mr. Will Blair to read Mr. Grimes's paper, as my voice is a little husky this morning.

Mr. Blair then read the paper Mr. Grimes had prepared.

IMPROVEMENT OF PUBLIC HIGHWAYS.

BY H. S. GRIMES.

Mr. President and Gentlemen of the Convention:

A discussion on the question of permanent improvement of public highways should be one of general interest to this entire membership, especially those who are interested in the manufacturing of paving brick, but it should not confine itself to those by any means, as it is a subject that should interest every citizen who has the welfare of his country at heart.

There is no question that the improvement today of roads with vitrified brick has been paramount over all other material. This is being conceded more and more as time develops the excellent quality of the material mentioned and also as time demonstrates the inferior quality of almost every other material that is used, with the exception, perhaps, of granite block; and while granite block makes a good roadway for heavy traffic, it would not do under any circumstances for the ordinary business street, nor residence street. Therefore, it can not help but be conceded that for the general improvement of roadways vitrified paving block is the material now and will be the material in the future.

The organization of the National Paving Brick Association has brought about a wonderful improvement in the demand for street paving brick and has filled a long felt necessity that the paving brick manufacturers needed. While it is an offspring of this organization and in no way conflicts with it, but adds to its usefulness, it devotes its time and attention to the promotion of paving brick exclusively. Since its organization, two years ago, it has accomplished wonders through its efforts, but no more than the originators of the organization anticipated. I speak of this for the reason it only goes to show where concerted action is used things can be accomplished by organizations that individuals can not possibly accomplish.

The organization of the National Paving Brick Association has also eliminated a feeling that formerly existed among paving brick manufacturers that was a detriment to their business and through its united efforts has increased the demand for municipal paving and made vitrified paving brick the material to be used.

Referring back to the improvement of roadways with vitrified paving brick, it is only a question of time, in my opinion, when every other material, with the exception of granite and vitrified paving brick, will be eliminated, as each day demonstrates the fact that there is yet undiscovered a material that is equal to the above mentioned. No place can be shown where any other material used has been down for a longer period than six years without being renewed, but we can point with pride to several hundred cities where paving brick has been down all the way from five to twenty-one years without being renewed, and that which has been down for twenty-one years looks as if it was good for that many

more years, as I had the pleasure of seeing it just a short time ago.

When you consider that this material was manufactured when paving brick was something that was almost unheard of for street purposes, you can fully realize with the improved advantages that have taken place since that time it is almost perfect now, if not entirely so.

I predict within the next five years that the increased demand for vitrified paving brick will exceed very largely the supply, and for the permanent improvement of roadways it will take precedence over all other material.

I could cite you now to several inlets to different cities, called county roads, that are being improved by paving with vitrified block. In our immediate neighborhood we have a road paved with vitrified paving brick a distance of five miles, and it is one of the prettiest driveways that could be made. It leads from a small village into the city of Ironton and diverts the trade from another city direct to Ironton on account of the excellent condition of the roadway. Such situations will eventually exist all over the country, and before many years I would not be surprised to see large improvements in the way of paving county roads, especially those that connect small villages with larger cities where traffic is very heavy and the ordinary macadam road is unfit for use in bad weather.

The wonderful demand that has sprung up in the past two years for paving brick has put a new life into the business, and while as yet the demand does not exceed the supply, if the demand increases in the future as it has in the past it will require many more manufacturers in order to supply the demand.

Municipalities all over the United States are beginning to realize that improved roadways add to the sanitary condition of the different towns, reducing disease and lightening the burden of all who have occasion to use highways. In prosperous times improvements were imperative, in dull times cities improved largely in order to supply labor to the unemployed, and it is one among the



H. S. Grimes, Portsmouth, Ohio.

very few industries that is not affected by what we would term hard times. This may be a singular assertion, but nevertheless, if you will think a moment you will realize it is a fact. It becomes necessary for cities to employ their unemployed labor rather than put them on the poor fund list, and in doing so they usually look around for public improvements, and the first thing is the improvement of streets. That is why the improvement goes on, no matter whether times are good or times are hard, and we can all take a very optimistic view of the improvement of public roadways at any and all times, regardless of the financial condition of the country. (Applause.)

General Discussion.

President Conway: You have heard this interesting paper. Mr. Shattuck, the mayor of Brazil, Indiana, has been with us. He is a friend of brick roads, and if he is in the room we would be glad to hear from him. If he is not, we would like to hear from Mr. Fletcher, the city engineer of Brazil.

Mr. W. P. Blair: Mr. President, they may be within calling distance, and while we are waiting, I have a resolution I would like to offer. I want to offer it in connection with the paper just read. I have been investigating by making inquiries and various examinations into the statistics concerning improvement of highways in a great many states, and I find that while there are laws relating to the gathering of statistics, they are not strictly observed. The resolution reads as follows:

To Encourage Good Roads.

Whereas, The building and maintenance of good roads throughout the United States is of the utmost importance to every citizen; therefore, be it

Resolved, That it is the sense of the National Brick Manufacturers' Association, in convention assembled, that such work should be carried on under state supervision, and we earnestly petition the various state legislators to take such steps and enact such laws as will promote this work and result in the compiling of accurate data as to the cost of various kinds of roads and the maintenance of same.

Moved by Mr. Cook, and duly seconded, that the resolution be referred to the Committee on Resolutions.

President Conway: If no one else cares to speak on this question, we will pass on to the next, which I will ask Secretary Randall to announce.

Questions for General Discussion.

Secretary Randall: This brings us to the "Questions for General Discussion. The first, No. 8, reads:

"Are paving brick burned successfully in continuous kilns?"

Mr. Charles M. Crook, Youngstown, Ohio: The only criticism I have ever heard of our conventions is that the paving brick men monopolize the time. I am interested in paving brick and could talk on the subject for a week, but we are



W. S. Purington, Galesburg, Ill.

starting in on the same old subject this morning; would it not be well to omit the paving brick questions until some of the other questions have been discussed, because some of the others are of vital interest to the members who are not manufacturing paving brick.

Secretary Randall: The arrangement of the program is made with a view of giving every phase of the brick business attention. It happens that we are now on the paving brick section. The reason that paving brick have been given so much attention seemingly is that the paving brick is a more modern product than building brick, and so has been more in evidence.

If no one desires to answer this question, we will pass on to the next. I judge from what Mr. Hervey Haigh has said that paving brick have been burned successfully in continuous kilns. Those of you who make the trip to Alton tomorrow will see a paving brick plant where they are burning paving brick in a gas fired continuous kiln. The next question is question No. 9.

"What is the limit of size for a round down-draft kiln that will burn brick successfully? That is, height and width."

Mr. C. M. Crook: I would like to hear that question answered.

L. C. Moore, Memphis, Mo.: In regard to limit of width, I can not say, but I have paid attention to the height. I have some kilns set 32 high and some higher. The limit I have

reached is 42 high. That is, common building brick. I have considerable demand for salmon brick and can dispose of them readily. I think 42 is the limit for height, and 32 is a little lower than is necessary for common building brick.

Mr. Crook: What is the diameter?

Mr. Moore: Twenty-two feet, but I have never attempted to reach a limit.

Mr. P. A. Smith, New Brighton, Pa.: I happen to know of a down-draft kiln forty feet in diameter, burning paving brick. Some burned were successful and some were not, but they are using it for burning paving brick. It is forty feet, and the people who built it say they can burn it with the same amount of fuel as a thirty foot kiln.

President Conway: If no one else wants to speak on the subject, we will proceed with the next.

Secretary Randall: Question No. 10 reads:

"How shall we decide the best time to close a kiln of vitrified brick?"

Possibly Mr. Twells can answer the question for us.

Robert Twells, Walnut Hills, Ill.: Mr. President, that is a very difficult point, even with all the cones and the instruments that are in use, it is an extremely difficult point to know just the exact moment when it is best to close the kiln. That is why the question was asked. (Laughter.)

Secretary Randall: The next, question No. 11, is one for for fire brick people.

"How and to what extent is bauxite used in the manufacture of fire brick?"

I guess the St. Louis people are a little bit late coming in this morning. If there is no answer to that we will take up question No. 12.

"What is a fair requirement as to percentage of loss allowable in the Standard Rattler for street pavers? Is the Standard Rattler test being adopted generally for paving brick?"

President Conway: Mr. Purington, what can you tell us on this subject?

Mr. Purington: That question has been discussed and that same question asked, I think, at every convention, and it was also asked of the Committee on Standard Specification to put a limit on the percentage of loss that could be sustained, and they gave it up and I will do the same. The Standard test is being adopted nearly every place where tests are requested, the Standard or N. B. M. A. test is being used.

Mr. C. C. Barr, Streator, Ill.: There is one question along that line I would like to ask. We have gone to a great deal of trouble to get a standard rattler test. Now that test may be made in Maine and it may be made in California, but so far as I know the point has never been settled as to what is loss and what is not. In other words, if a brick breaks in two in the middle, do you think you should throw it out as loss, or in quarters, or in eighths? Or what point do you call it loss, and at what point is it not loss?

Henry Hasbrouck: I can say that that is a matter that I took up with Prof. Orton himself only a few months ago. He said it had never been his practice to throw out a brick because it broke in halves, or quarters, if it left any perceptible remnant he weighed it up, but he took that into consideration as to the quality of the brick. I am speaking now from what he said to me.

Mr. Barr: Are we to compare a test made in the State of Maine with one in California? We must know at what point or wherever the line comes, whether it is a quarter of a pound or an ounce or a half ounce, or where the line is to be drawn.

Mr. Hasbrouck: I tried to get Prof. Orton down to that point, but he only generalized and left me where I was before.

Mr. Barr: Unless that test can be drawn definitely, we cannot compare one test with another.

Mr. Purington: Mr. Christopher, of Chicago, probably tests more brick than any other man here. I would suggest that he give us his idea on this subject.

Mr. D. J. Christopher: I have no hesitancy in saying that there is a great deal of misunderstanding in regard to brick tests throughout the country, and I also wish to say that all the paving brick men have a happy faculty of presenting the very best brick tests that they can find, and they always fail to tell you the conditions under which these tests were made.

The brick men show me a sample test and say, "Mr. Christopher, that shows what our brick will do." It will certainly be a wonderful brick, but when I come to follow it up, I find the rattler was small, and the revolutions were slower and consequently we have a high test. Going back to the question as to what to allow the brick manufacturers when you come to the percentage of loss, I have always made it a rule that whatever pieces that remained in the tumbler barrel, I picked out and put on the scales if it was as big as a pea. Of course, you have in most every brick, that is, every brick that I have come in contact with, a brick that will occasionally break in two in the center. That is apt to happen with most everybody, but I do not believe that one test should be the testing standard. I usually make at least five tests for a report, and in that way I think I give fair treatment to the city and fair treatment to the paving brick men, or the men who furnish the brick. But I believe there should be some work toward getting down to some system which would be general throughout the country as to the condition of the rattler, the charge that goes into the rattler, the iron that you have in there, and indicating the speed, because there are a great many people who cut down their speed and size of the rattler and consequently they get a fine report.

E. R. Dick, Coffeyville, Kansas: I would like to ask why you should attempt to preserve these small pieces that, when knocked off, represent a rough street. Is it not a fact that the brick in the rattler are going to pieces? I have had a good many brick tested by Prof. Orton and Prof. Purdy in his investigations, and by the State University of Texas, Kansas and Nebraska, and the Washington University, and I dare say not one of these fellows will limit the loss of the largest chunk to be broken from a brick to be one pound. I see no reason why you should attempt to preserve these pieces that chip off. I do not understand it. If you attempt to take into consideration all the pieces that are broken off, then it seems to me there are no results obtained by the National Brick Manufacturers' Association tests. I am a firm believer in the testing of brick until they show a loss not to exceed one pound.

Mr. Christopher: I might answer the gentleman. I have never had in all the brick I have tested, pieces enough left in the rattler to fill one pocket of a coat. It has been my experience that the iron grinds these pieces into dust and that passes through. Once in a while, if there is a big piece, it certainly gets the worst of it, but very rarely I will have a half a brick, or a brick that will break in two.

W. S. Purington: I think any brick that would break up as suggested by the gentleman from Kansas, would lose so much that it would be thrown out on account of the loss. The greater number of pieces, the greater the amount of loss, and we decide that any number of pieces left in the rattler should go in with the charge that is weighed when the test is made.

President Conway: I think we had better pass on to the next regular number on the program.

Secretary Randall: The next number on the program is a paper by Mr. Wm. P. Alsip, on "Mechanical versus Hand Work on the Brickyard."

MECHANICAL VERSUS HAND WORK ON THE BRICKYARD.

BY W. H. ALSIP, Winnipeg, Manitoba.

Mr. President and Gentlemen of the Convention:

In the city of Pittsburg, sixty years ago, my father, then a boy, made brick by hand; the only mechanical appliances, if they may be so called, were a spade, wheelbarrow, table, bow and two two-brick molds. A brief description of a gang making hand-made brick with these mechanical helps may be of interest to some of our younger brothers who have installed an up-to-date plant equipped with all the latest appliances and have never known the hardships of a hand yard. The owner of a hand yard, after determining the amount of brick he wished to make, would start in the fall by weathering his clay. This process many of our manufacturers follow today. To weather the clay the bank was undermined and caved down, then cast over with a spade and left to freeze and thaw until spring. This reduces all the lumps and puts the clay in condition to be tempered with the least amount of labor, which was very necessary, as you will see later on.

In the spring the gang consisting of four men and a boy were hired by the month without board. The moulder received thirty-five dollars, the three men twenty-six dollars each and the boy fifteen dollars. This made a daily wage of four dollars and eighty-five cents per day for the gang.

Thirty-two hundred brick was a day's work for this gang, who took the clay from the weathered pile and made it into brick, which they stored in the shed built for that purpose. The clay was taken from the weathered pile with a spade and cast into a pile called the soak pile, where water was added and then it was left to soak over night.

Next morning the clay was slashed out or tempered with a spade until in proper shape for the moulder. It was then loaded on an old fashioned wheelbarrow, where the man carried most of the load by the aid of a strap over his shoulders, to the moulder's table located on the drying floor, where he would again, by the use of his spade, deposit the clay on the table which had been sanded to keep it from sticking.

The moulder with his hands cut a clod from the clay and, after giving it a roll on the table, drove it into the mould, which had been wetted and sanded and placed before him by the off-bearer. The surplus clay, called caps, was cut off the top of the mould with a bow and wire and the caps thrown back onto the table. The off-bearer took the mould and dumped the brick on the floor or ground, which had been leveled off to receive them. The bricks were next edged and backed and when dry enough were wheeled to the storage shed where they were kept until one hundred thousand or more were made. Then the making was stopped and the kiln filled and burned. This was hand-work brick making as my father knew it when a boy. On a hand yard today a striker will mould 8,000 brick in a day. His clay is ground by horse power, otherwise he has very little advantage over his father of sixty years ago.

Hand-work in the brick yard, like the stage coach, will soon be a thing of the past. It has filled its mission and, while some of the work in a modern yard is done by hand, the ratio is about the same as the amount of mechanical appliances was in the yard I have just described. Mechanical made ware, where the workmen have only to look after the machines through most of the stages



W. H. Alsip, Winnipeg, Man.

of its manufacture, is a blessing to mankind. Much of the drudgery of the hand yard is eliminated. The workman after his day's work, returns to his family with some spirit left in him, which makes life what it should be, well worth living.

The age when men object to machinery lessening the labor required to produce the necessities and luxuries, which even the man who labors expects and should enjoy, is passing away.

Today a man who discovers or invents anything which is a benefit to mankind, is looked upon as a public benefactor; our laws are framed and passed to encourage and protect him in his work. The result of this policy is that the clayworker of today has at his command machinery that relieves him of much of the heavy manual labor which was necessary in our fathers' time.

Looking back through the ages we see many of our great benefactors who, after years of toil and study, invented great labor-saving machines, which, when introduced, brought only persecution and condemnation.

Each year marks improvements in equipment, from the clay bank or mine to the delivered ware. With all this advance in improved machinery we still face the problem of how and where we can procure the labor necessary to produce the quality, quantity and kinds of goods required to keep up with the urgent demands that our country, in this era of prosperity, places upon us.

The manufacturer is looking to the machinery man and inventors for improved methods, which will enable him to produce not only more and better ware, but make it at less cost.

Many of the manufacturers have closed their books for the year of 1906 and find their profits much less than for 1905. They have analyzed their cost accounts and find that nearly everything that enters into the cost of the manufactured ware has advanced in price, while the sales price has remained about the same. The manager is convinced that he must do something to protect his profits and first turns to the most natural remedy, which is to raise the selling price. After careful investigation he decides that

this will not be wise, as structural steel, cast concrete, sand-lime and sand-cement brick are in the field and are ready to fill the place of clay brick if given the chance. The only other remedy is to produce the brick at a less cost. This is what every progressive brickmaker of today has been and is trying to do. He is looking for machinery that will make more and better brick at a less cost. He is installing the best machinery, adopting the latest methods and equipping his plant with the best his means will afford. (Applause.)

Mr. Alsip: In addition to what I have read, I desire to say that I started back in 1880 in Iowa making hand-made brick. I was only twenty-one years old, and I believe the price we got for the brick while I was working for my father was \$8.50 in the wall, under sharp competition. In 1882, by molding brick by hand, with the aid of one horse such as many of you have seen made, I built the opera house in Waukon and put the brick in the wall for \$6.75. The front of the building was pressed brick, the wage was \$1.25 for laborers and \$3.50 for bricklayers. We made 5,000 brick per day per molder, and made them much as they make them today, except that many of them are struck brick. If I had attempted to say what we make brick machinery for, or had gone into that at all, I would have been up against it, and they would tell me we have been robbing the public. We are getting \$10.00 a thousand for our brick. The Chicago people tell us



A. R. Harwood, San Antonio, Texas.

what it costs them to make brick. They seem to burn them with wind. I hear the St. Louis people say they are shipping them down here in competition for them. Be that as it may, I did not give the price of machine-made brick, because I believe every man here is making brick by machinery and knows what it costs. Gentlemen, I thank you. (Applause.)

General Discussion.

Mr. J. J. Amos, Humboldt, Kansas: What did it cost you to make your hand-made brick in 1880?

Mr. Alsip: I never got so far as to figure it out that way, but I made brick for two seasons and in two years I had \$120.00 to go north to Grand Forks. (Laughter.)

Mr. Blair: How much did you have when you started?

Mr. Alsip: I got married when I only had \$5.00 to pay the preacher? (Laughter.)

At this point President Conway called Vice-President Gregory to the chair.

Vice-President Gregory: If there is no further discussion on this paper, I will ask the Secretary to announce the next.

Secretary Randall: The next paper on the program is a paper by Mr. A. R. Harwood, of San Antonio, Texas, on "The Use of Heat from Cooling Kilns for Drying Brick."

THE USE OF HEAT FROM COOLING KILNS FOR DRYING BRICK.

BY A. R. HARWOOD, SAN ANTONIO, TEXAS.

Mr. President and Gentlemen of the Convention:

Your honorable secretary has requested me to read a paper on "The Use of Heat from Cooling Kilns for Drying Brick." I have received too many useful hints from this body to refuse to do all in my power to add to the general fund of information. We have been using the L. E. Rodgers system of utilizing the waste heat for drying our brick now for three years. I want to say here for the benefit of my fellow craftsmen that our experience with Mr. L. E. Rodgers has been very satisfactory indeed. He is attentive to what he undertakes, capable and reliable. I mention this, as there are a few men who prey upon the craft and who have just the reverse of the qualities possessed by Mr. Rodgers. I do not know how I could present this subject better than to give you the benefit of my experience. We burn a dry press brick in a common up draft permanent wall clamp with fire boxes on the outside. Our clay burns at about 2,000 degrees F. Also, we only have about 75 degrees to play on in the difference between a melt and a soft burn. Besides this we have a very tender clay, and before we installed the waste heat system of drying our brick we took from fifteen to eighteen days to dry them and we generally had from five to fifteen thousand cracked brick in a kiln of two hundred and seventy-five thousand. After installing the Rodgers system we dry them in fourteen or fifteen days and hardly ever have any cracked brick. We generally start with our blast from 110 to 120 degrees F., and gradually increase to 250. We run the fan for about seven days and then close it down and run slow fire in the furnaces for seven days. At the end of the first period of seven days the kiln we are drawing heat from is pretty well cooled down. With a clay that will stand fast drying the hot kiln will probably furnish sufficient heat to dry the kiln of green brick. I believe that drawing the heat from the hot kilns as we do in six or seven days improves the quality of the brick in that kiln. The only disadvantage in the use of the system that I know of is this, when we are burning a kiln of brick we find it more difficult to get the heat to the center of the kiln just over the tunnel we use in connection with this system. To overcome this difficulty we set the brick in the center of the kiln just over the tunnel a little more open than the rest of the kiln. We make our brick two and one-half inches thick and set them in the body of the kiln eight over three. In the center of the kiln over the tunnel we set them five over two. There is a saving on fuel and labor in watersmoking a kiln of about \$50.00 and about three days time in each burn. The greatest saving is in having no cracked brick. The temperature of the blast we get from a cooling off kiln is very steady and uniform. In this respect it is superior to anything we could get. We also have our plant equipped to draw the heat from the boiler smoke-stack. We get a temperature when we are using only one 80 horse boiler of 175 degrees. When we are using two boilers we get 250 degrees. This answers very well when we use wood or fuel under the boilers, but coal soots and chokes up the draft of the kiln and gives trouble. Any questions that any one would like to ask I will be glad to answer. (Applause.)

General Discussion.

Mr. Blair: What kind of coal do you use, Mr. Harwood?

Mr. Harwood: We use lignite, and make dry pressed brick of common clay. I used to burn with oil, but it is too high now.

Mr. Copeland: Do you use the heat from the stack in the boilers?

Mr. Harwood: We begin it with the heat from the cooling off kilns and complete it with wood, the last seven days.

Mr. Copeland: Mr. Chairman and gentlemen of the convention, this is a point I am very much interested in, as I have in the exhibition room a complete working set of drawings for what we consider an up-to-date brick plant. We expect to make both vitrified and paving brick and common brick. Our engineers have planned for us to take the waste heat from our boiler stack, where we use three boilers, 72x80 feet with 150 pounds pressure, which is double the capacity we will require to operate our engines, driving that heat from the stack with a 12-foot fan into a twelve-track tunnel dryer. We expect to get good results from this waste heat from our boiler stacks, and just here I would like to say I am hunting all the information it is possible to obtain along this line. I have seen it on several plants and same seems to work very nicely on common building brick and I see no reason why we should not on other brick. We have in our kilns another fan of the same size and description like the one in the boiler stack. We expect to take the waste heat from the cooling kilns to the next kiln for water smoking, taking it up over and around into the kiln with a 10x14 duct in the bag wall. Our kilns are down-draft oblong kilns. I understand there have been some experiments made along this line, and in some instances results have not been what was expected.

In most cases, it was because there was not sufficient area in the flues to carry this waste heat. I have a complete set of drawings in the exhibition room, and I have had quite a number of interesting criticisms passed on these drawings from some of the most competent men who always attend these conventions, and as I always get something from these conventions, I am still looking for criticisms and I would like to have any one here give me his opinion.

L. C. Moore: In regard to this paper, it is quite interesting. I think I would have given up if I had had such difficulties as that. You fellows who have shale that you can dry in ten to twenty hours have no idea what some of us have to contend with in drying our clays. I know many sections of the country where the shale or clay is covered 150 feet deep with a common dirt, and then there are limestones in it that have to be ground very fine. In making stiff mud brick they have to be wrapped up to dry them without checking and it is very difficult then. (Laughter.) Here is the point I want to make. I am using a steam dryer with rather indifferent success. That is, I am getting good results, but it is costing me too much. I have put in fifteen years learning how to make a good brick and I have succeeded pretty well, but I do not know whether I can succeed in learning how to make a cheap one in the next fifteen years or not. I will tell you the experience of a neighbor of mine. He has a model plant—a shale plant. It is the prettiest plant I know of in northern Missouri or southern Iowa. I will not tell you which state it is in. He is making brick perfectly, drying with waste heat in ten to twenty-four hours. A neighbor of his concluded the brickmaker was making too much money. He lived in a town twenty-five miles distant, and he got envious of him, and thought he would like to have some of that money. He went down and studied that man's plant, and drew his plans exactly like his, built his dryers and everything exactly in accordance with that plant, but he did not pay attention to the clay bank. Today the owner of the original plant is running along making plenty of money, and the sheriff is running the other man's plant. It shows how much and how little confidence can be placed on my telling you how I solved my problems. As suggestions they are good and are all right, but be careful how you attempt to duplicate my plant, or any other plant in your own plant. This question of waste heat dryers. I was afraid from the experience of this neighbor of mine that I could not adapt the waste heat dryer to my clay, so I put in a steam dryer, but I do not like it. It is costing me too much money. Something ought to be done to cheapen the product. Perhaps I will solve the problem of a cheaper product, but so far every effort I have made to cheapen the cost of my product has lessened the quality of the product. Waste heat dryers will do for some clays I know, but in other cases it has proven a failure.

Mr. W. P. Blair: We have all got to keep in mind this one thing, that we are benefitted by suggestions here, but along with the suggestions we get here, we have got to bring the conditions we have at home, or we have got to take the suggestions and apply them to the conditions we have at home. I know there is too much of this sort of thing all over the country, just as Mr. Moore has said. I can give him an example that is even worse. He says the sheriff is now running the one plant that was built after the model of another that was in successful operation. I happen to know that within two or three hundred miles of this city there was a very successful plant started that has been in operation for twelve or fifteen years, and that plant has not failed to give a dividend each year of not less than \$20,000 and sometimes \$40,000, with a capital invested of a little over \$150,000. In the spirit that comes to all of us when we see a good thing, and want a part of it ourselves, a gentleman who had watched the plant got a party of gentlemen together and they decided they would start a plant on the other side of town, and they built a fine plant, as elegant as any one would wish for; they spent about \$100,000, and it was operated about two years and then it went into the hands of the sheriff, and it got so bad on his hands that he could not run it, and nobody would have it.

Vice-President Gregory: If you will permit the chair—this reminds me of a story Capt. Crafts used to tell us, about

a man, a preacher, who while sick, ate a lot of cabbage and got well. A neighbor, a cobbler, took sick; he thought he would imitate the other man and eat cabbage. He did so and it killed him. And so, Captain Crafts was wont to say, "Boiled cabbage will cure a preacher and kill a cobbler." So it is in the brick business, one man succeeds where another man fails. The secretary will kindly announce the next number on the program.

Secretary Randall: The next numbers on the program, Nos. 15 and 16, the illustrated lectures by Prof. White and Prof. Orton, we had at our evening session Wednesday. If Prof. Orton is present and desires to make a report for the Committee on Technical Investigation, or desires to make any suggestions in regard to the work of the committee, we would like to hear from him. In his absence, we will take up the next paper, "Burning Brick with Producer Gas," by C. A. Guignard, of Columbia, S. C.

BURNING BUILDING BRICK IN CONTINUOUS KILNS WITH PRODUCER GAS.

BY C. G. GUIGNARD, COLUMBIA, S. C.

Mr. President, and Gentlemen of the Convention:

The subjects, "The Value of Producer Gas to the Brick Industry," and "Producer Gas as a Solution of the Brick Maker's Fuel Problem," were thoroughly presented and discussed at the convention in Philadelphia last year.

To those who are interested in this most important of subjects to the brick manufacturer at this time, and who did not have the



P. L. Youngren, Milwaukee, Wis.

privilege of attending that interesting gathering, or who have not read the proceedings, I would suggest that they refer to the records and see if they cannot find some instructive matter there.

Following those interesting papers of last year's meeting, our Secretary has asked me to give a short paper at this meeting on "Burning Building Brick in Continuous Kilns with Producer Gas," as gathered from my own experience as one of the pioneers in this country in this method of firing continuous kilns.

What I shall have to say will be purely from a practical point of view, or relating my own experience. In the first place, I am not competent to treat this subject from a scientific point of view, and in the second place, the subjects have already been so treated before this convention in papers above referred to.

The fuel bill is a serious problem with every brick maker unless he is so fortunate as to own his own coal mine or his own gas well. Like most all the members of this Association, I am not one of those fortunate ones.

We make common building brick, and ours is a red burning clay requiring above the average temperature for proper burning. This is evidenced by comparison with numbers of sample brick, of red burning clay, from various places, including Massachusetts, Canada and Utah, burned in our kilns. In almost every case when our brick, surrounding the samples, were just sufficiently burned, the samples were very much over-burned, and in some instances melted away.

Being far away from the coal fields and facing a continuously growing scarcity of wood in our country, we were forced to cast about for a cheaper method of burning than with the old style up-draft kilns with fire-box on outside, which we were using exclusively up to about four years ago.

Naturally we turned to the continuous kiln for relief, for all of us know that the continuous kiln is primarily a fuel saver.

But then there was that common complaint of fire-marked

brick from continuous kilns fired in the old way of putting the coal directly on and over the brick. This objection put this type of kiln out of the question for burning brick for *our market*.

The use of producer gas in the continuous kiln with the hope of overcoming this difficulty appealed to us, so we decided to make the venture, though this method was then only in its experimental stage.

We arranged with Mr. P. L. Youngren, of Milwaukee, who had conducted experiments along this line, to build a twelve compartment continuous kiln of his design for using producer gas for firing. In this kiln there are six compartments, adjacent to and connected with each other on either side, and a cross flue connecting the two compartments at either end, thus making the whole continuous. The stack flue is located centrally between the two sides, each compartment a duplicate of each other one, is about 16x30x12 feet, with flash walls along one side. The kiln is of down draft type and was constructed with an individual gas producer for each compartment. Each producer is started up as the heat in the kiln advances sufficiently into the relative compartments, and closed down after that compartment has been sufficiently burned and the next one well under way. The daily capacity of this kiln is thirty to forty thousand brick. This kiln has been in use for over four years; fires have not been out in that time, and has given excellent results. In it, practically all brick are burned hard and uniformly. The construction of the flues is such that the gas and air are thoroughly mixed as the air passes from one compartment to the next. With proper handling and care, every single brick can be burned hard and perfectly. There is no difficulty in getting any desired heat, and the fire is under perfect control all of the time.

The operation of this kiln, our first experience of the kind, was so satisfactory that we decided, a year after we had put it into service, to build another.

This second kiln is also of the Youngren design, but on essen-



A. R. Root, Philadelphia, Pa.

Who Has Never Missed an N. B. M. A. Convention.

tially different lines from the first one, being a tunnel kiln, subdivided into twenty sections. The two tunnels of ten sections each, parallel with each other, and connected by cross flues at either end are 20 feet wide and 11 feet high, with the stack flue located between them. Also in this space between the two tunnels is located the central main gas flue leading the entire length of the kiln, approximately 200 feet, from a single gas producer located at one end. It was on this point of a single producer for the whole kiln that it was considered quite a prodigious venture, but we believed that it would work, and were bold enough to embark. The results have proved very gratifying.

The gas from this central flue is delivered to any kiln-section as the fire advances, through portable sheet-iron laterals. The special system of setting the brick, introduced in this kiln causes a thorough mixing of the gas and air at the points where gas is admitted, as well as forces the heat currents to travel in an upward and downward course through the ware from the point where the kiln is open to the open stack-damper.

In this kiln, as in the other, the heat is under perfect control, and almost any temperature may be attained. Brick are burnt practically all hard and perfect. The daily capacity of this kiln exceeds forty thousand brick, though this is all we have been able to get into it.

As to the practicability, advantages, and general economy of this method of burning brick, we can heartily recommend it. The superior quality of product, saving from waste through breakage, over-burn or under-burn in kilns, saving in fuel, saving in labor, saving in fire risks, all we think make it attractive.

In either of our kilns we burn brick with approximately 300 pounds of coal per thousand, which we think is not very bad, though this could be somewhat reduced by installing an improved producer.

The cost of labor for burning at our plant has been very much reduced through the use of these kilns. We keep one man on each

kiln all of the time and with ordinary supervision these two men keep the two kilns going, turning out seventy to eighty thousand brick daily, and these men have an easy job.

The kiln with single gas producer is a little more economical in fuel, and the fact that coal for this kiln has to be delivered all at one place and not having to start and close down fires is certainly an advantage. Also the wear and tear on a continuously fired producer is much less than on several that are frequently heated up and cooled down. We expect in the near future to equip our chamber kiln with a single producer.

Should we build another kiln for burning building brick or for face brick, it would be a continuous kiln, producer gas fired, with one central producer for the entire kiln. (Applause).

General Discussion.

Vice-President Gregory: The paper is now open for discussion, gentlemen.

Mr. Wm. Hammerschmidt, Lombard, Ill.: What kind of coal do you use?

Mr. Guignard: Run of mine coal.

Mr. William Moore Angas, Jacksonville, Fla.: You have two types of kilns; which do you find the most satisfactory?

Mr. Guignard: The tunnel kiln is cheaper, but we get rather better results in the department kiln.

Mr. William Moore Angas: I was at Mr. Guignard's plant, and must say the kiln is a success and the burns are uniform and good. I was only there for an hour or so, so I only got a passing view, as it were, of it. One thing that struck me was that I never saw them putting coal in the producer. I said: "Where is your man to do the firing?" He said: "He comes around at each hour and puts in three buckets of coal, amounting to a barrel full." They were turning out 40,000 brick a day, and the brick were well burned and uniform.

A. J. Wellington, Boston, Mass.: What is the difference in the cost per thousand, between the brick burned with coal and the brick burned with producer gas?

Mr. Guignard: We burn in up draft kiln, with the fire box on the outside, the Morrison or Wingard kiln, and burn with wood. We burn from five-eighths to three-fourths of a cord of wood. The gas is cheaper, as it takes 300 pounds of coal to the thousand. So you can figure it out for yourself.

Mr. Conway: Could one burn successfully with producer gas in a common open top kiln?

Mr. Guignard: I could not say: My experience has been altogether with continuous kilns.

Mr. Wellington: I was trying to get at the cost in dollars and cents.

Mr. Guignard: That depends on local conditions. Our coal costs us \$3.50 per ton and our wood \$2.25 per cord.

Mr. H. C. Kleymeyer, Evansville, Ind.: What is the difference in cost for repairs?

Mr. Guignard: I have not spent a dollar for repairs, except in the producer. Once in six months we renew the brick at the bottom. I have been operating one kiln four years last December, and the other two years last July.

Mr. E. L. Cook: Have you any opinion as to the practicability of conveying the gas 400 or 500 feet and utilizing the one producer for burning separate kilns?

Mr. Guignard: Our producer is within ten feet of our kiln at one end, while the other end of the kiln is 200 feet from the producer. We do not have any trouble in burning the end farther from the producer, though this main gas flue between the two chambers has to get warm, and it clogs up occasionally. It is provided with openings, and we blow it out.

Mr. Wellington: Do you ever burn them out?

Mr. Guignard: Sometimes. We usually let them burn out over Sunday.

Mr. L. C. Moore: The gentleman presents such an attractive proposition that I would like to know if producer gas can be used with down draft kilns. Is there anyone who does anything with producer gas with the down draft kiln?

Mr. Copeland: I think Mr. Purlington can tell us something about that.

Mr. W. S. Purlington: A year ago I invited you all to visit our gas producer and see it working. The only gentleman who was there and saw it was Mr. Barr. We arranged with the Morgan Construction Company to build a gas producer ten feet in diameter at the end of a square or rectangular kiln ninety feet in length. We thought we had just what we wanted, but when we wanted additional heat for settling pur-

poses we found we did not have heat enough, and we burned one-half of the kiln with gas, and the other half with coal, and we finally completed one-half of the kiln with gas, but it was too expensive. The producer gas people were not satisfied, and thought it was the coal, and asked us to make another test, and we burned one-half of the kiln, burning it with gas, and we had almost identically the same result with it. I hardly think it pays to burn brick with producer gas with that system and having to carry the gas such a distance from the producer. We had trouble with tar gathering in the flues. We had to burn them out every morning, and we never could have accomplished that but for the fact that we had a compressor that we turned into the flues and in that way burned out the tar. We had the greatest trouble getting the clinkers broken in the producer. There was no way to get them out until they passed through the bottom of the producer. The Construction Company sent a representative out; in fact, they had a representative there during all the time the kilns were burning, and they practically gave it up themselves, although they wanted to make further tests with coal from Pittsburg. We told them we were perfectly willing to do that if they would stand the expense. They let the matter stand about six months, when they sent a man to tear out the producer and ship it somewhere else. The Illinois coal is so full of clinkers that it is almost impossible to use it, and we have had all we want to do with producer gas until someone demonstrates its success.

Secretary Randall: Mr. Eb Rodgers, the manager of the plant at Alton, which you will visit tomorrow, can probably give some information on this subject.

Mr. Eb Rodgers, Alton, Ill.: Mr. President and Gentlemen of the Convention—We have been working with the railroad company for two days trying to make arrangements to have them stop one of their regular trains at our plant. I have not been able as yet to get a definite answer, but I feel sure we will make such an arrangement. The train leaves the station at 7:30, arriving at our plant at 8:35. There will be another train south bound at 11:33, putting you back here at 12:33. We will be pleased to have as many of you make the trip as possible.

Burning Brick with Producer Gas.

Along the lines that Mr. Purington spoke, I would like to say something about the difference of burning with producer gas in the individual type of kiln and the continuous kiln. It is an entirely difference proposition. In the individual type of kiln you have to gasify the same amount of coal that you would use in your furnace, and the producer men only claim to gasify ten to fifteen tons in every twenty-four hours, in one producer, and when you crowd your producer above that point it decreases in efficiency very rapidly. That is the reason Mr. Purington had so much trouble with clinkers. They were trying to force too much gas out of the producers, and did not have producers enough. In the continuous kiln, the air you are using for combustion is taken from a chamber or kiln that is already heated to within 300 degrees of the temperature desired. The air supplied for combustion in Mr. Purington's kilns was of the temperature of the outside air, about 60 degrees, and had to be raised from 60 to 2100 degrees. We have to supply in the continuous kiln enough gas to raise the heat from 1,800 to 2,100 degrees. The continuous kiln is the ideal condition for the use of producer gas, even more so than in the iron and glass industries, because they have to have their regenerators, and they take their waste heat in more or less out of the way directions to utilize it, and I was surprised that the Morgan Construction Company, who are probably as far advanced in the gas producer business as any one in this country, should attempt to do at Mr. Purington's what they were attempting to do, though they claimed in the first place that they would require the same amount of fuel to burn his brick, the only saving they expected to make being the centralizing of the coal business and having it all handled in one place. They did not take into consideration the amount of coal they would have to gasify. In burning paving brick we use just double the quantity of coal that Mr. Guignard is using for burning building brick. We have doubled our gas producer room.

We tried to use one gas producer of the type he has, but we had any amount of trouble. In fact, there is a vast difference between the burning of paving brick and building brick. It is the stage between building brick hardness and paving brick hardness that we desired to reach that caused the most trouble. You could get along up to the building brick hardness, and not have any trouble, but when you have to hold your fires back to develop your pavers there is where you get into trouble. I think there is no question but that paving brick can be burned successfully in a properly constructed continuous kiln. We had more success with builders, although we have worked almost continuously for the past two years on pavers.

We have made changes in our kiln, and have a few more we are going to make next month, when I think we will have a very satisfactory kiln. Although in building another kiln, I think we will be able to design one with a great many improvements over the one we have now. I believe that is about all I can tell you.

Mr. E. L. Cook: What trouble have you with your present kiln?

Mr. Rodgers: We have trouble in getting sufficient draft. In the burning of paving brick you have to extend your fires through so many chambers, that is it almost impossible to get a stack to furnish sufficient draft. We are using a fan in connection with the stack. We are going to take down the whole kiln with a fan. The best draft we could get with



Eb Rodgers, Alton, Ill.

the stack and put in a larger fan and run the whole kiln with a fan. The best draft we could get with the stack, according to our experience in that line, is about 7-10 of an inch water pressure. We have a stack 135 feet high, and you take that 7-10 of an inch and go back to your burning chambers, there will be a very small pressure, and a little back of that it dwindles down to nothing, and the pressure is entirely overcome. It will require, as nearly as we can figure it, about 2 inches of draft at the source of the draft, and this will give you about 5-10 of an inch in your fire. Of course, this is an enormous draft for clay work, but we find the more draft we can get, the faster we can go, the better the results. We had trouble, for some unaccountable reason, with the failure of the draft. We would see that the kiln was doing nicely, and then, in a couple of hours, we would take out a sample and find it swelled and stuck. There was no apparent reason for it. We have a recording draft gauge and we found the draft would be all right for a long time, and within two hours' time it would almost fail entirely. We have not been able to discover the cause of it, but we know it fails, because the instrument tells us so, and then we adjust the dampers until we get the draft back. But in an hour and a half or two hours of poor draft you will ruin the brick. I am at a loss to know what causes this sudden failure of draft. A gentleman was talking yesterday of cutting eye teeth, and I thought at the time we have gone way ahead of him in this

continuous kiln business. We have been cutting eye teeth continuously for two years, and we still have a few coming. We have had all the troubles, cracked brick, and swelled brick, and every imaginable kind of brick, and we consulted experts and chemists as to what might be the cause of these troubles and they assigned various causes and reasons, but we find that most all of the troubles disappear when the draft is right. I believe that in the individual type of kiln, or any type of kiln, that nine-tenths of your troubles are due to insufficient draft, or insufficient control of your draft. Very few people have any idea of what draft they have to have. They do not know anything about it. They open dampers here and there without knowing much about what effect they are going to produce. The only safe way is to have a draft gauge. The draft gauge which we have we paid some \$60 or \$70 for. It has saved us many times that amount, as we are able to tell at all times just what draft we are carrying.

Mr. Ira C. Jones, Minneapolis, Minn.: What temperature do you have to reach to vitrify your brick?

Mr. Rodgers: 1125 to 1150 Centigrade.

Mr. P. A. Smith, New Brighton, Pa.: Have you made any calculations of the practical cost of producing the increased draft?

Mr. Rodgers: We have a 50-horsepower motor direct connected to a fan, but on account of the fan running continuously the power is greatly in excess of that needed, which is, on an average, of 25 to 40 horsepower.



C. C. Marshall, Catskill, N. Y.

Mr. L. C. Moore: Do you propose to do away with the stack entirely?

Mr. Rodgers: Yes, sir.

Mr. William Moore Angas: I have cut some eye teeth on the continuous kiln problem, and I have kept track of what it cost me to run the fan, and it cost me \$3,000 a year.

Mr. Rodgers: In order to maintain this enormous draft in stack we are turning into our main draft flue gas at a temperature of 900 degrees. By the use of the fan we carry that gas on through to other chambers; that temperature will be absorbed and the temperature of the gas going through the fan will be about 200 degrees. The difference between 200 and 900 will make good on the power required to run the fan, and more, too, I believe. (Applause.)

President Conway: If there are more questions to be asked, we can ask them when we get out to Mr. Rodgers' plant tomorrow. I have forgotten to say that I have appointed the following Committee on Resolutions:

Joseph D. Cite, Fishkill-on-Hudson, N. Y.

H. Rawson, Des Moines, Iowa.

J. M. Harry, Dallas, Texas.

William Moore Angas, Jacksonville, Fla.

R. D. Lindsay, Denver, Colo.

E. R. Dick, Coffeyville, Kans.

J. P. Fulcher, Nashville, Tenn.

Secretary Randall: Mr. Talbot, the chairman of the Com-

mittee on Entertainment, wishes me to announce that in the trip to the brick yards this afternoon you will probably see a continuous kiln firing refractory materials with producer gas at the Christy Fire Brick Company's plant. The next on the program is a paper by Mr. Caleb C. Marshall, on "Mixing Coal in Clay in the Manufacture of Brick." Mr. Marshall is not here, but he has sent his paper.

MIXING COAL WITH THE CLAY IN THE MANUFACTURE OF BRICK—ITS ADVANTAGES AND DISADVANTAGES.

BY CALEB C. MARSHALL, CATSKILL, N. Y.

Mr. President and Gentlemen of the Convention:

The superiority of brick over all other building materials is something that has not to be established in this, the twentieth century, although we are called upon sometimes to emphasize it. Brick has been from time immemorial king of them all.

The readers of THE CLAY-WORKER have been entertained within the year past by that interesting peep into the future, "In Perpetuum Hominum Memoriam." We remember the great national monument, so grand in its magnitude and so wonderful in its daring, constructed of brick and other products of the clay industries. And yet that which comes to us as prophetic is at once historic when we read of those ancient people seeking to put themselves beyond the reach of the wrath of Him who is the creator of all such as work in clay, meeting in what I shall call the first brick manufacturers' convention to propose the building of that great tower of Babel in words like these: "Come, let us make brick and burn them hard and let us build a tower that shall reach up to heaven."

Now, if they had undertaken to build with any other material than brick, they would have soon run up against the limitations of their material; but as the limitations of brick that are burned hard can only be found in the infinite, a confusion of tongues became necessary to queer the project.

In this day, if any one wants to get to heaven he will not find the making of bricks conducive to that condition of life that leadeth upward. But we are coming back, thanks to the nineteenth and twentieth century clay journals, and that which is spoken in one tongue is heard in another, and that which is written can be known and understood by all. Our trouble today is confusion of ideas; different standards of excellence, both in method and product.

Now, as to the advantages and disadvantages of mixing coal in the brick: It is safe to say that some advantage must accrue to the manufacturer who uses this method. One advantage of this method is economy of space in burning, owing to the fact that brick can be set to a greater height for successful burning than they could without the coal contained in the bricks. Of course, this is assuming that the same kiln method of burning is used, namely, the up-draft system. This might be a distinct advantage on a yard that is cramped for kiln room.

Another advantage is economy in fuel. As the coal is contained in the brick, the bricks must retain or get the benefit of most of its energy; and as this coal that is mixed in the brick is nothing but screenings and costs but little, it is like getting something for nothing, and at the same time it reduces materially the amount of coal necessary to be applied to the furnaces.

But still it does not show altogether on the credit side of the ledger, as the losses from this method are not of an unappreciable quantity. Without doubt the danger to swell when treated too rapidly at an important period in burning is greatly accelerated by the presence of coal in the brick. And yet if treated too slowly, there is salmon brick as a result, owing to the fact that the coal in the brick has burned and gotten away before the proper co-operation that was relied upon between the coal in the brick and the heat generated in the kiln fires could be brought about, and as the energy of the one without the other is not counted sufficient to burn the brick, under such a system it seems that burning becomes a subject of instinct or sixth sense.

But the most serious objection to my mind is the fact that with the exception of a few localities there is a bias against such a product because of its porosity. In fact, when broken, some of them appear to be an infringement on the Gilson patents. That this extreme porosity must materially weaken the brick may be evidenced by the number of brick broken in handling or by testing with brick made without the coal mixed with the clay in manufacture. When a brick will absorb approximately fifty per cent. of its bulk and about thirty per cent. of its weight, there must be lacking a good deal of that which gives backbone to the brick, namely, clay from which good brick, like good brickmakers, must be made.

Moreover, just as the paving brick man and the firebrick man, year after year, finds that he must work to higher standards, so the building brick man, when the buyer, whether he be architect or contractor, ceases to choose a brick for its madstone qualities, will find that it is not quite sufficient to put out a brick that is good enough for the job, but it must be as good as the other fellow's.

As a craftsman, I always liked to see a good brick demanded and never liked the place or the man for whom anything was good enough. A few years ago, the writer had an experience with a manufacturer who did not know that his market had changed. The trouble seemed to be in the burning, and I was called in as the doctor. After attaining to what I knew to be the best results from the burning and things were not yet satisfactory by any means, I said, "Now, Mr. Manager, isn't this as good as you ever had?"

"Yes." "Isn't it a little better?" "Yes." "Now do you know what is the matter?" "No." "Well, your customers have been learning something and you have not; you have an educated market. Anything used to go, but now you must meet the other fellow with the best. We must go back and commence at the beginning and we will come out all right."

Well, here's hoping for a good demand for the best of bricks in the largest quantities with a share for every member of the N. B. M. A. (Applause).

Secretary Randall: We have nothing before us now but miscellaneous business, for the next paper on the program has failed to materialize. Mr. Butterworth, who was to have given us a paper on "Hydraulic Stripping of Clay," advises me that he is unable to be present. The next is the first question for general discussion, No. 20:

"What is the best means of increasing the number of journeyman bricklayers?"

Mr. Anthony Ittner: I have a resolution which will answer that question. The resolution was not prepared for the purpose of answering that question, but I think it will answer it completely. If it is the pleasure of the convention to adopt this resolution I would be pleased to have it acted upon now. I will give the resolution to the Secretary to be read, and after it is read I want to speak perhaps two or three minutes on the subject.

Secretary Randall then read the following resolution:

RESOLUTION URGING THE ESTABLISHMENT AND MAINTENANCE OF TRADE SCHOOLS FOR AMERICAN BOYS.

WHEREAS, the opportunities of the youth of America to acquire skilled trades has of recent years become so limited that the trades are now acute sufferers for want of men able to do the work; and

WHEREAS, entrance into skilled trades is so carefully guarded and limited, and in some trades absolutely barred by the regulations of organized labor, even to the extent that a father is powerless to teach his own son the trade in which he himself is engaged; and

WHEREAS, the field of higher education is receiving most munificent endowments from private generosity and public taxation, and the high schools, the colleges and universities are flourishing and developing on a scale never before dreamed of in this or any other land; and

WHEREAS, the opportunity for self development in the higher and professional callings is most excellent, if indeed not wholly ample, so much so that the ambition to secure an education is easily gratified by the children of the well-to-do, while on the other hand the vastly greater number of our young men, the children of the poor, or those in moderate circumstances, who, because of their environment, should have the greatest consideration, are really handicapped in the struggle for a livelihood, having no facilities or opportunity for learning a trade; thus, those who need and deserve help the most are, under our present system, most neglected and the least considered; and therefore, be it

Resolved, by the National Brick Manufacturers' Association of America, in convention assembled:

First: That we deplore the existing conditions which seem to threaten the very foundation of industrial growth and manly self-development among our people.

Second: That we believe that no more important issue is now to be faced by the statesmen and people of this republic, and that no field now lies open to the purse of the philanthropist which can at all compare with this field in its effect on the character of the people and the industrial development of our country.

Mr. Ittner: The President has stated that the Committee on Resolutions is out now and they will bring their report in now in a short time, and it would be inexpedient if we desire to take action on this resolution at this session to refer this matter to the Committee on Resolutions. I think you will all bear with me that they are so plain and straightforward, and only have reference to one subject, that it will be no discourtesy to the Resolutions Committee to have this preamble and resolution acted upon at this time. Specially do I desire to mention that by the morning papers I notice that John D. Rockefeller has made a magnificent appropriation or gift to the National Educational Association of \$32,000,000 for educational purposes. One-third of that money is to go to the endowment fund, and the other two-thirds to be expended at the direction and request of Mr. Rockefeller and his son. The purpose I have in asking the adoption of this resolution at this time is that we will be the first association and pave the way. I had almost forgotten to say that these resolutions were prepared yesterday by Prof. Orton and myself, and we had no knowledge whatever of this action taken by Mr. Rockefeller, but the whole thing just works out as though it was ordained and dovetails in completely with the purpose of my

remarks, and my motion for the adoption of this preamble and the resolutions is this: that the officers of this National Brick Manufacturers' Association be authorized to embody these resolutions in a communication to be sent to Mr. Rockefeller, to impress upon him the great importance of having a part of this vast sum of money devoted to industrial education in this country, in the way of establishing trade schools, so that you will get not only bricklayers, but that you will get all other classes of skilled labor, that we now need in our industries in this country, for the industrial advancement and progress of the country. I move the adoption of this preamble and resolution, Mr. President, and that the officers of the Association be authorized at the earliest possible date to lay this matter before Mr. Rockefeller.

Secretary Randall: I second the motion. Mr. Ittner's remarks bring to our attention one of the most important matters. It seems to me that Mr. Rockefeller, Mr. Carnegie and other men who have made their immense fortunes from industrial investments should not lose sight of the need for such trade schools. Surely these men who have given millions upon millions for charitable purposes will recognize the importance of such a movement as this. I trust this resolution will be adopted unanimously.

Motion carried unanimously.

Questions for General Discussion.....	319

President Conway: We will now proceed with the program. The Secretary will please read the next.



Alfred Yates, Shawmut, Pa.

Secretary Randall: The next is question No. 21:

"How can we as an organization prevent concrete construction supplanting brick?"

Mr. Crook: I think when you have successfully answered question No. 20 you will also have answered this one.

Secretary Randall: From the observation I have made the past year, brick manufacturers have little or nothing to fear from concrete when honestly and legitimately used. It is not the cheap construction that has been heralded. There is being erected in our city a large commercial structure of reinforced concrete, in which there is more burned clay than there is in any modern building of the same size in the State. All the principal piers and columns are backed up with vitrified brick. The only place where concrete comes in is in the alleged cheapness of the construction, and that means shoddy construction; and this cheap concrete has killed hundreds of people within the last year or two. We as a people are careless. Germany doesn't allow cheap construction in her cities and towns as we do. They have building requirements, and they have officers and inspectors who see to it that the legal requirements are lived up to. With us it is different; any man can be a builder and put up any kind of an old building. When we as a nation wake up to the fact that we need restrictions and supervision in these things, we will do away with this cheap concrete construction, and then it will not be

"one, two, three," compared with other reliable materials. When good concrete buildings are erected they are not cheap. (Applause.)

President Conway: A great many of you visited Atlantic City last year and were interested in a prominent hotel being erected entirely out of concrete. It was a pretty thing to look at, but it has not proved entirely satisfactory because it is damp. They are now erecting another hotel there, but they are covering the entire outside with terra cotta, trying to overcome that.

Mr. Cook: Is it not possible for our Association to have a committee appointed to give us statistics unfavorable to concrete, get a list of the failures of concrete construction, etc., for distribution to our members, and have the cost borne by the Association, even if a greater cost for membership is necessary. I think it would be worth investigating.

Mr. C. G. Guignard: I am a brick manufacturer, but I have a concrete block machine. There were people in my section who wanted concrete and I thought I would supply them. A party came to my place some eighteen months ago and said he wanted some blocks to build a building. I quoted him a price, and he said it was too much. I said, "That is about as little as I can make them for and make any money on it." He said, "How much cement are you putting in." I told him, and he said, "You are putting in too much cement. You might as well make it five parts sand and one cement." I told him, "No," that if I sent out any blocks they would



George O. Berry, Columbus, Ohio.

be first class. There are so many concrete machinery men selling machines and persuading the people that they can make a cheap product. There was a concrete machinery man in our town, where we hold our State fair, and where a good many thousand people gather. This man wanted to build a building or a house of concrete blocks and demonstrate that it was fireproof. I had something to do with the management of the grounds, and we granted him space. Thursday was the big day, when we had crowds of people. He had his house all built and filled with wood, and built a big fire, and the house fell down. Not only did the house fall, but the blocks crumbled. He probably made his blocks cheap, too much sand, or probaly mixed a little lime; but any way he did not demonstrate that the structure was fireproof. Concrete structures, to stand, must be made of good material; and when they are, brick manufacturers need not be afraid of them.

Mr. Marion Blair: I want to enter a protest against brick manufacturers using concrete construction on the brickyard above ground. (Laughter and applause.) The place for concrete, or the place to which it is adaptable, and the place to use it, is heavy, massive foundations; and there it is all right. It has proven all right for things that demand a heavy, massive foundation, and so long as the brick manufacturers keep it under the ground there is going to be plenty of brick work above the ground to use his material. Concrete is not

very artistic above the ground. It has not proven so. It does not look pretty when you tear down your false work and have a wall full of holes. I do not believe it is going to give the brick men any trouble if they will keep it in its place.

Mr. Guignard: As a brick manufacturer, I put my block machine in to demonstrate to the people that concrete blocks were not what they wanted. It will never take the place of brick.

Mr. George O. Berry, Columbus, Ga.: A year ago, in my city, a concrete company was formed to run the brickmakers out. They invested a lot of money. They bought a lot of molds and proceeded to go after business and opened up an elaborate office with gold signs on the window. At the convention at Philadelphia I heard the question discussed and they decided it would work itself out and we would be all right. This last spring a company was formed at home to build a large factory, and the stockholders in it were stockholders in the concrete company, and they left out the brickmakers when they got up their plans. They built a two-story building out of concrete block, but they did not finish it. They finally came to us for brick. Now the concrete factory is shut down, and we are furnishing the brick for the balance of the building. The mechanics say they will not work in a concrete building, for it is dangerous. When it rains, half of that building is damp from inside to outside. There are several places in the city where they had intended to use concrete; they will build of brick. That is the experience of the Columbus, Ga., brickmakers.

Victor Cushwa, Williamsport, Md.: I have been in the brick business for some forty years, and I think I have learned more in the last ten days than I ever learned before in all my life, and I passed my seventy-fourth milestone last Saturday, Ground Hog day. It has been interesting to listen to the concrete scare. I think it is altogether premature, for I have always made it a point not to say "good morning" to the devil until I have met him. Concrete has appealed to people because it is easy to make. It can be made in the little country place and at the cross roads. You know some people are always looking for something new, something novel. I have seen concrete buildings destroyed by fire the same as wood or anything else. You can not make good concrete unless you use a very large proportion of good Portland cement. Of course I know something about that, for I am in that business, handling coal, brick and cement. I have learned something in my seventy-four years, and I am still learning more and more every day. Dampness is one of the objectionable features of cement work. As the gentleman remarked a while ago, I have never found a place for concrete work except the underground work. With the experience we have had with concrete work, I think it is premature to take the matter under serious consideration until we have further evidence of its utility and its substantiality.

Mr. W. P. Alsip, Winnipeg, Manitoba: We need not try to get away from the concrete business. It is my opinion it has come to stay—reinforced concrete, I mean. There is no use dodging the issue. It is going to go above the ground. We have a building in Winnipeg that has carloads in it. We, the Alsip Brick Company, have put in a concrete block machine. We are using the concrete reinforced with hollow blocks between with brick for the outside of the walls, a little concrete and a lot of burned clay work. We have got plenty of room for the clay business, and we are making brick as of yore, and we can not find labor enough to manufacture all we want to. We are building a building with concrete columns reinforced with steel—that is right and proper. We are building a concrete building up in the north of the State, the walls stand up fine, demonstrating that it will hold up. We had a company put up a solid concrete construction, and it is wet inside and wet outside. If you use concrete, you have got to use hollow work—burned clay—on the inside, put brick on the outside and a little concrete in the middle. But as Mr. Randall has said, brickmakers need have no fear of good honest concrete work, for it is not cheap.

Secretary Randall: I have here a communication which may properly be considered in this connection. It is from

the Brick Construction Association of Los Angeles, Cal., and reads as follows:

BRICK VERSUS CONCRETE ON THE PACIFIC COAST.
Los Angeles, California, January 30, 1907.

Secretary National Brick Manufacturers' Association, Planters Hotel, St. Louis, Mo.:

The Brick Construction Association of Los Angeles, California, an organization formed for the purpose of promoting the use of burnt clay products in Los Angeles and vicinity, after six months of effort has just sent to press an elaborate publication entitled, "Burnt Clay Products in Fire and Earthquake," ninety-six pages and cover, containing eighty-three halftones—5x7—showing the effect of fire and earthquake on concrete, reinforced and plain, the defects of concrete in general, hollow cement block collapses, frame building collapses, and collapses and official report on the Hotel Bixby disaster, Long Beach, California. Also excellent results of brick and clay products in San Francisco in fire and earthquake, with concise descriptions. Also short technical extracts by the leading architects and engineers.

The printing of this publication was prompted by the claims that were made by the cement interests against brick and tile. We have no hesitancy in saying that there has never been anything published that will equal this book, having had a transcendent field to draw from, and have spared no expense and time in its make-up.

The book is 9x12—paper, printing and halftone work the best. Cover in three colors, allegorical representation of burnt clay products, tried by the elements and found not wanting.

The book contains nothing cheap or objectionable, and is intended for distribution among architects, engineers, builders and owners, city officials, bank directors and loan associations, and is the only bona-fide cure for the reinforced concrete mania, and warranted to restore to their normal mind anyone affected with the new craze—"Cementi Dementi."

We had planned to have the first edition of three thousand copies ready for the annual convention, but regret that we will be unable to do so.

A great deal of time and expense has been spent on this book, and it will be of great value to the brick interests throughout the country, and we ask that the convention take the matter up of distributing this publication in the different cities.

The book will be in our hands by February 10, and a sample copy will be mailed postpaid to any member of the association for seventy-five (75) cents. A large quantity can be printed at a much lower rate.

Trusting that the convention will see fit to take this matter up to further the interests of brick, we remain,

Yours very sincerely,

BRICK CONSTRUCTION ASSN.,

Jos. SIMONS, President.

JOSHUA H. MARKS, Secretary,
Brick Construction Association,
707 Lankershim Bldg.,
Los Angeles, California.

President Conway: I will ask Mr. Randall to read the next question.

Secretary Randall: This brings us to question No. 22:

"Is the drying of stiff mud brick in the kiln a practical and commercial success?"

Secretary Randall: If there is no one to answer that, we will take up the next, No. 23:

"What is the best means of overcoming prejudice in certain markets for any but soft mud brick?"

There seems to be no answer to that. So we will pass to the next, No. 24:

"Should the N. B. M. A. make an effort to establish standard sizes and shapes of hollow building brick and block?"

A Member: It can not be done.

Secretary Randall: The next and last question is:

"Which is best—a low or high grade pressure in burning brick with natural gas?"

Mr. J. J. Amos, Humboldt, Kan.: There are several of us here from Kansas, where we burn brick with natural gas where we are burning under high pressure. We believe it impossible to burn with low pressure. We would like to hear from someone who is burning with a low pressure, or knows something about burning with low pressure.

Secretary Randall: I think when the brickmakers burned with natural gas in Indiana, and burned with a low pressure, the well was invariably at the plant. Nearly every plant in the Indiana gas belt had its own gas well, and this, I take it, is different from piping it a great distance. Mr. Fred Adams, of Indianapolis, is here, and if the gentleman will hunt him up, he can get the desired information from him.

Mr. Amos: There is absolutely no difference. The only difference is in delivery at the kiln.

A Member: The pressure varies in piping a long ways, does it not?

Mr. Amos: I burn from one year's end to the other without having a pound difference in the pressure in the gas in my mains. We burn with from five to ten pounds, and we can deliver 300 pounds right at the kilns.

Mr. Purdy: Nine ounces is enough.

Mr. Amos: I would like to see you prove it.

The Wednesday Evening Lectures.

The illustrated lecture delivered by Prof. Orton Wednesday evening proved one of the most interesting features of the program. The following is but a digest of the lecture:

THE OCCURRENCE AND PREPARATION OF WHITE BURNING CLAYS.

By Prof. Edward Orton, Ohio State University.

Prof. Edward Orton, Jr., of the Ohio State University, gave an interesting lecture on the above topic Wednesday evening. Prof. Orton first traced the origin of clay matter on the surface of the earth, showing that it was due principally to the action of water and air on the rocks composing the primitive crust of the earth. The very great contrast existing between the condition and chemical composition and temperature of the atmosphere at the earth's surface in early time and that existing now lead us to believe that rock decay must have progressed with a rapidity and on a scale with which we are not now familiar. The sum of these alternative changes, which began vigorously when water in liquid form was able to remain on the rocky surface of the earth, and which have been decreasing in activity as the ages have come and gone, is now represented by a vast coating of clayey matter covering the earth like a blanket, through which the unweathered rocks project in places, in the forms of hills and mountains.

While all clays are formed by this process, some of them remain for a long time in the position in which they were formed, i. e.,



Edward Orton, Columbus, Ohio.

in contact with the rocks with which they have weathered. Such clays are called primary clays, but the vast majority of clay matter is soon moved from its place of formation through the agency of the rains, the frost, the snows, the streams, the glaciers, in fact, through moving water, or moving ice, or moving air, and when again the particles come to a temporary rest, they have become widely scattered and mixed. Such clays are called secondary, for they are no longer first hand products but consist of blends or mixtures of powdered rocks coming from large areas and from rocks of many different ages and kinds.

The speaker then stated that the subject under discussion had been printed under the title of *high-grade* clays, and that this title was somewhat misleading, for there were many kinds of high-grade clays, and that a clay might be high-grade for one purpose, and not so for another. He stated that the clays which command the largest price in the markets are the white-burning clays, such as are used for pottery and decorative purposes, and it was of this group only that he desired to speak.

The next point made was that white-burning clays are very largely found in the primary class, because the whiteness of clays and most other rocks depends on the absence of nature's great coloring material, iron, and where a mass of white rock, low in iron, is found, it is generally found that the clay which it produces by weathering is also white or light colored. But, as white rocks are not very common, white clays are also uncommon, for one is dependent on the other.

The amount of primary clay was shown to be comparatively small, and of this primary clay, the amount of white-burning material was shown to be an insignificant portion, so that the amount of white-burning clays in existence form but a drop in the bucket compared to the vast mass of clay matter which is colored red or yellow. But, because the white clays are rare, they are valuable, man being so constituted that whatever is unusual is desirable. White clays are intrinsically much less beautiful than the delicate

reds, buffs and grays, which natural clays produce, but because they are difficult to obtain they are valued.

The speaker next showed that the resources of America in white clays are good, compared to the other countries of the world, and that most of them come from the formation of old rocks called the Archaean. These Archaean rocks are not believed to be the original crust of the earth, but are thought to be the first sediments produced by the weathering of the original crust, which sediments have been greatly modified or metamorphosed by the tremendous changes which the earth's crust has undergone since that dimly distant period.

The earth's crust has been contracting, wrinkling up into mountain chains, cracking, and letting hot floods of rock flow out over the surface. It has been leached by superheated water, dissolving minerals in one place and precipitating them in another. It has been buried under miles of sediments giving rise to great pressure. All of these agencies have been operating for untold aeons on these earliest sedimentary rocks, and have so altered them that we can no longer prove definitely what their real origin was. Whatever it was, the Archaean rocks are important to us now, because they contain so much mineral wealth, not only in the form of ores of the rare and baser metals, but also in the marble, slate, granite, graphite, feldspar and kaolin which they produce.

Dana's map of the Archaean rocks of North America was then shown on the screen, and the slender thread of land running down from northeast to southwest along the general course of the Appalachian mountain chain was pointed out as the principal source of the kaolin bearing rocks of America. The crumpled and twisted nature of the schists which compose the bulk of the Archaean rocks was next shown by views of pieces of the rock in its hard condition, and by embankments of it in railroad cuts, where the rock had weathered sufficiently to be dug by steam shovels.

A typical occurrence of primary kaolin at Dillsboro, N. C., the property of the Harris Clay Company, was next carefully illus-



E. L. Cook, State Farm, Mass.

trated. The views shown illustrated a cross-section of the mountain in which the clay formation is seen; then a diagram illustrating the mode of working it; then photographs showing the pits in operation and pictures taken at the bottom of the pits showing how the clay is dug and removed, and how the treacherous walls are kept from caving in upon the pit-men. Another picture showed the red clay walls between which the white kaolin vein is found.

The washing or preparation of the kaolin, when once dug, is a task which involves much originality, because no two kaolins are alike and the apparatus required in one case is apt to be unsuccessful in another. Mr. Harris, the proprietor of this plant, has developed a most interesting procedure for separating the kaolin from the comparatively coarse sand and mica which compose the bulk of the gangue material at this point. No one who looked at the ashy-gray material that comes out at the top of the pit could believe that a beautifully white product could be obtained from it.

The method of this purification was explained on screen by diagrams and photographs, step by step. In general, the process is one of floating the light particles of kaolin out from the heavier particles of quartz and mica, by passing the liquid through long troughs in which the liquid flowed at slower and slower speed; but this method is supplemented by apparatus to disintegrate the kaolin, and get it into suspension in the liquid, and sand wheels for getting rid of the coarsest portions of other minerals, before the liquid passes on to the troughs.

The speaker then showed the relation between primary and secondary kaolins, and how the latter had been produced from the former by the same kind of a washing process as that described and illustrated in the preceding views, and also showed that in this case nature furnished the water process—the rivers and streams acting as the disintegrators, while lakes and oceans formed the settling tanks. The wonder of it all is how a white clay can possibly be carried for great distances and escape contamination by the red-burning clays which are everywhere so much more abundant. For this reason, white-burning secondary

clays are rarer, geologically, than the primary ones, though the beds in which they occur are often of considerable extent, and the amount of kaolin which they contain is sometimes very large.

Referring to the map once more, the speaker showed that the Archaean area of Georgia, North and South Carolina and Virginia was bordered by a wide expanse of level country, or coastal plain, which geologists tell us had been built out of the sands, clays and waste materials produced by the decay and erosion of this same Archaean area. Curiously enough, in these sedimentary beds are found areas of white secondary kaolins, three hundred miles distant from the Archaean rocks, from which they must have been formed. Speculations on the origin of these beds are very unsatisfactory, for it seems difficult to imagine any set of conditions which can have produced such great quantities of unstained material, surrounded above and below by red clays and separated by such great distances from the white parent rock.

However, the fact remains: *the clays are there*. No one accurately knows yet how large an area of Florida is covered by this white formation, but the two deposits now working are fifty miles apart, and there are many stories current in that vicinity that the white clay can be reached almost anywhere that one goes down. Both workings are located where the clay is comparatively close to the surface, and the beds are found to be from 25 feet to considerably greater thicknesses; the bottom has not been definitely reached in one of the beds. In both places, the soil is full of water and the clay can not be dug to any depth without encountering the water problem in severe form. At one of the places the workmen only go as low as can be conveniently drained with large centrifugal pumps. Much of the kaolin, however, lies below this level, and this, of course, is not being now recovered. In the other plant, a novel process of dredging the kaolin from beneath water level has been devised by Mr. Charles Edgar, and the water has been made an actual assistance in place of a hindrance to the winning of the material.

Both of these beds consist of a white sandy material containing from 60 to 80 per cent. of white sand, and the balance kaolin. The processes of separation of the sand and the kaolin are somewhat different in each plant; in fact, the fineness in grain of the clay substance, and the attendant sand particles, seems to vary in the two beds, so that the treatment given by one would be unsatisfactory to the other.

Pictures were used freely in showing the equipment of both of these plants for producing the kaolin slip, the sand separators, the trough system, the settling tanks, the filter presses and the dry houses. More than thirty views were used in illustrating this interesting stage of the work.

The two Florida deposits having been thoroughly discussed, a third deposit of sedimentary kaolin, differing widely from either of the others, was next discussed. The plant illustrated was that of the Georgia Kaolin Company, at Dry Branch, near Macon, Ga. The origin of this bed seems to be different, in the fact that it lies almost on the line of juncture of the Archaean rocks which produced it and the flat sedimentary rocks of the coastal plain. Where these two unlike formations come together, which geologists call the Fall line, there occurs a band of clays, many of which seem to be of considerable commercial promise. Curiously enough, however, these clays are not as white as the kaolins, three hundred miles south in Florida. One would think that, from the fact that they lie close to their place of formation, they would have encountered less danger of staining. One would also expect them to be coarser grained and full of sandy minerals, while the exact reverse is the case. The bed at the point inspected was about 30 feet and the clay is quarried out in lumps, which have been marketed for years past with absolutely no mechanical preparation other than drying and occasionally crushing to facilitate filling into sacks for shipment.

The pictures illustrating this plant showed the clay pit, with the black men digging and wheeling out the beautiful white lumps, and also showed the nature of the overburden which has to be removed here to a maximum depth of 35 feet. A unique device, called the tail rope scraper system, has been installed. The details of this plan were thrown on the screen. The system has many advantages over the steam shovel. The lesson should have some practical value to brickmakers who have heavy stripping to remove.

At the conclusion of the lecture, the screen was covered by a beautiful colored mountain scene of lakes, forests and snow-capped peaks, and while the audience feasted their eyes on this beautiful sight, the lecturer brought his remarks to a close with the following:

"And thus ends the story of the white clay—prosaic and commonplace enough, no doubt, to him who looks at it from a material standpoint. To him it is interesting because it sells for \$12 a ton. In the language of Wordsworth:

"'A primrose by a river's brim,
A yellow primrose was to him
And it was nothing more!'"

"But let your imagination have some play—let the searchlight of geology help you to read the dark pages of its history, and this simple lump of white clay can tell you a story more fascinating than the siege of Troy, or the loves of Romeo and Juliet. Around it is woven the wondrous history of our beautiful earth. It takes us back to the days before the human animal had made his humble entrance into Nature's zoological collection—back to the days when land and seas teemed with animal and vegetable life, now utterly perished and gone; still back, when continents were young, when our lovely earth was a fiery ball, surrounded by atmospheres as dense and reeking as the discharge of one of the monstrous weapons which now defend our coasts. And though the

purpose of this white clay now may be merely to stiffen and polish the surface of your morning paper, or to fashion the crude mug out of which you take your coffee at your hasty noon-day lunch, do not forget that it may also be the vehicle by which some future Wedgewood may fashion one of those triumphs of art before which people stand silent and dewy-eyed." (Applause.)

Prof. J. M. White, Dean of the College of Engineering, University of Illinois, followed with a most instructive lecture on "Artistic Brickwork," which was illustrated with a number of splendid views of brick structures of Italy and other European countries, with a few views of notable American structures, all of which, it is hoped, may be reproduced in pamphlet form later on.

Secretary Randall: This brings us to Reports of Committees. I believe Prof. Orton, as chairman of the Committee on Technical Investigation, has something he desires to say.

Report of Committee on Technical Investigation.

Prof. Orton: I was absent from the room when that item was reached on the program. I thought we would have a night session and the matter would be brought up then. We have only a short message to give you at this time. Those of you who have been attending these conventions for a number of years will probably know that I have been very much occupied in recent years with the work of the Geological Survey in the State of Ohio, and I have resigned that office, which leaves me at liberty to give more time to the clay industry, the field in which I like to work. While I have been so occupied with this geological survey work, the scholarship work has not received the attention it should. I have now on hand three complete investigations ready for publication. Each one will take two or three weeks' work of editing. Some of them should have been sent out two or three years ago if I could have found the time to give to the editing of same. I shall undertake no new enterprises until the scholarship work which has been done for this Association has been published, and I bind myself to that arrangement. I shall take up the work which this Committee on Technical Investigation has done and finish it before I undertake anything new. I am not taking your money and giving you nothing in return. The State University has taken your money, but we have not spent it. We are just beginning to spend the money on an investigation, and that investigation promises to be one of great value to the common and face brick manufacturers, rather than to the paving brick makers. The investigation is being done in collaboration between Mr. W. D. Richardson and myself. Mr. Richardson has devised a form of test dryer by which we hope to determine in some measure how clay should be dried. There is no such apparatus in existence at this time, and if we are successful in this experiment, which we have just taken up, it will perhaps be as useful a combination as this scholarship and Committee on Technical Investigation has ever brought to the Association. I hope we will finish it at the conclusion of the coming summer, but we will work at it until we have finished it, and meanwhile the fruits of past investigations will be placed before this association. (Applause.)

Columbus, Ohio, Wants the Next Convention.

Now, gentlemen, there is another matter I want to present to you, and one that is a great deal pleasanter to me. I want to say that a year ago at Philadelphia two strenuous gentlemen from Columbus waylaid Brother Randall in the hall, presented their credentials, and said: "We have come to capture this convention for Columbus." Secretary Randall, with his usual tact, told them that the situation was a little strenuous for them, because so many of our members had already expressed a desire to go to St. Louis. So they went home somewhat disappointed, without laying the matter before the Association. When I got home I told them they had made a mistake, that this was an association of clayworkers and it was the custom to receive invitations from the clayworkers themselves. We Columbus people have been

thinking the matter over and it has taken shape in the paper it is now my pleasure to present. (Applause.)

Columbus, February 1, 1907.

To the National Brick Manufacturers' Association, in session at St. Louis, Missouri, February 6, 1907:

Gentlemen: On behalf of the Ohio State University, its trustees and faculty, I have the honor to extend a most cordial invitation to you to hold your next annual session, February, 1908, in Columbus.

The University will consider it a privilege to afford its facilities for your accommodation and extend any other courtesies within its power. It may be proper to add that the University has a College of Engineering with more than seven hundred students and is reasonably well equipped in the lines of civil engineering, electrical engineering, mechanical engineering, chemical engineering, and recently has erected a new building for the School of Mines in which the Department of Ceramics is located. This latter work appeals to your association and has been most cordially recognized in the provision of the annual scholarship for the university for a series of years. The university appreciates this favor from the association and would have great pleasure in an opportunity to entertain the association on its campus.

Trusting that you will give this invitation a favorable reply, I have the honor to remain

Yours very truly,

W. O. THOMPSON, President.

To the National Brick Manufacturers' Association and American Ceramic Society, in convention assembled, St. Louis, Mo.

Gentlemen: The Columbus Board of Trade extends compliments and greetings to your organizations, and begs the pleasure



J. F. Smith, Omaha, Neb.

of jointly entertaining you in Ohio's Capital City on the occasion of your next annual convention.

Prof. Edward Orton, Jr., one of our Board's most honored members, has been authorized to make presentation of this invitation; and I am instructed to say to you that any promises or pledges he may make in such connection, our Board will stand in perfect readiness to make good.

Praying your favorable consideration, and hoping to welcome you in our city in 1908, I am

Most sincerely yours,

(ATTEST.)

JOHN Y. BASSELL, Secretary,
Columbus Board of Trade.

INVITATION FROM THE CLAYWORKERS OF COLUMBUS.

To the National Brick Manufacturers' Association, in convention assembled.

Gentlemen: We desire to extend to you a cordial invitation to meet at Columbus for the Twenty-second annual convention in February, 1908. We call your attention to the fact that the Association met last year at an extreme eastern point, and that it meets this year at an extreme western point, and that for the benefit of all parties the selection of a middle ground for next year is desirable.

We further desire to call your attention to the fact that Ohio is the greatest clayworking state in the Union and that the capital city of Ohio, as the geographical and commercial center of a large share of these clay interests, is the fittest representative of the state to extend her hospitality to the organization.

We believe that Columbus is a point of no little interest to clayworkers for many reasons. It is the center of a great number and wide variety of clayworking establishments, which can be reached in all directions. Certainly no capital city of the middle west can at all compete with Columbus in this direction.

It has besides, several establishments of a technical nature and

the Ohio State University, whose Department of Clayworking and Ceramics this Association helped to organize and has supported ever since.

The clayworkers of Columbus and vicinity desire to show their appreciation of the work of this great organization by offering to its members their hospitality and warmest welcome in February, 1908.

Signed:

COLUMBUS BRICK & TERRA COTTA CO.,
 RICHARDSON-LOVEJOY ENGINEERING CO.,
 THE JEFFREY MFG. CO.,
 M. P. STREETT,
 THE SCHMITT BRICK CO.,
 THE COLUMBUS CONTRACTORS SUPPLY CO.,
 THE LOGAN BRICK MFG. CO.,
 O. N. TOWNSEND,
 THE FULTONHAM BRICK CO.,
 OHIO MINING & MFG. CO.,
 THE DELAWARE CLAY MFG. CO.,
 THE TRIMBLE BRICK MFG. CO.,
 A. MAGOON,
 HYDRAULIC PRESS BRICK CO.,
 NELLSONVILLE BRICK CO.,
 THE HANOVER PRESSED BRICK CO.,
 EDWARD ORTON, JR.

Gentlemen, I want to say in conclusion that Columbus is not so large as St. Louis, and while there are not so many clayworkers, and our pocketbooks are not quite so plethoric as they are in St. Louis, we will do the very best we can to entertain you if you accept our invitation. (Applause.)

Mr. Ittner: I move that this matter be referred to the Executive Committee.

Motion seconded and carried.



J. B. Millar, Toronto, Can.

Secretary Randall: We have invitations from a number of cities, each in turn urging its claims as a convention city. First is a telegram from the mayor of Toronto, Canada.

"On behalf of the corporation of the city of Toronto, I have much pleasure in tendering to the National Brickmakers' Association a cordial invitation to hold their next annual convention in the city of Toronto. You may assure them of a hearty welcome and a most profitable and enjoyable meeting should they accept this invitation.

"E. COATSWORTH, Mayor.

"Toronto, February 8, 1907."

Another applicant for the convention, and an urgent one, too, is Peoria, Ill., from whose mayor we have received the following appeal, which is accompanied by a similar letter from the Creve Coeur Club of that city:

CITY OF PEORIA, MAYOR'S OFFICE.

ALLEN B. TOLSON, MAYOR.

Peoria, Ill., Feb. 1, 1907.

National Brick Manufacturers' Association, in convention assembled, Mr. T. A. Randall, Secretary.

On behalf of the city of Peoria, I extend you a most cordial invitation to hold your next convention in our city. We offer you free of charge our coliseum with a seating capacity of 7,500, together with all the necessary committee rooms and adjuncts for your comfort and convenience.

Peoria is a great railroad center, and practically every system

in the United States runs into our city, thereby making the question of transportation an easy matter for your delegates.

Our hotel accommodations and places of amusement meet your fullest requirements, and the hospitality of our citizens will convince you that Peoria is a most desirable convention city.

We await your favorable consideration, and assure you a hearty welcome.

Respectfully yours,
 A. B. TOLSON, Mayor.

As doubtless you are all aware, the coming year is to be celebrated at Norfolk, Va., and vicinity, by a great exposition, and we have the following invitation from the chairman of the Board of Governors:

INVITATION FROM THE JAMESTOWN EXPOSITION.

To the President and Members of the National Brick Manufacturers' Association.

Gentlemen: On behalf of the Jamestown Exposition Company, I desire to extend to the National Brick Manufacturers' Association a cordial invitation to hold the next annual meeting of the Association for 1907 in the city of Norfolk.

In that year a great international naval, military, historical and industrial exposition will be held on and near the waters of Hampton Roads, Virginia, within twenty minutes' ride of the cities of Norfolk, Portsmouth, Newport News, Hampton and Old Point Comfort, in commemoration of the three hundredth anniversary of the first permanent English settlement in America at Jamestown, Virginia, in 1607.

This section is the most historic on the American continent. In ordinary times the vicinity bordering on Hampton Roads possesses attractions to warrant its selection as a meeting place, while during the exposition period its natural advantages will be augmented by many other attractions.

The Jamestown Exposition will differ from other expositions, inasmuch as it will have a distinctive naval feature in a great international naval rendezvous, for which invitations have already been extended by the President of the United States to the nations of the world. The military and historical features will also make it very different from previous expositions.

The exposition management will be prepared to furnish your organization with a commodious and satisfactory hall for convention purposes, and will, if desired, recognize the presence of the National Brick Manufacturers' Association by setting apart a special day in honor of the occasion.

Respectfully,

C. BROOKS JOHNSTON,
 Chairman, Board of Governors.

An invitation which will appeal with much force to those of us who enjoyed the side trip to Atlantic City last year is from the Convention Promotion League of the city, urging us to consider that city when arranging for our next convention.

Buffalo, N. Y., is also a candidate, as evidenced by a letter from the Bureau of Convention of the Chamber of Commerce, Buffalo. All of these communications, I take it, are referred to the Executive Committee under Mr. Ittner's motion.

Secretary Randall: This brings us to the report of the Committee on Resolutions, which the chairman, Mr. Cite, has asked me to read for him.

Report of Committee on Resolutions.

Mr. President and Gentlemen of the Convention:

Your Committee on Resolutions beg to report as follows:

WHEREAS, this, our twenty-first annual convention is the largest and best in the point of attendance in the history of our association, and we feel that we are to be congratulated as an organization in celebrating our twenty-first birthday by such a splendid convention. The large attendance from all sections of the country and the deep and enthusiastic interest manifested by our members, both old and new, is most reassuring, and bespeaks the ever widening influence of our association in the work of promoting the interests of all who are engaged in or identified with the clayworking industries of America. Therefore, be it

Resolved, that the sincere thanks of our entire membership is due to the officers who have so wisely and safely directed the affairs of our association, and especially to our ever faithful Secretary, Mr. Theodore A. Randall, of Indianapolis, for his untiring efforts in our behalf and for the cause we represent.

MEMORIAL TO DECEASED MEMBERS.

WHEREAS, during the past year eight of our members have gone to the great beyond, and their voices, stilled in death, will nevermore be heard in our deliberations. The deceased are:

James W. Tester, Montreal, Canada.
 Charles W. Keefer, Mechanicsville, N. Y.
 John Doyle, Utica, N. Y.
 W. W. Reehl, Bucyrus, Ohio.
 Adam Schneider, Columbus, Ohio.
 H. C. Ellis, Toledo, Ohio.
 Chris McDermott, Wellington, Ohio.
 S. S. Kimbell, Chicago, Ill.
 John Murray, Paducah, Ky.

We mourn the loss of these departed members, and desire to extend to their families our sincerest sympathy. Therefore, be it

Resolved, that this memorial be spread upon our records that their names shall not be forgotten, but evermore held in affectionate remembrance.

IN THE INTEREST OF TRADE LITERATURE.

WHEREAS, we have been especially fortunate at this, our twenty-first annual convention in securing the services of well-known scientists and educators who have given us instructive addresses of much worth which will add materially to the value of our records. To the students of clay work the world over we especially commend the contributions of Dr. S. C. Dickey, President of the Winona Technical Institute, Indianapolis, Ind.; Prof. J. M. White, Dean of the College of Engineering, University of Illinois, Prof. Edward Orton, Director of the Department of Ceramics, Ohio State University, Columbus, Ohio, and Mr. J. E. Howard, engineer of tests at the Government Testing Laboratory, Watertown Arsenal, Mass., and Mr. R. C. Purdy, of the Ceramic School of the University of Illinois, therefore, be it

Resolved, that their addresses be printed separately in pamphlet form for free distribution among our members, and that the thanks of this association be extended to them, and to all others who have contributed to our program. And be it further

Resolved, that the United States officials at the testing laboratory at the Watertown Arsenal be requested to continue the testing of brick, cement and other building materials during the ensuing year and report results of special interest to our industry at our next annual meeting, delegating Mr. James E. Howard, or some accredited representative for the purpose, believing that such work will redound to the benefit of the builders of the nation.

TO AID IN ESTABLISHING TRADE SCHOOLS.

WHEREAS, there is great need throughout our country at this time of skilled mechanics and that it should be the unquestioned privilege of every American boy who desires so to do, to learn the trade of his choice without let or hindrance from any source; therefore, be it

Resolved, that we as an Association declare in favor of the support of all trade schools, and that a committee to be appointed by the President at his discretion, and instructed to confer with Dr. S. C. Dickey, of the Winona Institute, of Indianapolis, for the purpose of determining to what extent and in what way we may, as an organization, aid in the establishment of a department of brick-laying in that institution.

TO ENCOURAGE GOOD ROADS.

WHEREAS, the building and maintenance of good roads throughout the United States is of the utmost importance to every citizen; therefore, be it

Resolved, that it is the sense of the National Brick Manufacturers' Association, in convention assembled, that such work should be carried on under state supervision, and we earnestly petition the various state legislators to take such steps and enact such laws as will promote this work and result in the compiling of accurate data as to the cost of various kinds of roads and the maintenance of same.

TRADE SCHOOLS IN NEW JERSEY.

WHEREAS, it has come to the attention of the members of the National Brick Manufacturers' Association that there is now pending in the New Jersey State Legislature a bill providing for an increase in the annual appropriation for the support of the Department of Clayworking and Ceramics at the New Jersey State College; be it

Resolved, that, in view of the great value of the services rendered by clayworking schools in training young men for the industry; believing in their continuous maintenance and hearty support; and in recognition of the value of the work done by the New Jersey school, we do heartily endorse its efforts to secure increased financial support and thus extend its usefulness and urge upon the members of the New Jersey Legislature the necessity for favorable action. It is further

Resolved, That copies of this resolution be sent to the Governor of New Jersey, the President of the Senate and the Speaker of its House of Assembly.

February 8, 1907.

THANKS FOR ST. LOUIS HOSPITALITY.

WHEREAS, our stay in the city of St. Louis has been made most delightful by the untiring attention of the local committees, therefore, be it

Resolved, That the sincere thanks of this Association be tendered to the officers and committeemen of the Clayworkers' Association of St. Louis, who have contributed so much for our comfort and convenience. We also wish to tender a vote of thanks to our honored charter member, Anthony Ittner, who served so admirably as toastmaster at our great banquet, and to the gentlemen who responded so ably to the various toasts on that occasion, and be it further

Resolved, That our heartfelt thanks are due to and are hereby tendered to Mrs. Anthony Ittner and the St. Louis ladies associated with her, for the splendid and open-handed entertainment afforded the visiting ladies, who are also indebted to the proprietors of the Grand Leader and Nugent stores for courtesies extended during the shopping trip. Be it further

Resolved, That the thanks of our Association are due to the management of the Planters Hotel for the unsurpassed facilities afforded us and the splendid service which has prevailed throughout the week, making our stay so delightful that we depart reluctantly and with the hope that we shall assemble again in St. Louis in the not distant future.

J. D. CITE, New York, *Chairman*.
H. RAWSON, Iowa,
J. M. HARRY, Texas,
WM. MOORE ANGUS, Florida,
R. D. LINDSAY, Colorado,
E. R. DICK, Kansas,
J. P. FULCHER, Tennessee.

President Conway: Gentlemen, you have heard the report of the Committee on Resolutions. What is your pleasure?

Mr. J. Fred Smith: I move the adoption of the report.

Seconded by Mr. C. A. Bloomfield and carried.

President Conway: Gentlemen, our convention is drawing to a close. I want to again thank you for the honor conferred upon me, and the kind attention you have given to all matters that have been brought before the convention. I feel it has been one of the most, if not the most important convention the National Brick Manufacturers' Association has ever held. It shows the great progress the trade is making. The number of men from distant points who have come here to attend this convention, and the interest they take in all the discussions is remarkable. Ours has certainly become one of the most important industries in the United States today.

On motion of Mr. C. A. Bloomfield, duly seconded, the convention adjourned sine die.



THE ANNUAL BANQUET.

A Feast of Good Things Provided for the Visiting Clayworkers and Ceramists by the St. Louis Clayworkers' Association.

WHEN the doors of the immense dining room of the Planters Hotel opened Thursday evening, a vision of rare beauty met the gaze of the delegates and guests who, as they filed in, kept step to a catchy air played by an excellent stringed orchestra. The room was decorated with the official colors, blue and gray united, while a profusion of flags and flowers completed the picture which charmed the eyes of nearly a thousand happy mortals. Seats were provided for more than eight hundred and these were all occupied and special arrangements had to be made for a few late comers. Mine host declared that it was the largest banquet ever served in St. Louis. Notwithstanding this, the service was excellent. The Paragon Quartette, a splendid musical organization, rendered a number of songs in a most charming manner. After dinner speeches, which we give in full, were exceptionally clever, and all in all, the banquet was voted the most pleasing feature of the best convention to date.

MENU.

Blue Point Cocktail
Celery Radishes Olives
Chicken Broth in Cup
Fried Fillet of Sole, Tartar Sauce
Julienne Potatoes
Tenderloin of Beef "En Kiln"
Green Peas New Potatoes
"Hydraulic" Punch au Kirsch
Broiled Squab Chicken "Fire Proof"
Chicory and Beet Salad
"Brick" Ice Cream Cake "Terra Cotta"
Roquefort and Brie
Coffee
Cocktail
St. Julien
G. H. Mumm & Co. Extra Dry
Cigars

MUSICAL PROGRAM

Overture—"If I Were King"Adam
Two Novelettes—(a) "Laughing Water"Johnson
(b) "Idle Hours"Kretchmer
Paragon Quartette:
Ben. J. Bloemker Charles E. Blume
Joseph Saler Arthur E. Poss

Gems from "Mlle. Modiste"Herbert
Waltz—"Les Sirienes"Waldtcufel

Quartette

Characteristic—"Pan Americana"Herbert
Grand "American Fantasie"Herbert
Quartette

Toastmaster Ittner: Ladies and gentlemen, clayworkers of the United States and our "Silent Partners," or, as the word has more recently been coined, "Our Backers," it fills my heart with joy to see the good cheer prevailing here tonight. I am satisfied that that good cheer would not prevail to the extent that it does if our "silent partners" and "backers" were not of the company. (Applause.)

I desire to read the couplet of the first toast:

"Come touch your glasses overhead,
To what we love, to what we dread—
The after-dinner speech."

The question has been raised as to where the dread rests, whether it is with the speaker or with the listener. Taking it home to myself, I can assure you that it is with the speaker.

"May the coming hour o'erflow with joy,
And pleasure drown the brim."

I desire to extend to all our fellow craftsmen and to our guests, which, of course, includes the ladies, a hearty and spontaneous welcome to our city and our warmest hospitality. As we have on our program tonight a large number of

regular toasts, therefore, it will not stand the toastmaster in hand to take up any considerable portion of your time, but instead will proceed with the regular entertainment.

I had anticipated the pleasure of introducing to you tonight our Governor, who is well known to all of you by reputation at least, the name of Joseph W. Folk (loud applause) having become almost a household word throughout the land in recent years, but he is unfortunately ill and unable to be with us. However, he has sent his representative, our State Geologist, Mr. E. R. Buckley, to bid you welcome in his name. The selection of Mr. Buckley is a very happy one, for he is known to many present, having at one time been the Secretary of the Wisconsin Clayworkers' Association. The toast assigned to Mr. Buckley is "Missouri."

"Here's to the land which gave me birth,
Here's to the flag she flies;
Here's to her sons, the best on earth,
Here's to her sunny skies."



Toastmaster, Anthony Ittner.

I now have the pleasure of introducing to you Mr. E. R. Buckley. (Applause.)

"MISSOURI."

BY E. R. BUCKLEY, Rolla, Mo.

Mr. Toastmaster, Ladies and Gentlemen, Members of the National Brick Manufacturers' Association: I regret very much that our esteemed and beloved Governor of the State of Missouri can not be here tonight to welcome you to this great State. I have no doubt that many of the members present this evening have been looking forward to meeting, perhaps for the first time, the man who has been essentially active in bringing forward in this State the manhood and womanhood which makes for the betterment of all the industries and of all our citizenship in this Republic. The State of Missouri is a republic in herself. She stands not only among the leading States in the agricultural industries, not only among the leading States in the horticultural industries, but she stands among the leading States in the Union in the mining industries and in the clayworking industries.

The United States produces today approximately \$150,000,000 worth of clay products, which is \$27,000,000 more than all the gold and silver produced in the United States. It is \$33,000,000 more than the stone and lime and cement and sand products of the United States. The State of Missouri produces approximately \$6,250,000 worth of clay products annually, being one of the leading States of the Union in the manufacture of these important articles of commerce. We hold in the highest regard the clayworker of this State and of the United States. He builds our homes, he builds our business blocks, the most enduring homes and the most enduring buildings of this country. (Applause.) He not only builds our homes which stand for future generations, but he contributes to the true manhood and true womanhood of this coun-

try more than any other class of people in the United States. (Applause.) The products of agriculture are consumed in a few years, but the products of the clay factories do not perish, but live for years and centuries, monuments to our industrial life.

Ladies and gentlemen, the State of Missouri welcomes you within her confines. She welcomes you to this city. We wish it were possible for you to see more of our State than is contained in the city of St. Louis. We have clayworking factories in other parts of the State which are of equal importance. We would gladly show you our hills and our valleys and our factories. They are the backbone of this State, and the backbone of this Republic.

I hope, ladies and gentlemen, that your stay in this city will be a happy one, and that you will take away with you many pleasant memories. I extend to you, ladies and gentlemen, the greetings from our Governor, the Hon. Joseph W. Folk. (Applause.) I trust you will so enjoy your sojourn here that you will return and again hold your convention in this city. I thank you for your attention. (Applause.)

Toastmaster Ittner: The next toast is "The World's Progress."

"But what a guide for life was that,
Strong, philosophical and pat;
No stronger sermon ever fell
From human lips; no sage could tell * * *
'Push, don't knock!'"

Ladies and gentlemen, it now becomes my extreme pleasure to introduce to you Judge O'Neill Ryan, of St. Louis, who will respond to this toast. (Applause.)

"THE WORLD'S PROGRESS."

BY JUDGE O'NEILL RYAN, ST. LOUIS, MO.

Mr. Toastmaster, Ladies and Gentlemen: When our friend, the toastmaster, made his few preliminary and very happily chosen remarks, he puzzled me somewhat, as I have no doubt he did many



Prof. E. R. Buckley, Rolla, Mo.

of you here when he referred to your "silent partners." (Laughter.) Now, "silent partners" in the law, as perhaps many of you know, has a very well defined meaning. It means the person who is responsible for and puts up most of the collateral, or cash. (Laughter.) So I wondered who your silent partners were. I thought first, maybe it was the lawyers, because we have plenty of cash, but at that moment I happened to glance beyond Mr. Ittner, and my eye rested, and happily, too, upon his infinitely better half, Mrs. Ittner, and I saw her cast a half wicked, half affectionate glance in his direction, and it suddenly occurred to me that he had been guilty of sarcasm, and the "silent partners" were the women. Now, I submit to you if it is fair to characterize our better halves as silent partners. I should be most delighted, as I am sure all of you would if we could be present—it would be a most interesting occasion—some morning about 3 o'clock, when this fine old brick Ittner comes home after two or three lodge meetings, with all the variegated etceteras that attend lodge meetings where Ittner goes, and we should hear the voice that would ring out on the midnight air, as Mrs. Ittner opened the second story window and said, "Who's there?" (Laughter.) We should, indeed, wonder whether Mr. Ittner was guilty of sarcasm when he spoke of his "silent partner." (Laughter and applause.)

When two or three months ago, I forget just how long ago it was, our friend, Mr. Gordon McNeil, suggested to me on the street car, as we were coming down town one morning, that he was going to be responsible for me being asked to speak at a banquet during the coming winter, with the innocence that is characteristic of St. Louis men (Laughter), particularly members of the bar of St. Louis—(Mr. Bloomfield interrupting, with a laugh, "Which bar?") Mr. Ryan resuming—not the bar at which you are the most honored and frequent attendants (you see our friend Bloomfield

comes from New Jersey, and it may be excused him if he frequently seeks liquid refreshment to overcome the Jersey mosquito). (Laughter.) Well, I fell into McNeil's trap. There was something canny about the way he made that invitation. He must be a Scotchman. Then, about two or three weeks ago, several months after my meeting with McNeil, I got one day in my mail a type-written letter which bore something at the bottom that looked like a symbol, a sort of hieroglyphics such as are found on Egyptian monoliths, and after much pondering, I discovered the invitation was signed by a clever young man named Hatton, and he said, not only was I invited to respond to a toast at a dinner to be given to the clayworkers, but that I was at liberty to choose my own toast. Well, I promptly and properly forgot all about the obligation he put upon me, and Saturday last when he wanted to know my toast, I had not selected it, and he happily relieved me by giving me the whole range of human progress, which I suppose he thought would satisfy the mental activity and verbal gymnastics of a lawyer. Now, if a lawyer is properly retained, and later on properly refreshed, and later on properly reminded, he can talk ad libitum, and perhaps ad nauseam. But I submit to you that the "World's Progress" at a banquet board is synonymous with a program, like the menu card, ranging from a "Cocktail" to "Mumm's Extra Dry" (Laughter), one that is arranged for the purpose of our convenience and our pleasure, and runs the gamut of human understanding and human enjoyment. It runs, if Dr. McKittrick will allow me to say by way of appropriating a sort of text—it runs from Greenland's icy mountains to Africa's coral strand (Laughter). And yet, being serious, just for a moment, as a man never should be at a banquet board, if we want to even briefly tonight consider what is comprehended in the words, "The World's Progress," all that we need is to consider what is being accomplished by the people of our Nation, the greatest Republic, and the greatest Nation under the sun. (Applause.) Because today whatever there is within the range of human endeavor, commercial, industrial, financial, social, philanthropic, is being accomplished at its best and to the highest purpose by the men and women of our own Nation. It is not necessary to travel beyond the confines of either the Atlantic or the Pacific, we will not even dwell upon Cuba or the Philippines, to demonstrate what we are doing. We will not turn to China to learn that the old Mongol is at last getting a constitution; nor shall we need to turn to any of the other countries of the world, for, after all, wherever human endeavor is to be found in its highest and completest perfection, there you will find the impress and the stamp of the American citizen, because in the alembic of American citizenship are blended the highest and finest and best types of all mankind. (Applause.) We have in our composite, the sturdy Saxon, the brilliant Celt, the indomitable Teuton, the intellectual Latin. We have all the great nation builders of the earth, and the most perfect product of them all, highest unto perfection, under God's providence, is the American citizen. (Applause.) We have, if I may be permitted to coin a phrase, we have been thus chemically humanizing, as it were, in this alembic an extraordinary being out of all these seemingly incongruous classes and creeds, and we dub him the American citizen. I am sure there will be no dissenting voice when I say that perhaps in many ways, at least, the best and the most perfect type of our American citizen is to be found in our clever, many-sided, dynamic President of the United States, Theodore Roosevelt. (Cheers and applause.) I say this as a Democrat, a dyed-in-the-wool Democrat, one who believed in free silver, and who is not yet persuaded that gold is the only coin we should have, chiefly not persuaded, because I have not got enough of it. (Laughter.) Again I say, as a Democrat, I heartily and cheerfully yield this tribute to Theodore Roosevelt, to our Teddy (Applause), and he himself, you know, says he has all of these qualities; he is Dutch, he is Irish, he is English, he is Scotch, and I begin to suspect that he wants to be a little Japanese (Laughter), but the composite is complete without the interjection of the yellow foreigner into our national makeup.

Now for just another word in seriousness, and I will not trespass long, as I have perhaps talked too long now. (Cries of "Go on.") Great as is our commercial and financial progress, marvelous as is our record, and it is unsurpassed in all of the realms and periods of human material endeavor, marvelous as is the record of the struggle for the existence and perpetuation of this Republic, we are yet—and we may say it with just, and not with boastful, pride—we are just now at the very threshold of the possibilities of our Nation and of our people. (Applause.) We have scarcely touched opportunities, almost unlimited resources that nature has given to this great continent, and we have not even begun, practically speaking, to reach out into the greater Orient. As the present senator from Missouri, Thomas Benton, said, "There is East; there is India," and we have scarcely turned our eyes in that direction; then there is the vast continent to our south, Brazil, Venezuela, Chili, Peru, Argentina and all these great countries, our neighbors to the south, who are asking, and so far in vain, that the skill and knowledge and genius of the American should go into their midst, and make even more possible, than now seems the case, the growth and advancement of their countries. We have not done this because we have so much within our own midst. Let me say to you, gentlemen of these great manufacturing combinations, and, by the way, I hope you have not been forming any unlawful ones, I rather suspected when Governor Folk did not come himself that he was going to send his Attorney-General; let me say to you, that in your various fields of activity you have great opportunities of which you will no doubt avail yourselves, not alone to advance your commercial interests, not alone to advance the welfare of the various organizations which you represent, but to advance that which must be nearest and dearest to all of you, the

high principles which American manufacturers and American commercialism should represent, to make the world understand that the words industry and integrity are synonymous, and that we stand for the highest ideals of Christianity and commerce. The two words are not unrelated; Christianity and commerce may well go hand in hand, and commerce should and will go down if Christian principles do not continue to be the guide of the men who conduct it. (Applause.)

Tonight, as I heard the strains of "Marching Through Georgia" applauded, and again "Dixie" and "Yankee Doodle" meet with like hurrahs by this multitude, I recalled and wrote upon my card, that I might not forget some mention of a great American whose birthday comes within a few days during this closing month of winter. The birthdays of three great men of our nation are commemorated during this month. The first George Washington (Applause); Washington, the Virginian, first in many ways in the hearts of his fellow citizens. The first great leader of our Continental armies, when we struck off the yoke of foreign despotism and made ourselves a great and free people. (Applause.) Then comes a gentler and a sweeter memory, because in this month, one hundred years ago, Henry Wadsworth Longfellow was born in the State of Massachusetts, born to give to the world the sweetness and the beauty of his poetry, and the songs which hallowed and delighted our childhood hours, and will brighten and solace our declining years. Then comes, next in order of the year of birth, the man who in his character, in his lofty ideals, in his love of country, illustrated the highest, the finest and the best of the many types of the American patriot, the immortal Abraham Lincoln. (Loud applause.) Live up, my countrymen, inspired by your wives and daughters and sweethearts, live up to the ideals of these great men, for this great nation, and then, indeed, will the world make great progress. (Loud applause and cheers.)

Toastmaster Ittner: I will here take upon myself the responsibility of departing in some measure from our regular prepared program. Next to his ability as a poet, as shown at our first session, our Theodore, our "Teddy," is in it as a story teller, and to pay him off for laughing at me yesterday afternoon I am going to call on him for a story. At the recent meeting of our St. Louis clayworkers he took up half our time telling stories. He will tell us one now. (Applause.) It is hardly necessary for me to introduce to you Mr. Theodore A. Randall. (Applause.)

Cries of "He's all right! Who's all right" "Randall."

SECRETARY RANDALL'S STORIES.

Mr. Toastmaster, Ladies and Gentlemen: Mr. Ittner is getting even, but I will get back at him. I can tell a story and it will fit him. He has, as you know, a large family of girls and boys. The boys were good, but like all children, some of them were a little mischievous. George, who is here in the room somewhere, I believe, was particularly mischievous, and at times annoyed his mother a great deal by his pranks. One day when Anthony came home from the brickyard, his "silent partner" met him and said, "Tony, that George has got to be disciplined. He has been up to mischief again this afternoon. He is now hiding under the house, and you have got to go and punish him. Anthony knew better than to disobey orders, and started under the house after George. He had only gone a little way, when he heard George's voice saying, "Hello, pa, is mother after you, too?" (Laughter and applause.)

There is another story comes to my mind as I look into the sea of faces before me. What a splendid gathering this is. You can not appreciate that as I can, for I am looking into your eyes. This is a story on our good friend, Will Purington, in part. They employ a great many men at the Purington plant, and used to do a great deal of blasting in the clay bank, using dynamite. One day, the young fellow who had charge of it, touched off the charge before they were quite ready, and it blew him about fifty feet and down an embankment. Fortunately he was not hurt a bit, and that evening down in town, he was telling about it to a crowd of men. One of them was of a serious turn of mind, and said, "Young man, the Lord was with you, or you never would have escaped alive." The young fellow said, "Well, maybe He was, but if He was He was going some." (Laughter.)

Now it is very plain to see, looking over this sea of faces, that the N. B. M. A., too, is "going some."

I am going to tell something at the risk of being considered a little egotistical, something which I consider about the best compliment which has ever been paid me as secretary of the National Brick Manufacturers' Association. When passing Mr. Purington's chair a few minutes ago, he stopped me and said, "Randall, I am going to suggest some other man for secretary, for if you keep on at this rate, there will not be a town in the country big enough to hold us." (Laughter.) I am glad we came to St. Louis, and I am going to suggest to our executive committee that we come here every second year. But, gentlemen, I want to do one thing while we are here together. I want to lift the glass and say a word in memory of one of our old-time members, one who while he lived delighted to participate in these gatherings, our good old-time friend, Laclède J. Howard, of St. Louis.

Now, ladies and gentlemen, Mr. Ittner thought he was going to put me in a hole. He did not say a word to me about calling me, but the secretary is resourceful, and even if I had not thought

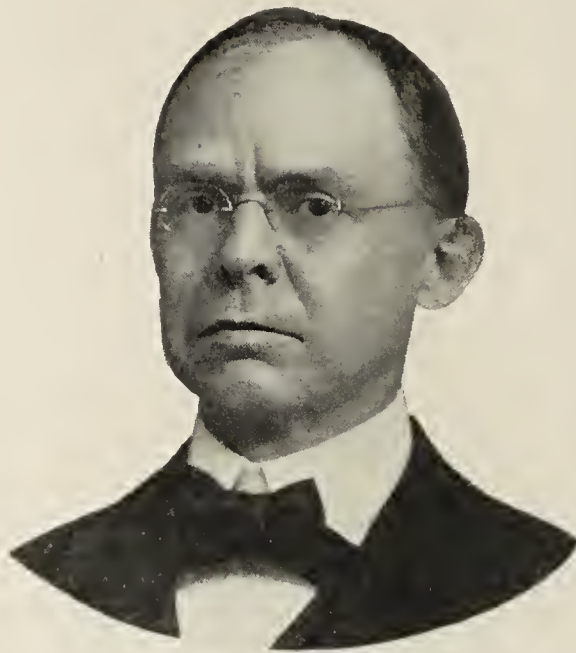
of these stories, I had another resource. I had a substitute, and with the indulgence of the toastmaster, I am going to call on one I love to hear talk, Dr. A. L. Converse, of Springfield, Ill., as my substitute. (Applause.)

Toastmaster Ittner: This is another departure, but it will have to be permitted, because it is Theodore A. Randall. (Laughter and applause.) Mr. Converse, we will be pleased to listen to you.

ADDRESS OF DR. A. L. CONVERSE.

Mr. Toastmaster, Ladies and Gentlemen: I shall talk to you but a moment. I have greater respect for the gentlemen engaged in the clayworking industry than I ever had before, on account of having met them in this national convention, under the most pleasant conditions. The reason that I admire you so much is the exceedingly good taste you have manifested in picking out such amiable and interesting "silent partners." (Laughter.)

When I first came into the convention yesterday afternoon, I was informed by some member of the program committee that I would be expected to make a few remarks at this banquet. I was first notified that the subject that would be assigned to me would be that of "The Ladies." About half an hour afterward I was notified that that subject for me was off. (Laughter.) Notwithstanding I had prepared in that half hour one of the best speeches of my life. (Laughter.) I was told there was a clergyman in St. Louis who had been working on the subject for about three weeks (Laughter), and that the arrangements that had been made by him were such that no person so humble as myself ought to undertake the task. The committee immediately approached me after that, and said we have assigned to you another subject, "The Progress of the World" (Laughter), and I had no more than begun to work up a good speech on the progress of the world than I was



Judge O'Neill Ryan, St. Louis, Mo.

notified that an eminent judge here in St. Louis had been working on that topic about three months (Laughter), and that I must make no allusion to the progress of the world. By that time, I had begun to get a little warm under the collar. The committee said to me, "What will you talk about?" I said, "Give me the world, then there may be something I can talk about at length." They said, "No, John Rockefeller and Andrew Carnegie have got that." (Laughter.)

Now, ladies, and I want to say one thing to you, and these gentlemen, if they could get out, which I am afraid they can not, on account of that which they have been taking as a beverage, I would just as soon they would go out, for if there is anything that I like to do, it is talk to the ladies in confidence. I am somewhat of a Biblical scholar, though you never would suspect it from my looks. I was reading not long ago about Methuselah and Noah and a few others, and I was struck with the thought that there is no reference in the Good Book to the age of women, and I had not much more than begun to reflect on that subject, than I had reached a conclusion that, after all, that fact is responsible for the conundrum upon which all the women have barred us strictly upon this topic. I must ask you that conundrum, and that is "How old is Ann?" (Laughter.) Now, had it ever occurred to you why such a conundrum was proposed and has never yet been answered? You don't show any gray hairs, or crow's feet under your eyes, and we can guess your age within six months; but when it comes to Ann, we are dumbfounded. (Laughter.) Strange as it may seem, my wife and I were married the same day (Laughter); she was about two years younger than me then, and if you will but believe me, I am about twice as old as she is now. (Laughter.) Ladies, I don't know how you do it. It is beyond my understanding and my comprehension. I wish I did know. I wish I did. There was a young man in a Pullman sleeper not long ago, he was a good deal of a dude, and prided himself a good deal on his looks

(I don't suppose he is here tonight.) He took out a little pocket glass and looked at himself and began to brush his hair, and it was as much as the lady who sat behind him could stand. She opened her bag and took out a little chamois (I don't know what women carry them for), and she leaned over and handed it to him and said, "This is what we use." (Laughter.) Now, ladies, I don't know you, I have only been introduced to two or three of you, but I want to apologize for calling you ladies; I should have addressed you as girls, you look so young and attractive. Mrs. Converse is one hundred miles from here (Laughter), and I can say these things to you because I don't suppose any of you would tell her. The ladies are cautious, I tell you; they are watchful; I don't know what I would do without one of them to watch over me.

The Good Book tells us that Adam was made of the same material that you are making your brick of, but that his "silent partner" was taken from one of his ribs. It don't say which side, but I know it was on the left side. I know it was, because it must have been taken very close to his heart, and I think a little of the heart was taken with it. It was not taken from the other side, because that is the gall side (Laughter), and we men are short on heart and long on gall, every one of us. (Laughter.) But this, I do know, that you have kept so close to our hearts ever since that when my heart beats I know what it is beating for. (Applause.)

Now, that speech in regard to the progress of the world, I am sorry the gentleman spoke before I did, for I had a great deal better speech (Laughter), and I would have covered a good deal more ground. I would liked to have talked to you about some of the things that have been real progress in this world of ours. There is the horseless carriage, and the wireless telegraph, and the boneless codfish (Laughter) show how things are going. But, after all, these things that we speak of as being new are, many of



Dr. A. L. Converse, Springfield, Ill.

them, as old as time. I heard of an Irishman not long ago who said he thought they had telegraphs 800 years ago, for in tearing down an old building they had found under the house a piece of wire, and that must have been a telegraph wire. A gentleman who was listening, said, "Now look here, Pat, I was over in Rome not long ago, and they tore down a building that had been there over 2,000 years, and under that building, what do you suppose they found?" "I don't know," said Pat. "They did not find anything," said the gentleman. "It was the wireless telegraph." (Laughter.)

Now, I have taken up too much of your time (Cries of "Go on, you are all right"); but I want to say to you that in this day and generation, with all the progress we have been making, we are a cautious and careful people. There was an old maid down in our city who was a school teacher, and she had occasion to get off a trolley car, and she wanted to cross the track, and she said to the conductor, "Will it give me a shock if I should step in the track," and he said, "No, madam, not unless you should put your other foot on the trolley wire." (Laughter and applause.) But you may say as much as you please about the aged schoolma'am, I admire her. I remember one of the sweetest women that ever lived who was a school teacher. She used to take me on her lap, face downward. (Laughter.) She is dead now, and I love her more than I ever did. (Laughter.) But I must stop, you are going to hear that magnificent address on "Women," and all he says to your credit I am going to endorse it before I sit down. My dear parson, I am with you. (Applause.)

Before I sit down, I want to tell a peculiar little thing that happened over in Indianapolis. They are paying a great deal of attention over there to giving the children seeds for planting in the garden. One little boy came home from school and said, "One little boy has succeeded in raising the biggest squash," and Mr. Randall said to him, "My son, how large a squash was it?" "Oh," said the lad, "it was a pretty large squash." Mr. Randall said,

"Was it as large as your head?" "Yes," said the boy, "it was larger than my head." "Well, was it as large as my head," said Mr. Randall. "It was longer," said the boy, "but it was not as thick." (Laughter.)

Toastmaster Ittner: Ladies and gentlemen, we will now proceed with the program, and we will try to adhere to it until we have gotten through, for the hour is growing late. It may be we will depart in one or two instances, but it will be only for a few moments. The next toast on the program is "Up-to-Date."

"After all, we are judged in our journey through life,
By the gray matter under our hoods,
And the men that win out in the strenuous strife,
Are the men who deliver the goods."

Now, the gentleman who is to respond to this toast comes from the city by the lake, and though this evening is the first time I have had the pleasure of meeting him, I have met a brother of his in many of our past conventions with a great deal of pleasure. I am told that "Dick" Kimbell, as he is known in his native town, is a jolly good fellow, and I take extreme great pleasure in introducing to you Mr. E. C. Kimbell, of Chicago. (Applause.)

UP-TO-DATE.

BY E. C. KIMBELL, CHICAGO.

Mr. Toastmaster, Ladies and Gentlemen: I feel that my part in the program tonight is an undeserved honor. In fact, I can liken myself to the bashful bridegroom who, at the wedding feast, was called upon to respond to a toast. Rising slowly to his feet and unconsciously placing his hand on the shoulder of the bride, he said, "Friends, I can't speak; in fact, I refused to respond if called upon. All I can say is, that this thing was forced upon me."

In December last, Mr. Randall informed me that he had me slated and would not listen to a refusal. He comforted me by saying that the real talent of the convention would be used during the regular sessions, and as custom demanded the usual diversion at the banquet, the committee were not very particular as to who they got; however, I will, in as few words as possible, speak to my subject, "Up-to-Date," though I am honest to confess that my feelings are akin to those of the speaker who was introduced by the manager of a Chautauqua association, who, in his opening remarks, advised the audience that owing to a deficit in the treasury at the close of the last session, the management had secured cheaper talent for the present session. (Laughter.)

I am not very strong on the matter of after-dinner talks, and in fact, I sympathize deeply with the prophet Daniel, of whom it is related that at the numerous functions and banquets tendered him by his constituents before his reverses, he was called upon to such an extent for after-dinner speeches that he was always ready to dodge anything that looked like a committee on arrangements. When at last, he was deposited gently but firmly in the lion's den, he remarked, "Thank goodness, if there is to be any after-dinner speech, I won't have to make it." I might add that Daniel was up to date, as I believe he is the first one of record to receive an immunity bath, neither was he spoiled by lionizing. Of course, if Eve could have handed Adam a lemon, but she didn't, and so missed the opportunity.

Any individual or corporation to be a success must be up-to-date. This qualification is clearly emphasized in the clay industry, by comparing present methods with those in vogue twenty years ago. It is in my time that a down-town office as an adjunct to a brickyard was putting on metropolitan airs and the boss usually spent most of his time on the yard.

In the early days of Chicago, but since that milestone in its history, the fire, any noon at Old Quiney Number Nine, an emporium at the northwest corner of LaSalle and Randolph streets, wherein is dispensed the beverage that makes Mil—, I mean St. Louis, famous, could be found contractors and brickmakers, settling old accounts, making new ones, and all contributing with an impartial hand to the gentlemen in white aprons. The brickmaker and the contractor literally carried their offices under their hats. I am not sure but the phrase, "Talking through his hat," originated at that time. In making reference to the crude methods which obtained in the early days of the clay industry, I do not deprecate the indomitable will and sturdy efforts of the pioneers who laid the foundations of present conditions, by risking their money and reputations in demonstrating the possibilities of the industry, and the advancement of their ideas is but the advancement of human progress incident to the day and age. The brickmaker of a quarter of a century ago, who, innocent of the unknown power of steam as applied to the manufacturing end of the industry, and also equally innocent as to artificial drying, who made his "run" in the late spring, all the summer and early fall, closing his yard at the first heavy frost, and then (possibly) watching his bank account crawl up, enabling him to take up his notes and sometimes leaving him a balance with which to experiment with the following season; I claim this brickmaker was up to date, for that time, but only a few of the old time manufacturers were willing to risk their profits in new ideas, the utility of which called for both money and nerve, and many of the brickmakers, both in the past and the present,

have learned the definition of "Experience," as that quality which enables them to make new mistakes.

Coincident with the advancement of clay products has been the advancement of clayworking machinery.

I can recall the old-time stunt of 12,500 brick per day, for the stop mud machine, and I can recall the advent in the Chicago market of the first so-called "Sausage" brick machine, in the early 80's, guaranteed to turn out 40,000 brick per day. This same machine today can deliver 200,000 to 225,000 brick per day to the offbearing belt. That's going some, and when we couple the idea as oozing from Philadelphia, words of eulogy are as "Sounding brass and tinkling cymbals."

Another instance of up-to-datedness is a monthly magazine, published by a brick machine concern, and which reaches every manufacturer of clay products. If any are missed, Mr. Martin doesn't know it.

This reminds me that considerable Keewah is necessary from start to finish, in our particular line.

From the expression on some of the faces near me, I have an idea that "Keewah" is hardly understood; I will illustrate. When Secretary Taft was in the Philippines he addressed a large body (I use this term in the plural) of natives, telling them, among other things, the advantages of becoming civilized and particularly under the American system. The delivery of his address was necessarily slow, owing to the interruptions of the interpreter and cries of "Keewah" and other kinds of applause from the audience. When he had finished, he asked the meaning of "Keewah." "That," said the interpreter, "in Filipino is all same as what you call hot air." (Laughter.)

I believe that the progressive ideas entertained by the comparative few of the clayworkers a number of years ago were about as well understood by their associates as were the efforts of the evangelist who, in his earnest endeavors to interest his audience and to impress upon them the necessity of keeping in the straight and narrow way, and incidentally the uncertainty of life, said: "My hearers, do you know that with my every breath, a human life goes out." A voice back in the hall sung out, "Gee, why don't you eat cloves." (Laughter.)

And now, a word for the city and the clayworkers of whom we are the guests this evening.

Prior to the Louisiana Purchase Exposition, Saint Louis had a national reputation as a rest cure resort. But the big show opened a veritable Pandora's box, minus the ills, and today we see a city which is a revelation even to its makers, and with an assured future which savors of a modern Aladdin.

As to the brick industry of Saint Louis, it started with the brand "Sterling," and continues to hold its own. (Applause.)

As to our entertainers, I have in a limited time endeavored to single out some individual from the local committee whose personality is in evidence on every hand, let the coat fit whom it may. I have obtained the information under pressure, principally hydraulic, and find that it fits Hugh. (Laughter and applause.)

Many of our office systems are apparently up to date in the use of the loose leaf system; Nature has recorded the changing seasons by this system, beyond the memory of man. If the clayworkers can continue in the future their advancement, in the same ratio as in the past, their success is assured.

I recall the criticism some ten years ago of a well meaning brickmaker who could see little use in exchange of ideas in our line and he doubted that any large per cent. of the men attending could assimilate enough to pay for their time. His position reminded me of the slightly deaf gentleman present at a banquet and discussion on vegetarian lines. A young lady at his right appealed to him to sustain her in her opinion as to bananas. He answered that he had no liking for new fangled things and would stick to the old fashioned night shirt. (Laughter.)

I am now in the position of the amateur lecturer who was informed by his lantern man that the lime light supplies would last about two minutes longer: Ladies and gentlemen, I must conclude as my gas is giving out. I thank you. (Applause.)

Toastmaster Ittner: The next toast on the program is "Architecture."

"The architecture is the printing press of all ages, and tells the history of the state of society in which it was erected."

I will call upon Mr. E. J. Russell, of the firm of Moran, Russell & Garden, St. Louis. (Applause.)

ARCHITECTURE.

BY E. J. RUSSELL, ST. LOUIS.

Mr. Toastmaster, Ladies and Gentlemen: I am exceedingly sorry that Dr. Converse was not assigned my toast, because I can assure you I would not have felt in the least aggrieved had I been compelled to step aside in his behalf. Unfortunately I am not a speaker; I can draw a little, as perhaps my work will show for itself.

I am going to talk on architecture because I was asked to give a little shop talk and not the shop talk of a brickmaker, but the shop talk of the architect. A few days ago in Washington, the American Institute of Architects celebrated its fiftieth anniversary. That institute was organized by about twenty-five men, who at that time represented the best of the profession. We were hardly a profession then, as a rule the architect and contractor were one and the same. Their problem was to put up four walls and a roof. That, perhaps, very fitly represented our profession. Today, the

architect must be a trained man, but must not only put up his four walls and his roof, he must study the subject, he must investigate the purpose to which this building must be put. He must so arrange his work that the man who is to occupy his building can administer his affairs in the most economical manner. He has to know a multiplicity of things in connection with the building today that was not thought of fifty years ago. He has got to know the nature of the soils in order that the foundation may be strong; he has got to know about concrete and brick that he may put up the walls with sufficient strength to hold the roof. And today, in order to make a beautiful building we turn to brick. Brick occupies first place of all the materials we use in our work. (Applause.) He has got to be a trained engineer, both mechanical and electrical, as well as civil. He has got to have a corps of men under him in order to produce the best results. He must know plastering and carpentering, glazing and plumbing. He must know something about iron work and steel work in order that he may do his work intelligently. The sky-scraper of today is largely an engineering enterprise which the architect clothes with the best thoughts, the best work of which he is capable.

I do not know that I want to keep you here any great length of time. I appreciate very much the fact that I have been invited to speak, although I did not have, as Judge Ryan did, three months in which to prepare my speech (Laughter), nor even three weeks. Mr. Ittner was kind enough to come around on Thursday of last week and say to me that he had gone around among the profession and that I was the last chance, and the architectural profession had to be represented at your banquet. (Laughter and applause.)

Toastmaster Ittner: Ladies and gentlemen, with your consent I desire to depart from the regular program, as Mr. Russell took but a very limited amount of your time. I think



E. C. Kimbell, Chicago, Ill.

you will all be pleased to hear from Mr. Wm. H. Hunt, of Cleveland, Ohio, who will say a few words to us. (Applause.)

ADDRESS OF MR. WM. H. HUNT.

Mr. Toastmaster, Ladies and Gentlemen: A boy was given by his father a quarter as he was leaving his home for divine service. He was asked upon his return if he had placed the quarter upon the collection plate. "No, father," he said, "As I was about to do so, the minister said, 'The Lord loveth a cheerful giver,' and concluding that I could give ten cents more cheerfully than I could the quarter, I placed a dime upon the plate." (Laughter.)

At the first session of the convention I was expected to respond to an address of welcome by the Mayor of St. Louis. Mayor Wells was not present. Therefore, I made but a part of the speech prepared for that occasion, and having, therefore, placed as yet but a dime upon the plate, I am permitted at this time to dispose of at least a part of the remainder of my quarter. (Laughter.)

Speakers who have preceded me have been generous in expression of compliment for the ladies. We have made an expression of the high esteem in which we hold our worthy Secretary, and I would choose this occasion to pay, particularly, our compliments to the great profession that is so ably represented by Mr. Russell who has spoken for the American architect. It was at the Old Point Comfort convention that the question was first raised, "What is our relationship as clayworkers to the architect; to what extent are we indebted to the architect for the great prosperity that has come to the clayworking industry of this country?" It was at that time that we first made formal acknowledgement of our dependence upon the architect, his profession being admitted the strong right arm that sustains the clayworking industry. (Applause.) We have, therefore, made it a feature of each succeeding convention to invite to our meetings an architect of prominence who might advise us as to the manner in which we could serve the architect most intelligently. Upon one occasion Mr. Blackall, of Boston, favored us with a most ably prepared address. Upon another occasion Mr. J.

Cilpson Sturgiss, also of Boston. At another time Mr. J. Milton Dyer, of Cleveland, and today those of us who had the pleasure of hearing the splendid paper prepared by Mr. Charles Sumner Schneider, of Cleveland, will concede that his address has given much that is helpful in the conduct of our business.

I am reminded of the pedestrian whose progress was interrupted by a speeding automobile. He was suddenly knocked to one side of the street and those who rushed to his assistance said to him, "Did you get the number of the car?" He said, "No, I heard it, I felt it, I caught the odor suggestive of the car's energy, yet I did not see it." (Laughter.)

I am reminded by the story of a great force that is helping us in our industry, sometimes unseen by those of us engaged in the practical side of the business, and that is the architectural journals that are educating the architects in the practical use of our material. We know and acknowledge our debt to THE CLAY-WORKER, to Brick, and the Clay Record, but the Brick Builder, edited by our good friend Arthur D. Rogers, of Boston, The Clay Architectural Record, and journals of similar character, are intensely loyal to clay products, and I therefore desire in behalf of the clayworkers of this country to make this acknowledgement of the debt we owe to them as well as the architect, and to pledge to the American architect our best endeavor to meet their most exacting requirements.

In conclusion, Mr. Toastmaster, inasmuch as each preceding speaker has been introduced by a formal toast, may I not take a bit of poetic license and propose a toast to the American architect. I want every man to rise and drink to the toast which I propose:

We shall all come as of duty
To worship the paths of their bent,
To gaze on the shrines of their beauty
That rest in our hearts content.

(Applause.)

Toastmaster Ittner: We will now have the toast, "Our



Fritz Salmen, New Orleans, La.

Backers," or "Our Silent Partners," as I mentioned a moment ago.

"For once, the rose and the lily must yield first place," and for this toast I have the great pleasure of calling on Rev. W. J. McKittrick, of St. Louis. (Applause.)

"OUR BACKERS."

BY REV. W. J. MCKITTRICK, ST. LOUIS.

Mr. Toastmaster, Ladies and Gentlemen: I was asked to respond to the toast of "Our Backers," but I was told that I was expected to speak on the subject of "Our Ladies." I suppose I should not begin my five minute talk without saying something about the "Silent Partner." The "Silent Partner" reminds me of one of the most brief and eloquent speeches that was ever delivered on the subject of women. It was delivered by an old bachelor, and he rose up and said, "I am to speak on the subject of 'Women.' Now, dear friends, women, generally speaking—well, that's all; generally speaking." (Laughter and applause.)

Our civilization is held together by women, because if it were not for them there would not be any civilized men at all (Laughter), but only a lot of uncouth animals chattering like monkeys in the tree tops, or growling for bones along the ground. It is the ladies who have drawn a silken smoothness along humanity, have put a satin finish upon its rough surface, have breathed sweet poetry into its ears and lead it from the desert to fountains of pure water, have charmed the barbarism out of its heart, has saved it a deal of profanity by sewing on its buttons, and has led it around like a dancing bear until it has danced its way into paradise. (Applause.) I am perfectly willing to admit here and now that the women are made of finer clay than the men are. All you men may

be bricks, but you will never be as fine bricks as they are. (Applause.) Why, how much farther and quicker can they see than we do. The old lady can see around the corner, while the old man is putting on his spectacles, and the young widow, when she once begins to sit up and take notice, how she can accurately discern the outside of a word or the inside of a smile; and how a woman can see that a man is a fool long before that useful fact is revealed to the man himself by a sort of progressive revelation. How easily she can see a hole in a man's character and fill it with dynamite or soothing syrup, as the case may demand. How quickly she sees our virtues and makes excuses for our faults. She not only sees, but she feels better than we do. I pick up two napkins and I feel them and they feel alike and look alike to me, but a woman puts her little thumb down on them and she finds they are as different as Solomon, who had several hundred wives, and Gordon McNeil, who never had sense enough to get one. (Laughter and applause.)

Not only in the feeling of her fingers and thumbs, but in the finer feeling of her soul. She is the good Samaritan of the ages. You can hear the rustle of her robes all the way from Jerusalem to Jericho.

"O, woman! in our hours of ease
Uncertain, coy and hard to please,
When pain and anguish wring the brow,
A ministering angel thou!"

Some people say they are at times a little sentimental, a little extravagant, a little emotional, a little hysterical on the upper notes when there is nothing to be excited about; but would you take that away from them and nail them down to hard facts? Why, dear friends, there are too many facts in this world now. (Laughter.)

I read a piece of poetry about women the other day ridiculing their extreme sentimentality, something like this:

"O, the sadness of her sadness, when she's sad,
And the gladness of her gladness when she's glad.
But the sadness of her sadness and the gladness of her gladness
Isn't in it with the madness of her madness when she's mad." (Laughter.)

Nail them down to hard facts! Never! Why, friends, after a sharp fact has run up your leg and a hard fact has hammered you over the head, and a hot fact has burned your fingers, and a cold fact has frozen your heart, and a disappointing fact has taken the gladness out of your soul, thank God for a little poetry and the little music, and the song of the noisy stream over its pebbly bed, and thank God for all the women of the world from the Garden of Eden to the Planters Hotel. (Loud applause.)

Toastmaster Ittner: We come now to the last regular toast upon the program, "Sunshine."

Oh, the north wind and the sun!
How each loved the other one;
Full of fancy, full of folly,
Full of jollity and fun."

This toast will be responded to by one of the old-time members of the Association, Mr. F. Salmen, of New Orleans.

"SUNSHINE."

BY MR. F. SALMEN, NEW ORLEANS, LA.

Mr. Toastmaster, Ladies and Gentlemen:

Sunshine. It is a small, simple word, and yet it covers one of the greatest, most complex and mysterious subjects that could be named. A child can understand the word, and to what it applies, but a Solomon could not make plain to Man's mind the full extent of its meaning and much less can I, a Salmen.

And, speaking of children and Solomon, I guess I'll have to spring that chestnut about the small tot asking its father questions. You know how it is, that is, all of you that have got children, for you've been there yourselves, been asked innocent looking questions by an innocent little voice and found yourself unable to satisfy the juvenile mind. You have also been asked questions at inopportune times and at other times when you didn't want to be bothered or at least made out that you didn't, so as to bluff your way around giving an answer to something that was beyond you. You can appreciate how this father felt then when one evening while he was reading the paper after supper, his little tot came along seeking enlightenment about the sunshine and the moonshine.

"Papa," she said, "what makes the sun shine in the day time and the moon shine at night?" After the question had been repeated a time or two, the father became a little impatient and said, "Run along away—ask mamma and don't bother me."

The little tot appealed to its mamma, who frankly admitted she didn't know, and then turned back to its father, which the child-mind recognizes and respects as the court of last resort—till it gets bigger and learns better. Remembering its former rebuff, the child paused and did some thinking, out of which it evolved the following:

"Papa, does God just hand out the sun to make light in the day time and then take it in and hang out the moon at night so as not to have such a bright light while we're sleeping?"

"Yes, yes, that's it. Now, run along and don't bother me any more."

A few days afterward, while the child was outside playing, it happened to look up and see the moon in daytime. The tot stopped,

puzzled for a minute, looked around and saw the sun, too, and was still more puzzled for a while. By and by, however, she began to smile, having discovered in her juvenile mind a satisfactory solution of the phenomenon. Then she broke and ran into the house to her mamma and excitedly exclaimed:

"Mamma, mamma, I got a joke on God."

Her mother was startled and shocked beyond speech for a moment. However, she managed to stay the tumult of her emotions for a minute to inquire of the child what it was she meant.

"Why," the innocent little one replied, "God hung out the sun this morning and forgot to take in the moon." (Laughter.)

But while the child made a ludicrous application of a small amount of knowledge, it is only in a sense what we all do more or less all the time, and our knowledge is limited to. We know, speaking in a physical or material sense, that sunshine is not only the sustaining power of life, but it is life giving. When we come to consider it seriously and all its importance in material things, while we can not encompass with the human mind all that it stands for, we can realize enough to understand why the ancient peoples worshipped the sun as the great power ruling over the world.

Now, while our capacity is limited and our appreciation may not be as fully shown as it should be in the material application of sunshine, that is really nothing to our lack of understanding and appreciation of mental sunshine—of letting the sunshine in our minds give us health and happiness and brighten the way for those we come in contact with.

Without mental or spiritual sunshine, our social life which, after all is the biggest part of human existence here, would wither and die.

Sunshine should surround us and be all permeating in our minds, just as it is always present around the earth. It is too much to expect it to always shine on us brightly and no clouds intervene. Clouds now and then, made of the troubles of life, temporarily obscuring the brightness, serve to make it more appreciated. At least, it should be more appreciated, and the art of diffusing sunshine should be more cultivated by every one. We let troubles darken the way for us at times and drive out the sunshine in our hearts, when by a little effort on our own part, or a little help from some one else, we could dispel the clouds.

That's what I'd like to do here—do a little cloud dispelling and a little rooting for sunshine, for the brighter side of life, but I don't feel big enough for the job. It's one of those cases where the Secretary has cut off for me a bigger chunk than I can masticate. It all looked so big and I felt so small in comparison and so incompetent to cope with other orators that would be here, that I was panicky for a while and almost decided to stay at home in order to get around the unenviable attitude I am placed in, but by and by I bethought me of a friend, a typical Southern Colonel, who is seldom at a loss for something to say, no matter what comes up; and I appealed to him to help me out a little in this thing. Told him it was up to me to talk "sunshine" and the reputation of the sunny South was at stake, especially so after the experience a number of this Association with their wives and daughters suffered while honoring us with their presence down in the Pelican State two years ago, when they failed to find sunshine, but in its stead had to wade in mud through rain.

"Sunshine nothing," the Colonel snorted, after meditating the subject enough to work up steam. "You let sunshine and moonshine alone. They'll take care of themselves if you'll give them half a chance. The thing for you to do is to tell that aggregation of brick men to solve the race problem. Give them the real, genuine, home-grown solution of the negro question."

"But, my dear Colonel," I expostulated. "That's a serious subject and a rather embarrassing one, if you'll permit me, in a meeting where conflicting ideas and opinions are likely to obtain on the matter, and what I think they want out of me is something nice and bright with a little fun in it if I can get it in and I don't want to take our family troubles up there, anyway."

"You don't; well, it's not what you want, but what they want you should look after, my boy, and I know that's what they want. Most of the boys that are there will come from north of the Ohio river, and you can not meet a man north of the Ohio river that he don't want to know something about the race problem and, while he may not want you to solve the problem for him, he does want you to furnish him information so that he can solve it for you and himself, for the question is gradually interesting the citizens north of the Ohio river equally as much as us down South. Besides, such problem solving is the great fad of the hour. It's in style, and if you don't aim to be in style you might just as well be at home and this nigger question is about the only thing that they haven't solved. There's Governor Folk that has put boodlers on the run, and there'll be a lot of other folks there that have trailed down the iniquities of all sorts of things from the Standard Oil trust to the milk man, so there is nothing left for you to wrestle with and be in style on but this race problem, and this is your chance to sail in and make a killing."

"How is that?" he said, when I mumbled something about my inability to furnish a tangible solution to this great question. "You don't know the solution? Well, I'll tell you about it, that's what I'll do, sir. I've been experimenting with this question myself and I can speak by the book, sir, that's what I can. One of the subjects I experimented with was a flat-headed, white-eyed, blue-gum nigger that goes by the name of Smoke. Smoke runs the elevator and does add jobs for the cigar boy in the building. I didn't notice

much difference between him and the other darkies around the building, nor had I been looking for any light on this great problem until one day I overheard, or rather, was made the recipient of some of his comments about an educated young colored gentleman that had stolen some money from his employer."

"I tells you, boss," Smoke was saying to me, "a nigger is just a nigger, dat's all he is and dat's all the Lord ever intended him to be. When he gits to be anything else he gits into trouble. When he goes to school and learns to write all dem pretty things in books and gits to be an educated colored person, I tell you, boss, den you better let him alone, 'cause somethin's going to happen. 'Cause a nigger can't be nothin' but a plain nigger, dat's all he is and dat's all the Lord aim him to be." (Laughter.)

"Oh, look here, Colonel," I said, rather impatiently, too, I expect, "I am much obliged to you, and that's a fairly interesting story about a darky which may be can and may be can not be improved on, but I thought you were going to tell me how to solve the race problem. This thing you have told me is not any solution of the race problem, nor have I yet defined sunshine."

From the appearance of its effect on all faces assembled here at the convention, sunshine has given renewed life and happiness to each brickmaker, and we are all well satisfied with results of our last season's labor, and I hope that the year we now enter will prove equally as sunshiny for each and every one of us here present as for those of our craft that could not be with us at this meeting.

By the way, one more word and that is, we brickmakers of Louisiana hope soon to be honored with a meeting of your convention to be held in our city of New Orleans. (Applause.)

Toastmaster Ittner: Ladies and gentlemen, we will now



Robert McNeil, St. Louis.

be favored with something a little extra by our excellent quartette. They will now render "Grand Old Ocean," after which we will sing "Auld Lang Syne."

IMPRESSIONS OF A NEW MEMBER.

Editor THE CLAY-WORKER:

I appreciate as never before the fact that there is a great deal of work to be attended to in conducting and recording the proceedings at a convention such as we have just attended, most particularly when all depends upon one person. Fortunately for the rest of us you are the right man in the right place without question. As you know, it was the first brickmakers' convention which I had attended, but it will be a long time before I shall forget the pleasant and profitable week spent in St. Louis, and I want to thank you again most heartily for the warm reception which you gave us.

You will find enclosed my check for \$2.00 in payment for a year's subscription to THE CLAY-WORKER, which I realize is the best paper published in the interest of the brickmakers. Mr. Edwin Brockway joins me in sending you and Mrs. Randall our best regards.

Very sincerely yours,
Fishkill on Hudson, N. Y.

Jos. D. CITE.

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 Geo. M. Krick.....Decatur, Ind.
 John C. Boss.....Elkhart, Ind.
 H. C. Kleymeyer.....Evansville, Ind.
 E. C. Miller.....Fort Wayne, Ind.
 F. G. Banker.....Greenfield, Ind.
 Adams Brick Co.....Indianapolis, Ind.
 Denton F. Billingsley.....Indianapolis, Ind.
 Robert Elliott.....Indianapolis, Ind.
 Ed Gerard (National Dry Kiln Co.).....Indianapolis, Ind.
 Jas. W. Hensley.....Indianapolis, Ind.
 Indianapolis Terra Cotta Co.....Indianapolis, Ind.
 Marion Brick Works.....Indianapolis, Ind.
 C. & A. Potts & Co.....Indianapolis, Ind.
 Theo. A. Randall.....Indianapolis, Ind.
 James E. Randall.....Indianapolis, Ind.
 O. H. Root.....Indianapolis, Ind.
 W. W. Winslow.....Indianapolis, Ind.
 Jake A. Behrick.....Mt. Vernon, Ind.
 Jacob Keller.....North Judson, Ind.
 Chas. H. Read.....Oakland City, Ind.
 J. G. Jones.....Pittsboro, Ind.
 Wm. M. Read.....Princeton, Ind.
 Madden & Co.....Rushville, Ind.
 E. A. Morse.....South Bend, Ind.
 O. S. Adams.....Terre Haute, Ind.
 Will P. Blair.....Terre Haute, Ind.
 J. A. Dally.....Terre Haute, Ind.
 C. W. Hoff.....Terre Haute, Ind.
 R. D. Culver.....Veedsburg, Ind.
 Lawrence F. Culver.....Veedsburg, Ind.
 Wm. H. Neff.....Veedsburg, Ind.
 Granite Brick Co., The....Burlington, Ia.
 Emil N. Nagel.....Clinton, Ia.
 R. W. Besley.....Council Bluffs, Ia.
 E. A. Wickham.....Council Bluffs, Ia.
 C. A. Marshall.....Cresco, Ia.
 H. L. Tramp.....Creston, Ia.
 E. A. Brecht.....Des Moines, Ia.
 Eagle Iron Works.....Des Moines, Ia.
 Flint Brick & Coal Co....Des Moines, Ia.
 C. A. Rawson.....Des Moines, Ia.
 H. A. Rawson.....Des Moines, Ia.
 S. K. Leacox.....Keota, Ia.
 F. A. Stephenson.....Mason City, Ia.
 D. F. Morey.....Ottumwa, Ia.
 C. J. Holman.....Sergeant Bluff, Ia.
 Tom W. Green.....Sioux City, Ia.
 Paul Beer.....So. Des Moines, Ia.
 C. B. Platt.....Van Meter, Ia.
 Victor C. Vance.....West Point, Ia.
 Sanshi-Muto.....Tokyo, Japan
 Atchison Paving Brick Co..Atchison, Kan.
 Otto Brett.....Buffalo, Kan.
 H. J. Huinskamp, Jr.....Buffalo, Kan.
 E. R. Dick.....Coffeyville, Kan.
 B. E. LaDow.....Fredonia, Kan.
 J. J. Amos.....Humboldt, Kan.
 Chas. Francis.....Independence, Kan.
 L. L. Ponsler.....Iola, Kan.
 George White.....Lawrence, Kan.
 B. W. Ballou.....Neodesha, Kan.
 A. R. Batley.....Pittsburg, Kan.
 Thomas H. Gwynne.....Pittsburg, Kan.
 Willis Edson.....Topeka, Kan.
 D. Stewart Miller, Jr.....Cloverport, Ky.
 A. Meier & Co.....Covington, Ky.
 T. W. Spinke.....Covington, Ky.
 E. R. Dillehay.....Danville, Ky.
 Kleymeyer & Klutey Brick & Tile Co.....Henderson, Ky.
 George D. Dalton.....Hopkinsville, Ky.
 H. W. Katterjohn.....Paducah, Ky.
 Givens Brick Co.....Providence, Ky.
 G. Godchaux.....Abbeville, La.
 C. N. Adams.....Alexandria, La.
 J. R. Randolph.....Ruston, La.
 F. Salmen.....Slidell, La.
 Baltimore Brick Co.....Baltimore, Md.
 C. C. Bartgis.....Baltimore, Md.
 Samuel R. Busey.....Baltimore, Md.
 Jno. H. Gels.....Baltimore, Md.
 Independent Brick Co.....Baltimore, Md.
 Albert D. Klein of J.....Baltimore, Md.
 Jacob Klein.....Baltimore, Md.
 Louis N. Rancke.....Baltimore, Md.
 Chas. W. Slagle, Jr.....Baltimore, Md.
 Union Mining Co.....Baltimore, Md.
 T. H. Mitchell.....Salisbury, Md.
 Glen Perdue.....Salisbury, Md.
 Victor Cushwa & Sons.....Williamsport, Md.
 Edward D. Emerson.....Boston, Mass.
 Frank G. Evatt.....Boston, Mass.
 Geo. M. Fiske.....Boston, Mass.
 Albert H. Gleason.....Boston, Mass.
 John W. Hahn.....Boston, Mass.
 Parry Brick Co.....Boston, Mass.
 A. D. Rogers.....Boston, Mass.
 Alfred J. Rogers, Jr.....Boston, Mass.
 Spiers-Fish Brick Co., The..Boston, Mass.
 Waldo Bros.....Boston, Mass.
 A. J. Wellington.....Boston, Mass.
 F. L. Wright.....Boston, Mass.
 Ernest Yates.....Boston, Mass.
 C. C. Dyer.....Greenfield, Mass.
 William Mahanna.....Lenox, Mass.
 W. A. Bailey.....Northampton, Mass.
 C. H. Leathe.....Otter River, Mass.
 C. F. Leathe.....Otter River, Mass.
 Wm. Sanborn.....Somerville, Mass.
 T. D. Potter.....Springfield, Mass.
 E. L. Cook.....State Farm, Mass.
 B. C. Pierce.....Taunton, Mass.
 Edward C. Bryan.....Westfield, Mass.
 J. J. Miller.....Benton Harbor, Mich.
 G. H. Atherton.....Boyne City, Mich.
 A. Wagner & Son.....Dearborn, Mich.
 D. Diver.....Deerfield, Mich.
 American Blower Co.....Detroit, Mich.
 George H. Clippert & Bro...Detroit, Mich.
 Jacob Daniel.....Detroit, Mich.
 John S. Haggerty.....Detroit, Mich.
 Wm. D. Southwick.....Detroit, Mich.
 Thomas Bros. Co.....Detroit, Mich.
 F. H. Wolf Brick Co.....Detroit, Mich.
 W. J. King.....Grand Blanc, Mich.
 J. F. Lewis.....Jackson, Mich.
 Holton Brick Co.....Muskegon, Mich.
 Jno. L. Jackson.....Saginaw, Mich.
 Mershon, Schuette, Parker & Co.....Saginaw, Mich.
 Saginaw Paving Brick Co..Saginaw, Mich.
 H. Brewer & Co.....Tecumseh, Mich.
 Zealand Brick Co.....Zeeland, Mich.
 H. H. Farnham.....Brickton, Minn.
 Ira C. Jones.....Minneapolis, Minn.
 A. C. Ochs.....Springfield, Minn.
 E. L. Young.....Aberdeen, Miss.
 Walter Clark.....Clarksdale, Miss.
 S. A. Williams.....Clarksdale, Miss.
 W. B. Taylor.....Jackson, Miss.
 J. W. Parker.....Meridian, Miss.
 R. W. Davis.....Brookfield, Mo.
 I. C. Wheeler.....Carthage, Mo.
 J. E. Meek.....Chillicothe, Mo.
 C. E. Miller.....Festus, Mo.
 John A. Hensley.....Fulton, Mo.
 H. A. Bastien.....Illmo, Mo.
 Walter S. Dickey.....Kansas City, Mo.
 Robert Nesch.....Kansas City, Mo.
 Claude E. Fuller.....Kansas City, Mo.
 Geo. H. Smith.....Kansas City, Mo.
 L. C. Moore.....Memphis, Mo.
 J. J. Hoffman.....Milan, Mo.
 O. W. Renkert.....Moberly, Mo.
 The Tuttle and Hudson Brick Co.....Moberly, Mo.
 Carroll Connett.....St. Joseph, Mo.
 A. Eagon Arbuckle.....St. Louis, Mo.
 Frederick E. Bausch.....St. Louis, Mo.
 A. C. Boughton.....St. Louis, Mo.
 John P. Camp.....St. Louis, Mo.
 Christy Fire Clay Co.....St. Louis, Mo.
 Jno. Dell.....St. Louis, Mo.
 Evans & Howard.....St. Louis, Mo.
 Fernholtz Brick Machine Co.....St. Louis, Mo.
 R. F. Grady.....St. Louis, Mo.
 J. J. Gledhill.....St. Louis, Mo.
 W. P. Grath.....St. Louis, Mo.
 E. L. Hess.....St. Louis, Mo.
 Otto Hensel.....St. Louis, Mo.
 Hydraulic Press Brick Co..St. Louis, Mo.
 Anthony Ittner.....St. Louis, Mo.
 E. E. Johnston.....St. Louis, Mo.
 Laclede Fire Brick Co.....St. Louis, Mo.
 McNeil Pressed Brick Co...St. Louis, Mo.
 S. Mitchell.....St. Louis, Mo.
 National Press Brick Co...St. Louis, Mo.
 Otto C. Oehler.....St. Louis, Mo.
 Lemon Parker.....St. Louis, Mo.
 Edward J. Ryan.....St. Louis, Mo.
 W. F. Scott.....St. Louis, Mo.
 J. Stocke.....St. Louis, Mo.
 G. E. Thomas.....St. Louis, Mo.
 R. A. B. Walsh.....St. Louis, Mo.
 H. J. Wedel.....St. Louis, Mo.
 H. A. Wheeler.....St. Louis, Mo.
 A. F. Williams.....St. Louis, Mo.
 J. M. Williams.....St. Louis, Mo.
 M. F. Williams.....St. Louis, Mo.
 Versailles Fire Brick & Clay Mfg. Co...Versailles, Mo.
 J. G. Hammer.....Butte, Mont.
 Charles H. Bray.....Helena, Mont.
 J. W. Turner.....Burnham, Neb.
 A. Koehler Company.....Geneva, Neb.
 C. B. Hutton.....Hastings, Neb.
 C. F. Kaul.....Madison, Neb.
 M. S. Storer.....Nelson, Neb.
 S. A. Corneer.....Omaha, Neb.
 H. J. Edwards.....Omaha, Neb.
 G. E. Goldner.....Omaha, Neb.
 V. R. Gould.....Omaha, Neb.
 John L. Neble.....Omaha, Neb.
 J. Fred Smith.....Omaha, Neb.
 William Sutton.....Table Rock, Neb.
 George Frank Ball.....Keene, N. H.
 William E. Turner.....Rochester, N. H.
 Hubert Somers.....Atlantic City, N. J.
 Elton Braddock.....Bakersville, N. J.
 Geo. C. Pedrick.....Flemington, N. J.
 Otto F. Gehlhaus.....Keyport, N. J.
 H. A. Bushnell.....Matawan, N. J.
 Clifford Brick Co.....Matawan, N. J.
 C. A. Bloomfield.....Metuchen, N. J.
 Cullen W. Parmelee.....New Brunswick, N. J.
 W. W. Blanchard.....Newark, N. J.
 A. S. Reed.....Newark, N. J.
 D. H. Applegate.....Red Bank, N. J.
 C. W. Kilborn.....Rosenhayn, N. J.
 C. T. Clarke.....Trenton, N. J.
 Jos. Walker.....Trenton, N. J.
 Charles F. Binns.....Alfred, N. Y.
 Edwin Brockway.....Brockway, N. Y.
 Chas. Graham.....Brooklyn, N. Y.
 F. J. Nash.....Brooklyn, N. Y.
 W. A. Scantlebury.....Brooklyn, N. Y.
 Henry Bender.....Buffalo, N. Y.
 J. H. Black.....Buffalo, N. Y.
 S. C. Brush.....Buffalo, N. Y.
 W. H. Brush.....Buffalo, N. Y.
 Cling-Surface Mfg. Co....Buffalo, N. Y.
 Wm. J. Leary.....Buffalo, N. Y.
 John E. Schuesler.....Buffalo, N. Y.
 George L. Schmidt.....Buffalo, N. Y.
 Geo. W. Schmltdt.....Buffalo, N. Y.
 V. H. Whitney.....Buffalo, N. Y.
 Hervey Halgh.....Catskill, N. Y.
 Caleb C. Marshall.....Catskill, N. Y.
 M. E. Gregory.....Corning, N. Y.
 Tobias Figie.....De Witt, N. Y.
 Walter E. Hilton.....Dunkirk, N. Y.
 Clarence P. Hendricks.....East Kingston, N. Y.
 F. S. Naugle.....Empire, N. Y.

Joseph L. Cite.....Fishkill-on-Hudson, N. Y.	C. H. Doan.....Columbus, O.	Equitable Brick Co.....Philadelphia, Pa.
W. G. Dove.....Geneva, N. Y.	C. B. Harrop.....Columbus, O.	John Huhn.....Philadelphia, Pa.
D. P. De Long.....Glens Falls, N. Y.	S. J. Heafield.....Columbus, O.	E. F. Houghton & Co.....Philadelphia, Pa.
Frank E. Wiles.....Grassy Point, N. Y.	Gustave J. Holl.....Columbus, O.	O. W. Ketcham.....Philadelphia, Pa.
John E. Lynch.....Haverstraw, N. Y.	The Jeffrey Mfg. Co.....Columbus, O.	Edwin A. King.....Philadelphia, Pa.
John Peek.....Haverstraw, N. Y.	L. G. Kilbourne.....Columbus, O.	Main Belting Co.....Philadelphia, Pa.
John F. Shankey.....Haverstraw, N. Y.	Ellis Lovejoy.....Columbus, O.	Mack Mfg. Co.....Philadelphia, Pa.
H. C. Preston.....Horneli, N. Y.	Prof. Edward Orton.....Columbus, O.	Frank B. McAvoy.....Philadelphia, Pa.
R. G. Eisenhart.....Horseheads, N. Y.	W. D. Richardson.....Columbus, O.	T. B. McAvoy.....Philadelphia, Pa.
Levi Marshall, Jr.....Horseheads, N. Y.	The United Brick Co.....Conneaut, O.	Elmer E. Melick.....Philadelphia, Pa.
George H. Morton.....Jewettville, N. Y.	The Keller Brick Co.....Cuyahoga Falls, O.	A. R. Root.....Philadelphia, Pa.
Albert Terry.....Kingston, N. Y.	D. H. Downey.....Dayton, O.	E. A. Snow.....Philadelphia, Pa.
Jay Terry.....Kingston, N. Y.	The C. W. Raymond Co.....Dayton, O.	Webster & Keyser.....Philadelphia, Pa.
M. M. Hayden.....Newburg, N. Y.	Telgler Bros.....Dayton, O.	Central Brick Co.....Pittsburg, Pa.
Hiram H. Walsh.....Newburgh, N. Y.	H. Wirsching.....Dayton, O.	Darlington Brick & Mining Co.....Pittsburg, Pa.
Wm. Lahey.....Newburgh, N. Y.	Mitchell Brick Co.....Delhi, O.	Grant Dibert.....Pittsburg, Pa.
American Process Co.....New York, N. Y.	George Gleckler.....Elmore, O.	William Flinn.....Pittsburg, Pa.
Andrew A. Ayers.....New York, N. Y.	John Kline.....Euclid, O.	A. A. Hersperger.....Pittsburg, Pa.
Jas. G. Beemer.....New York, N. Y.	D. Earl Child.....Findlay, O.	Kittanning Fire Brick & Clay Co.....Pittsburg, Pa.
William C. Black.....New York, N. Y.	D. M. Potter.....Fremont, O.	Evan Jones.....Pittsburg, Pa.
J. Frances Boorem.....New York, N. Y.	E. M. Freese & Co.....Galion, O.	I. M. Justice.....Pittsburg, Pa.
Francis T. Burr.....New York, N. Y.	B. F. Place.....Galion, O.	S. C. Martin.....Pittsburg, Pa.
Ed. H. Calloway.....New York City, N. Y.	C. H. Forry.....Hanover, O.	Phillips & McLaren.....Pittsburg, Pa.
W. B. Chapman.....New York, N. Y.	J. W. Jones.....Haydenville, O.	D. T. Riffe.....Pittsburg, Pa.
Wm. R. Clarke.....New York, N. Y.	The Orchard Knob Clay Works, Ironton, O.	Sankey Bros.....Pittsburg, Pa.
H. E. Davidson.....New York, N. Y.	A. Magoon.....Logan, O.	Thomas M. Wilson.....Pittsburg, Pa.
J. Parker B. Fiske.....New York, N. Y.	Thew Steam Shovel Co.....Lorain, O.	E. S. Fox & Co.....Reading, Pa.
M. Gabriel.....New York, N. Y.	Marion Steam Shovel Co.....Marion, O.	G. W. Lenkerd.....Reynoldsville, Pa.
E. E. Gorton.....New York, N. Y.	C. H. Carpenter.....Martin's Ferry, O.	W. S. Ravenscroft.....Ridgway, Pa.
A. Koppel.....New York, N. Y.	W. A. Stephens.....Middleport, O.	R. C. Reynolds.....Saylorsburg, Pa.
H. D. Lounsbury.....New York, N. Y.	George S. Markley.....Mineral City, O.	Union Brick Co.....Shamokin, Pa.
Robert Main.....New York, N. Y.	The Horton Mfg. Co.....Painesville, O.	Alfred Yates.....Shawmut, Pa.
Robert C. Martin.....New York, N. Y.	J. B. Weigel.....Pierce, O.	Lewis H. Alwine.....Spring Forge, Pa.
Ohio Mining and Mfg. Co.....New York, N. Y.	J. D. Fate & Co.....Plymouth, O.	Thomas Hampton.....West Elizabeth, Pa.
R. C. Penfield.....New York, N. Y.	Adam Buch.....Portsmouth, O.	Wm. Steele.....West Winfield, Pa.
Orin D. Person.....New York, N. Y.	H. S. Grimes.....Portsmouth, O.	Wm. S. Dickover.....Wilkesbarre, Pa.
Pfotenhauer & Nesbit.....New York, N. Y.	The Peebles Paving Brick Co.....Portsmouth, O.	George T. Dickover.....Wilkesbarre, Pa.
D. S. Plummer.....New York, N. Y.	Portsmouth Brick & Tile Co.....Portsmouth, O.	Williams Grove Brick Co.....Williams Grove, Pa.
J. A. Ridgway.....New York, N. Y.	A. J. Darbyshire.....Sabina, O.	D. P. Guise.....Williamsport, Pa.
H. J. Roth.....New York City, N. Y.	C. W. Turner.....Sciotoville, O.	David Stuempfle Sons, Williamsport, Pa.
John E. Sparrow.....New York, N. Y.	S. M. Gould.....Shawnee, O.	York Shale Press Brick Co.....York, Pa.
Geo. F. Tafel.....New York City, N. Y.	Warren Boice.....Toledo, O.	Wm. L. Studley.....Providence, R. I.
Carl E. A. Trommer.....New York, N. Y.	James E. Fox.....Toledo, O.	W. G. Titcomb.....Providence, R. I.
R. A. Whiston.....New York, N. Y.	W. A. Howell.....Toledo, O.	C. G. Guignard.....Columbia, S. C.
Ernest Weiner.....New York, N. Y.	A. A. Reilly.....Toledo, O.	John F. R. Villalta.....Barcelona, Spain
Edward G. Acheson.....Niagara Falls, N. Y.	Ben S. Fisher.....Union Furnace, O.	J. W. Wells.....Chattanooga, Tenn.
A. T. Blatchford.....Orchard Park, N. Y.	A. E. Spear.....Uhrichsville, O.	Rush A. Jones.....Jackson, Tenn.
N. Y. Hydraulic Press Brick Co.....	R. C. Bennett.....Wellington, O.	X. B. Wickersham.....Jackson, Tenn.
.....Rochester, N. Y.	F. W. Bennett.....Wellington, O.	Knoxville Brick Co.....Knoxville, Tenn.
W. H. H. Rogers.....Rochester, N. Y.	C. G. Stevenson.....Wellsville, O.	T. C. Lundy.....Knoxville, Tenn.
W. W. Parry.....Rome, N. Y.	The Cleveland Car Co.....West Park P. O., O.	Alex. A. Scott.....Knoxville, Tenn.
John B. Rose.....Roseton, N. Y.	W. E. Ellenberger.....West Park P. O., O.	John G. Walters.....Martin, Tenn.
Philip Goldrick.....Saugerties, N. Y.	W. J. Carmichael.....Willoughby, O.	Frank H. Reid.....Memphis, Tenn.
John T. Washburn, Jr.....Saugerties, N. Y.	L. W. Penfield.....Willoughby, O.	Robert A. Speed.....Memphis, Tenn.
Thomas Kieran.....Stapleton, N. Y.	Charles M. Crook.....Youngstown, O.	Tennessee Brick Co.....Memphis, Tenn.
James L. Breed.....Syracuse, N. Y.	American Encaustic Tiling Co.....	Joe P. Fulcher.....Nashville, Tenn.
William Cannon, Jr.....Syracuse, N. Y.	R. L. Queisser.....Zanesville, O.	T. L. Herbert.....Nashville, Tenn.
Willis N. Dutcher.....Syracuse, N. Y.	R. H. Rutherford.....Zanesville, O.	W. D. LeSueur.....Nashville, Tenn.
C. H. Merrick.....Syracuse, N. Y.	O. N. Townsend.....Zanesville, O.	E. T. Lewis Co.....Nashville, Tenn.
J. Frank Plumb.....Syracuse, N. Y.	J. V. Montrieff.....El Reno, Ok.	J. E. Whiteselle.....Corsicana, Tex.
National Roofing Co.....Tonawanda, N. Y.	O. K. Edwards.....Newberg, Ore.	Fraser-Johnston Brick Co.....Dallas, Tex.
James B. Crowell.....Walkill, N. Y.	Amedee M. Smith.....Portland, Ore.	J. M. Harry.....Dallas, Tex.
G. B. Mentz.....Walkill, N. Y.	R. R. Hice.....Beaver Falls, Pa.	Arthur S. Goetz.....Ft. Worth, Tex.
D. S. Hildebrand.....Asheville, N. C.	Reese, Hammond & Co.....Bolivar, Pa.	C. W. Williams.....Laredo, Tex.
F. G. Thompson.....Elizabeth City, N. C.	Chas. E. Foster.....Bradford, Pa.	A. L. Branson.....Marlin, Tex.
E. A. Poe.....Fayetteville, N. C.	W. M. Hodges.....Bradford, Pa.	A. R. Harwood.....San Antonio, Tex.
W. E. Jeffrey.....Rocky Mt., N. C.	T. J. Melvin.....Bradford, Pa.	J. P. Cahoon.....Salt Lake City, Utah
J. C. Steele & Son.....Statesville, N. C.	Chas. C. Stratton.....Bradford, Pa.	George Curley.....Salt Lake City, Utah
Dinnie Bros.....Grand Forks, N. D.	C. P. Mayer Brick Co.....Bridgeville, Pa.	Justus Jungk.....Salt Lake City, Utah
McCausland Bros.....Akron, O.	Shull & Badger Brick Co.....Butler, Pa.	Wm. S. Simpkins.....Salt Lake City, Utah
Robinson Clay Product Co.....Akron, O.	W. H. G. Walker.....Cameron, Pa.	A. W. Perkins.....Rutland, Vt.
R. E. Weaver.....Akron, O.	George Fickes.....Carnegie, Pa.	C. H. Yohe.....Alexandria, Va.
George H. Bruns.....Brecon, O.	Clearfield Clayworking Co.....Clearfield, Pa.	D. E. Cronsharn.....Mt. Meridian, Va.
C. B. Sharer.....Bucyrus, O.	U. J. Matson.....DuBois, Pa.	J. W. Davis.....Newport News, Va.
G. C. Stoll.....Wheaton, Ill.	C. K. Williams & Co.....Easton, Pa.	F. W. Dennis.....Norfolk, Va.
The Bonnot Co.....Canton, O.	H. C. Dunn.....Erie, Pa.	Joel Booth.....Richlands, Va.
A. A. Oldham.....Canton, O.	E. P. Lippincott.....Greensburg, Pa.	D. G. Robinson.....Richlands, Va.
J. M. Blair.....Cincinnati, O.	Henry Hasbrouck.....Johnstown, Pa.	W. Benj. Davis.....Richmond, Va.
W. A. Eudaly.....Cincinnati, O.	R. E. Keedy.....Johnstown, Pa.	H. L. Jacobs.....Suffolk, Va.
L. P. Hazen & Co.....Cincinnati, O.	American Road Machine Co.....Kennett Square, Pa.	A. V. Sturgeon.....Suffolk, Va.
Suer & Bros.....Cincinnati, O.	G. W. McNees.....Kittanning, Pa.	Wm. C. Mitchell.....Renton, Wash.
Henry Wuebker.....Cincinnati, O.	H. P. Martin.....Lancaster, Pa.	Denny-Renton Clay & Coal Co.....Seattle, Wash.
Atlas Car Mfg. Co.....Cleveland, O.	James P. Martin.....Lancaster, Pa.	S. Geijsbeek.....Seattle, Wash.
Cleveland Brick & Clay Mfg. Co.....Cleveland, O.	Wm. R. Martin.....Lancaster, Pa.	S. P. Baird.....Charleston, W. Va.
.....Cleveland, O.	T. H. McMichael.....Lewistown, Pa.	A. H. Finnegan.....Green Bay, Wis.
Robert J. Dawson.....Cleveland, O.	O. R. Hartel.....Lewisburg, Pa.	A. Bogk.....Milwaukee, Wis.
Dover Fire Brick Co.....Cleveland, O.	John P. McIntyre.....McKeesport, Pa.	Clifford Chase.....Milwaukee, Wis.
Spencer M. Duty.....Cleveland, O.	Calvin F. Smith.....Nazareth, Pa.	George J. Schwarz.....Milwaukee, Wis.
F. H. Eggers.....Cleveland, O.	T. W. D. Addenbrook.....New Brighton, Pa.	L. H. Taylor.....Milwaukee, Wis.
Wm. H. Hunt.....Cleveland, O.	P. A. Smith.....New Brighton, Pa.	Ferdinand Vogt.....Milwaukee, Wis.
Ohio Ceramic Eng. Co.....Cleveland, O.	H. R. Beagle.....New Galilee, Pa.	P. L. Youngren.....Milwaukee, Wis.
F. C. Robinson.....Cleveland, O.	Cyrus Chambers, Jr.....Overbrook, Pa.	Gunther Bros.....Port Washington, Wis.
C. B. Stowe.....Cleveland, O.	George B. Waite.....Parsons, Pa.	Henry W. Carter.....Oshkosh, Wis.
John Wilson.....Cleveland, O.	Patton Clay Mfg. Co.....Patton, Pa.	E. C. Tecktonius.....Racine, Wis.
J. W. Candler.....Collinwood, O.	Thomas B. McAvoy, Jr.....Pawling P. O., Pa.	Oscar Zimbal.....Sheboygan, Wis.
J. M. Adams.....Columbus, O.	George O. Bass.....Philadelphia, Pa.	John Ringle.....Wausau, Wis.
F. Henry Angell.....Columbus, O.	E. H. Carroll.....Philadelphia, Pa.	
A. V. Bleiringer.....Columbus, O.	P. F. Carroll.....Philadelphia, Pa.	
John A. Conard.....Columbus, O.	J. H. Chambers.....Philadelphia, Pa.	
	I. N. Conkling.....Philadelphia, Pa.	
	William Conway.....Philadelphia, Pa.	
	S. B. Dobbs.....Philadelphia, Pa.	
	Murrell Dobbins.....Philadelphia, Pa.	
	E. H. Dorsey.....Philadelphia, Pa.	
	John H. Earley.....Philadelphia, Pa.	

In Memoriam.

James W. Tester.....Montreal, Can.
S. S. Kimbell.....Chicago, Ill.
John Murray.....Paducah, Ky.
Charles W. Keefer.....Mechanicsville, N. Y.
John Doyle.....Utica, N. Y.
W. W. Reehl.....Bucyrus, O.
Adam Schneider.....Columbus, O.
H. C. Ellis.....Toledo, O.
C. McDermott.....Wellington, O.

THE ANNEX AND THE ANNEXERS.



USUAL the machinery men were conspicuous in the lobby and put in a most strenuous week. The only available space for an exhibition was a small room, partitioned off from the convention hall proper. This was crowded with various displays consisting mostly of advertising literature, pamphlets, blue prints, calendars and placards of many sizes and colors. Samples of many different grades of brick were scattered here and there on tables about the room, while the only machinery exhibited was a small steel double-decked car of the Ohio Ceramic Engineering Company. The smiling faces of the button-holders were to be seen everywhere, from early morn till early morn, always ready to enlighten those looking for information about the various machines and clayworking apparatus. Many of the machinery men had special rooms in the hotel where they made individual exhibits; of these the largest and most extensive display was that of the American Clay Machinery Company, Bucyrus, Ohio. They operated small models of their brick machine, automatic cutting table and Eagle represses, by means of electricity. Photographs of their new and old machines, blue prints of dryers and plant drawings were hung about the walls in conspicuous places. Samples of sand-lime brick made by their presses were exhibited on one of the tables. Their souvenir pencil holders with advertising buttons were very attractive. They also distributed among the delegates neat memoranda books and knives. The firm was represented by those familiar old-time conventioners, R. C. and L. W. Penfield, G. C. Stoll, S. J. Heafeld, H. B. Wiley and C. B. Sharer.

The John E. Thropp & Sons Company, manufacturers of the Trenton rotary brick machine, exhibited small models of their machines in the room of Jos. Walker, the firm's representative. Their attractive pamphlet was scattered freely over the hotel. They made one of the hits in the advertising line by presenting delegates with a very pleasing badge in the form of an eagle carrying a small dangling red brick, which was made on the model press on exhibition. This model is an improvement over the old. The new press has heated rotary wheels and an agitated hopper above.

John C. Boss, of Elkhart, Indiana, who has reached quite a prominent position before the eyes of the clayworking world, entertained his friends and business men in his rooms, where he made known to the uninformed the advantages of the Boss system of burning and presented them with very attractive pamphlets.

The Scott Manufacturing Company, of St. Louis, was well represented by that jovial, good fellow, well met, "Dixie" Scott, and ably seconded by Peter B. Gibson and J. N. D. Dickinson. They presented the delegates with a very tasty watch fob, which had stamped upon the back, a picture of the "Press that Scott Builds." Near the door in the exhibition room, standing on a table was a large picture of the Scott noiseless plant, while scattered promiscuously around were photographs of their presses.

The well-known firm of The C. W. Raymond Company, Dayton, Ohio, who manufacture almost every conceivable kind of machinery needed about a clayworking plant, distributed their beautifully illustrated catalogues. They were well represented by Geo. Raymond, D. H. Downey, of Dayton, and G. H. Smith, of Kansas City. Their very attractive souvenir, that of a three-foot jointed rule, was delightfully received by the delegates.

The J. D. Fate Company, Plymouth, Ohio, was represented by H. H. Fate and H. J. Votaw. They mingled with the delegates and their smiling faces displayed the state of mind they were in over this year's business successes. They distributed pamphlets and catalogs.

The Bonnot Company, Canton, Ohio, which has an enviable position in the manufacturing of clayworking machinery, had a small display of literature. Messrs. A. A. Oldham and A. W. Aylesworth, their representatives, handed out neat

leather card cases, bill folders and diaries, which were eagerly sought.

John Berg, the son of the inventor of the Berg press, Anton Berg, represented that firm and gave as their souvenir a neat black leather bill holder.

The Williams Patent Crusher and Pulverizer Company, St. Louis, had a revolving rack, in which was displayed large cuts of their machines, testimonials and calendars. They were well represented by M. F. and A. F. Williams. Their catalogs and pamphlets, setting forth the merits of the Williams crushers and containing testimonials and views of their machines, which have met with remarkable success, not only in the clayworking line, but cement, coal and cotton, fertilizing and tanning industries, were conspicuously displayed.

Madden & Co., Rushville, Ind., manufacturers of brick and tile machinery, were represented by Edgar Plummer, who has been a very successful exponent for this firm, which is now in its twenty-ninth year, made himself well known at the convention and received several large orders for their machinery.

The Thew Automatic Shovel Company, Lorain, Ohio, was ably represented by their general manager, F. W. Smythe, and D. D. Deeds. Their catalogs and pamphlets clearly demonstrated the great advantage of the steam shovel over the old-time methods of handling clay, where large supplies of the raw material are needed and well mixing of the various clays in the banks necessary. This firm has had a most remarkable year's business.

The E. M. Freese Company, Galion, Ohio, had a table in the exhibition room for their catalogs and advertising literature. Mr. J. J. Gledhill and E. L. Hess were their busy representatives. They circulated impartially, attractive leather bill books.

Chambers Brothers Company, Philadelphia, Pa., made no other display than their printed matter, due to the fact of the inadequate space in the exhibition room. They were actively represented by A. R. Root, of Philadelphia; Lincoln S. Morrison, of Rome, Ga., and E. R. Frazier, of Chicago.

The interests of the Standard Dry Kiln Company, Indianapolis, were taken care of by V. R. Outland. They exhibited in the exhibition room a large photograph of their dryer. Their souvenir was a leather bound memoranda book.

The Fernholtz Brick Machinery Company, St. Louis, was very ably represented by W. L. Rodgers, who for seven days prior to the convention had been sick abed with the grippe. He was much pleased with the convention and has the highest hopes for the greatest business the present year, though he declares that the brick machinery business was never better than the past year.

The Reliance Machine and Tool Works, St. Louis, represented by H. M. Hammer, likewise reported a successful year's business. It was due to this gentleman's good taste, as chairman of the St. Louis badge committee, that a very attractive convention badge was presented to the visitors. This firm had a model of their dry press in Mr. Hammer's room, where the delegates were entertained and catalogs freely distributed.

L. E. Rodgers, the "Dryer Man" of Chicago, was the active representative of his firm and wore "the smile that won't come off," which plainly told of the business successes of the past year, which were very gratifying to that firm.

The Main Belting Company, Philadelphia, had samples of their famous "Leviathan" belting, with bucket conveyors, on a table in the center of the exhibition room, where were also seen novel catalogs and testimonial pamphlets. Their advertisement in the shape of a brick, with letters of recommendation inclosed, was very attractive. They gave as souvenirs beautiful light brown leather pocketbooks. The firm had for representatives D. S. Thompson, F. S. Thompson, E. M. George and E. P. Foster, all of Chicago.

The Illinois Supply and Construction Company, St. Louis, known throughout the States as the manufacturers of the "Grath Brick Press," confined its display to advertising literature, which included a neatly gotten up catalog. Their representative, Mr. W. P. Grath, gave the trade a neat memoranda book as a souvenir.

J. Parker B. Fiske, New York City, represented his well-known firm. In the exhibition room he displayed blue prints and photographs of the Fiske Brickmaking System. Over them, on the wall, was a placard in bold lettering, "All Without Hand Labor!"

Mr. Marion Blair, son of W. P. Blair, president of the National Paving Brick Manufacturers' Association, represented the C. E. Luce Engineering Company, Chicago, Ill. He exhibited on a table, in the back of the exhibition room, a large drawing of a plant covered over with a heavy plate glass, which made it attractive and more easily studied.

The Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., who manufacture a fine line of clay-working machinery, both for steam and horse power, were represented by Frank McClellan and James P. Martin, who were designated by the number buttons, No. 9 and No. 10.

The Wellington Machine Company, Wellington, Ohio, ably represented by R. C. Bennett, was advertised by means of their catalogs and pamphlets, supplied from a table in the exhibition room.

John P. Camp and E. A. Camp, representatives of the Ross-Keller Triple Pressure Brick Machine Company, St. Louis, were busily engaged in the exhibition room and hotel lobbies telling of the merits of their triple pressure brick machines.

Chisholm, Boyd & White, Chicago, were represented by H. J. Flood, who has attended the conventions for years and is a very familiar figure to most of the N. B. M. A. members. He had no display, but confined all his energies to making new acquaintances. This firm has had remarkable success the past year.

The Dunlap Manufacturing Company, Bloomington, Ill., manufacturers of the well-known Dunlap screens, was represented by O. W. Dunlap. He distributed their neat catalog and presented a beautiful paper clip to the delegates.

The Arthur Koppel Company, New York City, famous for their complete line of industrial railroad equipments, had as their representative Otto C. Plessner, of Chicago. He mingled freely with the brickmakers, expounding the merits of Koppel cars, etc.

The Anderson Foundry and Machine Works, Anderson, Ind., was represented by W. N. Durbin as usual, who enjoyed the convention thoroughly and was always ready to tell of the merits of the Berg press and the other brickyard appliances they put on the market.

The Ohio Ceramic Engineering Company, Cleveland, Ohio, had a neat line of catalogs and circulars, as well as their small model double-deck car. Frank H. Robinson represented them.

The American Blower Company, Detroit, Mich., was represented by R. B. Bedford, of New York City, and B. C. Fennell, of Atlanta, who looked after the interests of that firm in their usually clever way. They also distributed the literature of the Scott Kiln Drying Company, which appealed to many, being both new and novel.

Albert Potts, who attends all of the national conventions, bringing his better half with him to enjoy the social features of the convention also, represented the C. and A. Potts Company, Indianapolis, manufacturers of horizontal brick machines, mold sanders, clay disintegrators and a complete line of clayworking appliances.

Charles Burrige, of Tecumseh, Mich., represented the H. Brewer Company in his characteristic manner, and enjoyed a busy week.

The Cleveland Car Company, Cleveland, Ohio, had two representatives, W. F. Caskey and R. L. Dumeldinger. These men reported a very successful week and are looking forward with much interest to the next national convention.

The Chicago Brick Machinery Company, Chicago, was represented by that jolly good fellow, John J. Moroney, who apparently had few idle moments.

The Richardson-Lovejoy Engineering Company, Columbus, Ohio, was represented by W. D. Richardson, ex-president of the N. B. M. A. and A. C. S., and C. B. Harrop.

The Eagle Iron Works, of Des Moines, Iowa, was ably represented by L. Aulman, who lost no opportunity of greeting old friends and making new ones, nor of telling of the merits of the "Eagle" dry pans.

The National Brick Machinery Company, Chicago, was represented by that old-time member of the N. B. M. A., P. L. Simpson, and his son, H. S. Simpson.

The American Road Machine Company, Kennett Square, Pa., presented their interesting catalog, which contained a number of views of their rock crusher, cars, drills, scrapers, plows, etc.

The Atlas Car and Manufacturing Company, Cleveland, Ohio, also presented attractive catalogs, which picture a large line of cars, both dump and brick cars, turn-tables, pallets, tracks, etc. Their representative was S. A. Williams, Jr.

The interests of the J. C. Steele & Sons Company, Statesville, N. C., and the Success Brick Machinery Company, Memphis, Tenn., were well taken care of by Mr. Frank H. Reid, who had a display in the exhibition room consisting of pamphlets and a very attractive calendar.

The F. W. Braun Company, of Los Angeles, Cal., had numerous catchy circulars, which were placed in conspicuous places.

Mr. P. L. Youngren represented the Youngren Gas-Fired Continuous Kiln Company of Milwaukee. The delegates who were fortunate enough to take in the side trip to the Alton Paving Brick Company, convention week, were well pleased with the type of the Youngren kiln found in operation at that plant.

That popular old-time member of the N. B. M. A., Mr. James W. Hensley, came early and stayed late. He, too, had his "Backer" with him. He had as his display in the exhibition room a pleasing calendar. Mr. Hensley represents the "Quaker," "Monarch" and "Duke of Wellington" line of brick machinery and makes a specialty of equipping plants.

The New York Blower Company was represented by R. O. Rogers, of Chicago.

Mr. W. A. Eudaly, of Cincinnati, one of the charter members of the National Association, and a man of many years' practical brickmaking experience, made a display of his patent kiln. It consisted of several colored drawings, which were hung on the walls of the exhibition room.

Mr. Alfred Yates, the "Paving Brick Man," had a display of his Shawmut paving brick, which for perfection challenged the admiration of competitors, even, in the exhibition room. He manufactures a fine grade of vitrified paving brick and block and has accomplished much good in the upbuilding and introduction of brick paved thoroughfares of this country.

Mr. W. P. Blair, of Terre Haute, president of N. P. B. M. A., also had some sample paving brick on exhibition. His samples had been taken from a street laid many years ago and had the reputation of being subjected to very heavy traffic. These brick showed very little wear, though they have been down for years.

C. F. Kaul, Madison, Neb., who was a practical brick-maker years before he came over to this country from Germany, brought his wife to the convention, and they asserted that they had a most enjoyable time. Mr. Kaul is the proud possessor of more than seventeen patents on clayworking appliances, the best of which he claims is the Multiple Down Draft Kiln.

There were many other well-known firms represented, some of whom had samples of their brick on exhibition. Of these may be mentioned:

The Tuna Valley Pressed Brick Company, Bradford, Pa.

The Ohio Mining and Manufacturing Company, Shawnee, Ohio.

The Underwood Brick Company, Springfield, Ill.

The Corning Brick, Tile and Terra Cotta Company, Corning, N. Y.

The Coffeyville Vitrified Brick and Tile Company, Coffeyville, Kan.

The David Stuempfels Sons, Williamsport, Pa.

The Sibley-Menge Press Brick Company, Birmingham, Ala.

Several firms selling roofing materials were represented, displaying samples of their products. The more prominent of these were the National Roofing Company, Tonawanda, N. Y.; the Roofrite Company, Chicago, and the Eastern Granite Roofing Company, New York City.

There were a number of other firms represented at the convention who had side lines of secondary interest to the clayworker.

AMERICAN CERAMIC SOCIETY CONVENTION.

Annual Meeting Held at St. Louis, February 4, 5 and 6.

THE NINTH annual meeting of the American Ceramic Society was the most successful in the history of that Association. Representative men from nearly every branch of the clayworking world were present and attended all the many interesting and instructive sessions. This society, founded as it was, for the uplifting of the higher arts and technical branches of the ceramic industry, has grown from a handful of members to a body consisting of nearly two hundred and seventy-five members. The interest in the papers and discussions which followed, was unflagging from the beginning to the very close of the final session.

The delegates began to put in their appearance at the Planters Hotel late Saturday night, and by Sunday afternoon the lobbies were pretty well filled with groups of old friends and new acquaintances, who talked over old times and discussed the problems to be placed before them at the convention. The sessions were held in the Planters convention hall, and during the evening, as well as all day long, Monday and Tuesday, the seats were well occupied and the proceedings were carried on with the enthusiasm characteristic of such an organization.

The first regular session was called to order at ten o'clock Monday morning. After an address by the retiring president, W. D. Richardson, who reviewed, in a pleasing manner, the proceedings of the previous convention held at Philadelphia, and pointed out many of the good points in the articles published in the transactions of the society last year, scrutineers of election were appointed, who looked over the ballots and made ready for their announcement as to the results of the election of officers.

In the meantime, Prof. Orton, who has been the secretary of the organization since its inception in 1899, and has always directed the affairs of the society, read in his characteristically entertaining way the minutes for 1906, and a detailed review of the convention at Philadelphia, and likewise that most enjoyable mid-summer meeting at Beaver Falls, Pa. The mid-summer meeting with the Beaver Falls and East Liverpool ceramists was one of the most interesting and enjoyable ever held by that association and those who were so fortunate as to be with that jolly crowd on those mid-summer excursions, eagerly listened to the re-telling of their past pleasures.

Prof. Orton then gave his report as secretary, which was adopted as read. He then read the report of the treasurer, Ellis Lovejoy, who unfortunately was not able to attend the meetings. This report was also adopted as read.

The N. B. M. A. Secretary Made a Life Member of the A. C. S.

Toward the close of the session, Secretary Orton took the floor on a question of personal privilege, and proceeded to recount the many favors and courtesies that had been extended to the members of the society by Theodore A. Randall, Secretary of the National Brick Manufacturers' Association, and stated that the Council, after due consideration, had determined to recommend the election of Mr. Randall to life membership in this society as a token of their appreciation of his services. The matter was put to a vote and carried unanimously, whereupon Mr. Randall was called for, and a speech demanded. He responded in characteristic manner, though briefly, thanking the society for this gratifying exhibition of their esteem, and assuring the officers and members that in the future as in the past, he would make every effort possible to advance the interests of the society.

Prof. Binns, chairman of the scrutineers of election committee, announced the result of the election and the installation took place as follows:

Officers Elected.

President, Stanley G. Burt, Cincinnati.
Vice-President, Ross C. Purdy, Champaign, Ill.
Secretary, Prof. Edward Orton, Jr., Columbus.
Treasurer, Ellis Lovejoy, Columbus, Ohio.
Manager for 1907-1908, Lemon Parker, St. Louis.

On taking the chair, President-elect Burt, who had served the society as treasurer for some years, made an appropriate address, expressing the great appreciation of the honor done him, and then proceeded to the regular business, which consisted of reports of committees, etc.

The applications of twenty odd aspirants for membership were acted upon favorably and the session closed.

The first number on the program for the afternoon session, was one of the best of the convention, being a careful study of "Fritted Glazes," by Ross C. Purdy and Harry B. Fox, of Champaign, Ill. This paper consisted of an investigation into the effects of the variation of the oxygen ratio of the fritted glazes and their silica boracic acid ratio. The paper was read by Harry Fox, who is an instructor at Illinois University, while Mr. Purdy, who is at the head of the Ceramic School at the Illinois University, explained the many curves plotted on large placards hung across the entire width of the convention hall. These curves showed the range of temperatures required by the various glazes and gave the members a small idea of the thoroughness of the work of these two ceramists on this subject.

The paper by George Simcoe, of Victor, N. Y., on "Plaster of Paris Molds," was much enjoyed, as it touched upon a subject that has never before been discussed by the society. Then followed a discussion, which brought out the fact that the age of plaster molds could be prolonged and their usefulness greatly increased by thorough slow drying after being used.

"Reduction in the Overglaze Decorating Kiln," by Charles E. Jackson, Syracuse, N. Y., and "A Comparison of the Costs of Preparing Frit by the Frit Kiln versus the Sagger Method," by Arthur E. Mayer, Beaver Falls, Pa., were two able papers, which brought out much discussion.

The note by Herbert Goodwin, of Columbus, Ohio, on "The Precautions to be Used in the Mechanical Preparation of Glazes," was well received.

The two remaining papers, "Glazes and Bodies," by Charles Weelans, of Trenton, N. J., who has contributed a number of interesting articles to the society in previous years and "A Simplified Method of Getting the Cost of White Ware," by Thomas Gray, of East Boston, Mass., closed the first afternoon's session, and the convention adjourned for supper.

Monday evening the convention was treated with a most enjoyable paper by Junius F. Krehbiel, of Champaign, Ill., on the subject of "Crystalline Glazes: The Effect of Variation in their Oxygen Ratio and R O Composition with Different Crystallizing Agents." This valuable paper was illustrated with a series of plotted curve sheets and glazed vases, which showed the results of his experimental work.

C. W. Parmelee, who is at the head of the Ceramic School at New Brunswick, N. J., exhibited trial pieces which illustrated his paper, "Notes on Terra Cotta Glazes," and the evening session then closed with a paper by Thomas Gray on "Notes on the Relative Cost of Firing Biscuit and Glost Kilns," and the discussion which followed.

At the Tuesday morning session many interesting papers were read and discussed, the best received of these being that by W. J. Stephani, of Philadelphia, who gave in an article, "The Construction and Operation of a Terra Cotta Plant," minute details of the subject and told of the exact cost of production of their wares. The five papers under the head of

"Symposium on the Terra Cotta Kiln," are valuable contributions to the society's literature.

The paper by H. A. Plusch, Rocky Hill, N. J., on "Polychrome Glaze Decoration in Architecture," was out of the usual run of ceramic papers and was well received. Mr. S. Geijsbeek, of Seattle, Wash., was unable to be at the convention this year, but he had prepared and sent a paper on "The Technical and Mechanical Problems of Terra Cotta Manufacture," which was read before the society.

One of the most valuable papers ever read before the society was that written by Prof. A. V. Bleininger, Columbus, Ohio, on "Some Aspects of the Physical Chemistry of Fusing Silicates." This was read at the opening of the Tuesday afternoon session, and was of such a deep nature that it could not readily be grasped by simply the reading of such a studied effort. This paper will be one of the most valuable ones appearing in the forthcoming Transactions. Of the remaining thirteen papers which were read before the society, the most noteworthy, perhaps, were those on "A High Temperature Carbon Resistance Furnace," "The Influence of the Rate of Cooling on the Toughness of Vitrified Paving Brick," "A Study on the Absorption Test of Clay Products," "The Government Testing Station at St. Louis and Its Work," "Some Compression Tests on Brick," "Pyro-Chemical Changes Occurring in the Burning of Clay Wares," and "Surface Pimpling on Salt Glazed Over Sewer Pipe."

A large number of the American Ceramic Society was present Wednesday evening to hear Prof. Orton's most interesting stereopticon lecture on "The Occurrence and Preparation of High Grade Clays." A synopsis of this lecture appears in connection with the N. B. M. A. report in this issue.

During the course of the convention the following six associate members were honored by being elected to full membership: A. J. Aubrey, of the Bessemer Limestone Company, Youngstown, Ohio; H. B. Fox, assistant professor of Geology Champaign, Ill.; A. F. Creaves-Walker, Utica Fire Clay Company, Salt Lake City, Utah; H. P. Humphrey, Northeastern Terra Cotta Company, Bradford, Pa.; J. F. Krehbeil, assistant, Ceramic Department, Champaign, Ill.; W. J. Stephani, O. W. Ketcham Terra Cotta Company, Philadelphia.

Twenty-seven associate members were elected, two being foreign. The present standing of the Society is:

Honorary Members.....	2
Resident and Foreign Members.....	47
Resident Associate Members.....	193
Foreign Associate Members.....	22
Making a grand total of.....	264

This increase of thirty-six over last year is a most gratifying growth for this Society. The members are now looking forward with much pleasure to this year's mid-summer meeting, the exact date and meeting place of which has not yet been decided.

Many of the members of this Society stayed throughout the week to attend the National Brick Manufacturers' Association convention and went with the large crowd on the special trains which the local committee had chartered for their excursions to the St. Louis clay plants.

THE MOST SUCCESSFUL CONVENTION EVER.

Editor THE CLAY-WORKER:

Mrs. Gregory and I returned home yesterday from Western Kansas where we went after the convention. I believe our last convention was the most successful in every respect we have ever had. We certainly are all indebted to our St. Louis friends for a grand time, as our last convention was certainly a record breaker.

Corning, N. Y.

M. E. GREGORY.

THE SIDE TRIPS TO THE CLAYWORKING PLANTS.

TO VERY MANY of the visitors, the trips to and through the great clay plants of St. Louis was the greatest treat of the N. B. M. A. convention. The local committee had carefully mapped out all details, and provided an itinerary that with less skillful manipulation and direction, could not possibly have been carried through in the time allotted. But master hustlers were in command and the program arranged was carried out in every detail, both Thursday and Friday afternoons. In conjunction with the Missouri Pacific railroad, special train service was provided, and on both occasions the party left the Union Station within a few minutes of the appointed time, and carried some 300 or more of as jovial, yet enthusiastic sightseers as one may ever hope to see together at one time. The following plants were visited Thursday: The first stop, Laclede Fire Brick Manufacturing Company, St. Louis Terra Cotta Company, Winkle Terra Cotta Company; second stop, Evens & Howard Fire Brick Company; third stop, Hydraulic-Press Brick Company.

It would take too much space to go into details, and describe each of the different plants visited. Then, too, all of the plants were described in the January CLAY-WORKER, so it will suffice to say here that it was a revelation to us all to note the immensity of the plants, and how far they have advanced in the clayworking art.

Nothing pleases a brickmaker more than to see how the other fellow "turns the trick," for thereby he may possibly save himself much worry and expense. It certainly was a rare treat to visit these immense plants, even though we got but a hurried glance into each department. True, it would have been much more to our liking could we have taken more time, but there were so many places to go, and so much to see that we could only give each operation a quick inspection, and pass on to the next. With our genial guide and acting captain ever prodding us on, with a brisk and happy "You will have to hurry," "We must move on," "There are five miles more to go," etc., etc., etc., we were obliged to turn reluctantly from one operation and hurry on to the next.

Friday afternoon was a repetition of the good time of Thursday, the itinerary including the following plants: First stop: Blackmer and Post Pipe Company; second stop: Enterprise Press Brick Company, Progress Press Brick and Machine Company, Superior Press Brick Company, Parker-Russell Mining and Manufacturing Company; fourth stop, Christy Fire Clay Company. And be it said to the credit of those in charge, that the party was back in the Union Station on schedule time, at 6 p. m. Speaking of the trip, a Southern delegate says:

"After we had passed from plant to plant and had seen how, out of what appeared to be common clay, they made the most beautiful front brick, all shapes and sizes of fire brick, all designs and colors of terra cotta, all sizes and kinds of sewer pipe, and high grade paving brick and block, we realized, as never before, the magnitude of the clayworking industry. To what a future we have to look forward in this, the work of the molding of clay into the most durable, and at the same time, the most beautiful building material known today, and we, the brickmakers from all corners of the United States, are made to be proud of our calling and to attach a greater importance to our work and to return to our respective homes with a determination to push onward in our chosen profession, strengthened by the inspiration received from our association with these good St. Louis brickmakers, and holding the recollection of those few days ever green in our memory, we once more proceed with our work, breathing out a blessing on those noble fellows who worked

so hard to make our stay in their city instructive as well as pleasant and who succeeded so well."

THE SIDE TRIP TO ALTON.

What proved to be one of the most interesting of the side trips provided for the visiting delegates to the St. Louis convention was the one to Alton, Ill., on Saturday forenoon.

In response to a general invitation extended to the delegates by the genial manager of The Alton Paving Brick Company, Mr. Eben Rodgers, to visit this company's plant at North Alton, between forty and fifty members assembled at the union station early Saturday morning and departed at 7:20 on the north-bound Chicago and Alton train. Arrangements had been made to have this train make a special stop at North Alton and thus permit the delegates to disembark from it immediately in front of the plant. After arriving at the destination the delegates were escorted through the works by Mr. Rodgers and his superintendents, Messrs. Kohler and Meyers, and all points of interest were examined from the shale bank to the kilns.

The feature of especial interest at this plant which seemed to hold the almost undivided attention of the largest portion of the delegation was the Youngren gas-fired continuous kiln which is used at this plant for burning street paving brick. This kiln, as far as the writer knows, is the first attempt in this country to burn street paving brick in a gas-fired continuous kiln and, while considerable difficulty was experienced during the first season of its operation, due principally to certain peculiarities of the shale, these difficulties have now been overcome and the kiln is doing such excellent work that much surprise was expressed on every hand at the superior quality of the output and the high percentage of first class burn. Several compartments were being drawn from at the time, and it was a noticeable fact that but very few seconds or "alley" brick were to be seen and no over-burnt brick were in evidence.

"It affords me a great deal of satisfaction to see my former predictions verified," said Mr. Yates, of Shawmut, Pa. "I have always maintained that it would be possible to burn paving brick successfully in a continuous kiln and now we have the evidence before us."

This kiln consists of sixteen compartments, each of which holds fifty thousand paving brick, and Mr. Rodgers stated that after installing the induced draft to overcome the difficulties encountered in watersmoking they have no difficulty in burning one compartment a day and expect to increase the output of the kiln at least fifty per cent. more by increasing the capacity of the exhaust fan. The amount of coal required for burning these pavers in the individual down-draft kilns previously employed was stated to be 2,500 pounds per thousand, while in the continuous kiln the fuel consumption is from 700 to 900 pounds per thousand.

After spending several hours at the plant in a most enjoyable and profitable manner the delegates boarded the south-bound C. & A. train shortly after 11 o'clock, which made a special stop at the plant for their accommodation, and on which the party was accorded the seclusion of a private car on the return trip to St. Louis.

Upon taking leave of the delegates at Alton, Mr. Rodgers was given "three cheers and a tiger" in appreciation of the high and unselfish motives which characterize him in his relations with the N. B. M. A.

That this visit to Alton left a decided impression on the participants was evidenced on every hand on the return trip when many of the members entertained views on certain matters that were diametrically opposite to those previously held, and all of them returned to St. Louis with the feeling that they had been fully repaid for sacrificing a little of the morning nap by going out on this trip.

Among those who availed themselves of the opportunity to visit the Alton plant was our genial retiring president, Mr. Copeland, of Birmingham, Ala., who, as will be remembered, brought with him to the convention his very carefully prepared plans for the new paving brick plant, which included an installation of a large battery of individual down-draft kilns. The results seen in the Alton kiln and the accuracy with which those results are obtained, together with the great saving in fuel and labor, seemed to have caused Mr. Copeland to do some very deep thinking, and it would not be surprising if some very material changes are made in the plans for his new plant.

The opinion expressed by Mr. Richards, of Edwardsville, Ill., probably reflects the sentiment of the entire delegation. Said Mr. Richards, "The success of the continuous kiln is now an assured fact and we are bound to see it in general use within a comparatively short time."

CONVENTION ECHOES.

From St. Louis to New Orleans.

Editor THE CLAY-WORKER:

Here I am, not at home, but in the Southland after a delightful week in St. Louis. How our friends in that city did their best to make our stay enjoyable. I think the twenty-first convention in every respect a little better than any that preceded it. I am only sorry that I will not be here twenty-one years hence, to go back again and have them repeat it. We have had delightful weather the past week, nothing but warmth and sunshine.

With best wishes to you and yours, I am, as ever,

Your sincere friend,

New Orleans, La.

CHAS. A. BLOOMFIELD.

A Novice at Seventy-Four Profits Immensely.

OUR DEAR SECRETARY:

In simple justice to officers and members of the National Brick Manufacturers' Association attending the twenty-first annual convention held in the old and hospitable city of Saint Louis last week, as well as in accordance with our own feelings and high appreciation of our first N. B. M. A. convention whose sessions we attended with great pleasure and edification, allow us to thank you and congratulate the Association most sincerely on the kind and brotherly feeling that pervaded the members without exception and the unbounded hospitality of the good people of the city of St. Louis.

It seemed to us that, although comparative strangers, it was a well recognized fact that all were remote descendants of Adam, that we were all formed of "Clay," that we continued to improve and work in "Clay," and then after doing our best in progress and reforms and when our earthly career is ended, we would return to "Clay" from whence we emanated. It also seemed to us that all were well convinced of that equality in origin that was expressed many years ago by Roger A. Pryor, of Virginia, when he was at the Court of Saint James. He visited the House of Commons whilst there, and the members began whispering, "Who is this man?" The whispering annoyed Pryor and at last he exclaimed, "My name is Roger A. Pryor; I sprang from Adam and Eve; who of you sprang higher?"

The whole convention was distinctly marked with universal kindness, courtesy and unbounded hospitality. Although I have been interested directly and indirectly in the manufacture of bricks for 40 years, from the old methods of our ancestry to the late modern and improved methods, I learned much from the discussions. The different views blended with the practical were most highly appreciated and stored up, so that

taking the different views with different materials and modes of manufacture together, I was immensely profited.

Whilst a young man and novice, at the age of 74, I am so well pleased that I hope to live to attend every convention until I have completed another twenty years and thereby attain my majority as a member and voter in the Association. Again thanking most sincerely, the officers, members, all, in which my wife joins me. In the tribute I want to include the ladies for their unusual care and kindness, especially Mrs. Randall, Miss Wallace and others whose names I do not recall or have before me. With our continued best wishes, I remain

Yours very sincerely,

Williamsport, Md.

VICTOR CUSHWA.

THE "FATE SPECIAL."

THE TENDENCY of the brick manufacturers toward the use of large, heavy machines of enormous capacity is forcing the machine builders to design new machinery to meet this demand, and the first in the market is the large, new "Fate Special," built by the J. D. Fate Company, of Plymouth, Ohio. This machine is without doubt the largest and heaviest brick machine ever built and will have the greatest capacity. The weight of the machine is 35,000 pounds and the capacity is everything desired. Its length is 25 feet, width 6 feet 4 inches, height 6 feet 6 inches; width of pug shell, 42 inches by 10 feet long; main shaft, 6 inches diameter; the pug and intermediate shafts $4\frac{1}{2}$ inches with $3\frac{1}{2}$ inches driving shaft; the main gear wheel has 12-inch face; pug and intermediate gear, $8\frac{1}{2}$ -inch face.

The machine is mounted on heavy "I" beams, securely

bolted and braced. The main shaft has through bearing, which holds it perfectly in line. The front bearing is a long plain one and the center one is of the marine pattern and takes a large portion of the end thrust, while the rear bearing is of the submerged type and is provided with triple, anti-friction thrust plates. All the bearings of the machine are automatically oiled by means of wick oilers.

We present herewith a cut of this mammoth machine, but it is impossible to get a full conception of the real size from the picture. One of these machines has recently been shipped to the Johnston Brothers Clay Works of Kalo, Iowa, and the company has a number of orders for this machine to be shipped immediately.

This large machine and the new "Guilder" elevating and lowering car seem to be sure winners of the public favor, judging from the orders received for them.

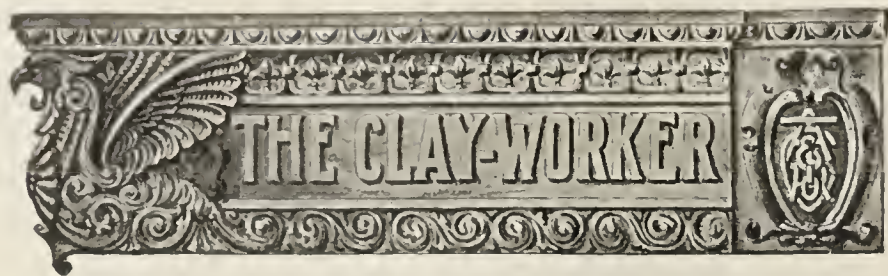
The J. D. Fate Company will be glad to hear from any one interested and will give full information on application.

BRICKMAKING IN SOUTH AMERICA.

W. P. Grath, president of the Illinois Supply and Construction Company, St. Louis, Ill., takes much pride in the following letter, received from Rogers & Co., of Barranquilla, Colombia, South America, under date of January 25:

"We take pleasure in certifying that your Grath hand press for standard European size sand-lime bricks, 10 in. by 5 in. by 3 in., has been working in our factory for about two months to our greatest satisfaction. Three native workmen, at wages of 50 cents each per day, make in ten hours over one thousand practically perfect cornice and bull-nose bricks, which are sold hot at \$15 per mille; thus your press paid for itself in a short while. It is a model of simplicity and durability and is practically unbreakable."





Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	\$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVII.

FEBRUARY, 1907.

No. 2.

CURRENT COMMENT.

If we can't have enough trade schools in the daytime, let's work overtime a little and have a few at night.

* * *

Right now it looks better to be 21 than 23, but may be that funny edge of the 23 mile post will wear off by the time we reach it.

* * *

We hope the N. B. M. A. will keep "going some," and merely pause to remark that it showed up pretty good in size on its twenty-first birthday.

* * *

The trade school is a subject that should not only be boosted in talk, but should have continued live, substantial support between the talks.

* * *

Platt says economy is the need of the hour. Question: Does economy mean we should strive for more income to spend, or strive to spend less of the income as it is?

* * *

That was an interesting display of brick tests made by Mr. Howard, and St. Louis, as was befitting under the circumstances, carried off the honors with the hardest brick on record.

* * *

It has been pointed out before that the average man does not object to being called a brick—and now it has been demonstrated that neither do Mayors object when "Hunted" out with this appellation.

* * *

Mayer intimates that cutting eye teeth by brick manufacturers differs materially from real infant worries of this class, especially in the number of teeth the brick man generally has to cut before his eyes are thoroughly opened. His

paper on this subject has lots of meat as well as spice, a-plenty to make lively reading.

* * *

Treasurer Sibley has again demonstrated his ability to add to the fund of humor as well as keep the treasury fund growing.

* * *

We agree with you, Mr. Power, "the ideal roadway is one that offers little resistance to traction, and at the same time presents a hard, dry surface at all seasons of the year," and we only want to add, that in our mind that spells B-R-I-C-K.

* * *

The magazines have now discovered that by forcing telegraph and telephone wires underground and dispensing with the wooden poles, some of our forest resources can be saved. Sure; keep it up, boys, we're with you, and are ready to back you up to the point of asserting that a vitrified clay conduit is a better place for wires than upon a wooden pole, any day. So there now. Let the cherry trees rest and cut down the telephone poles.

SECRETARY RANDALL'S LOVE TOKEN.

It was our intention to present in this issue a photo of the beautiful silver tea service presented to the secretary by the old-time members of the N. B. M. A. and the A. C. S., as a remembrance of his twenty-first annual election, but the jewelers have not been able to complete the engraving on the tray in time to enable us to do so. It is indeed a beautiful gift, a fitting symbol of the love of the givers, and as such will ever be cherished as a precious heirloom by the Randall family.

THE BADGE OF MEMBERSHIP.

The souvenir badge presented to visitors by the St. Louis Clayworkers' Association is exceptionally pretty, as the readers of THE CLAY-WORKER may judge from the replica on our front cover page. It may be transformed into a very pretty watch fob by substituting a suitable strap for the ribbon. To accommodate the members who make it a practice of keeping these souvenirs, an extra lot has been supplied, and one will be sent to each of the members who were not present and who will advise the secretary that one is desired. A large majority of the absentees have already remitted the annual membership fee, but a few have overlooked this important detail, and they are hereby reminded of that fact, lest they forget.

THE PROGRESS OF THE NATIONAL ASSOCIATION.

Looking over the proceedings of the N. B. M. A., from the first one, and ending with the report of the St. Louis convention, one is greatly impressed by the development the association has made. In the early proceedings there was a kind of self-centered interest, a personal element, which recent meetings do not show. There is a higher tone and quality during the last few years which places this body of workers well to the front in the Nation's productive industries. This body develops, not alone good matter and good ideas, from an industrial point of view, but good literature; literature which has at once a scientific and an inspirational value as well. There were at least three distinct and characteristic expressions as represented by the proceedings of the St. Louis convention. There was that which was technical, and which applied to the practical side of the business of clayworking, and then there was that which related to the common good, and had a broad significance; there was the paper by Dr. Dickey, and the one by Mr. Brumbaugh, which related

to educational matters. Papers of this kind deal with the future, they do not present records of the past, but they blaze the trail for those who come after us. Another feature, which was characteristic of the proceedings of this convention, was that which betokened a spirit of brotherhood, a fraternal feeling and a friendly interest which is the outgrowth of years and a confidence which long association develops.

THE PERMANENT IMPROVEMENT OF PUBLIC HIGHWAYS.

The spirit of the paper by Mr. Grimes and Mr. Powers is prophetic in character. Our country roads, while they have improved in character during recent years, are yet susceptible of greater improvement. And now that the brickmakers have educated the public as to what may be done by good brick pavements within the cities, it only remains for these pavements and roads to spread into the country. The history of paving work, in its relation to the people, has shown that the people are always ready and willing to pay for a good thing when the facts relating to its value have been fully established.

THE STRENGTH OF BRICK.

One of the eminently strong documents presented at the St. Louis convention was that on the "Strength of Brick and Brick Piers," by Mr. James E. Howard, of the United States testing laboratory at the Watertown Arsenal. These tests, and the record of them, which we present in such graphic form, will make enduring literature of great value to the clay-workers, builders, architects and engineers. The building regulations of our towns and cities have considered too superficially and carelessly in relation to the structural value of brickwork. But here is an eminent authority, of unquestioned accuracy and thoroughness, who fixes a standard, one that can not be questioned. Mr. Howard's experiments will at once command respect and implicit confidence of all engineers, architects and builders who are influential in the matter of the use of brick as a structural material. Now that this work has been well started it should be kept up. There are brick in many parts of the country which have a much higher structural value than that shown by any of the tests given in Mr. Howard's diagram.

MONUMENTS FOR ALL TIME.

President Copeland, in his able address, said: "You will find evidence on all sides of a tendency toward more and better substantial home building among the people, not only in the cities but in the agricultural districts." This again suggests that we have passed beyond the pioneer period of our building. Hitherto most of our structures have been built with the idea that some day, not far off, they would be rebuilt. The very early pioneer built a home that afforded a crude sort of protection from the elements, and after that something a little better; even in the towns the business structures, the court houses, the school buildings and the manufacturing establishments are built with an astonishing disregard for permanency. This ought not be, and in the years to come, we may expect to build enduring monuments, not in the form of pedestals, with a crowning bit of statuary, but monuments in the form of permanent buildings, bridges and other structures. Our homes are taking on a monumental character, if not in outline, in the quality of the material and workmanship of the structure. We have now reached that point as a people that should lead us to build with an eye to permanence and beauty, and these elements are wrought best with brick and terra cotta.

THE ATTITUDE OF THE CANADIAN PUBLISHERS TOWARD U. S. MAGAZINES.

On the subject of postal agitation regarding second-class mail matter, one of our contemporaries across the northern border, "Canadian Machinery," denies emphatically that there is any recognized movement among the publishers of Canada seeking to influence Canadian postal authorities to keep out American magazines. They say that it is their desire that Canada shall have the most liberal access to the best reading possible. We are glad to see our editorial friends talking this way, and only hope they will go a little further. In reference to the abrogation by Canada of the postal convention between the United States and Canada in so far as it relates to second-class matter, is set forth in our contemporary in their editorial as being simply a waiting game, a holding back to see whether or not Uncle Sam will make more stringent rules regarding second-class matter. Really now, this information is not very edifying, and we think if our friends across the border are in earnest they might state specifically just what they do want, and the publishers up there, if they are as friendly as they claim, might urge the postal authorities to play the game a little better. There are unquestionably publications which ought to be shut out of the mail, but it does not help it much to levy a heavy tax on legitimate publications for the sake of getting after the improper ones. There ought to be another way to get at them and we hope that our postal authorities will find a way, and that Canadian postal authorities will come to see it in the same way. Meantime, if our contemporary across the border is in earnest, he might use his influence editorially to induce his postal authorities to work in harmony with ours, instead of standing aloof.

OBITUARY.

Spencer S. Kimbell, Chicago.

SINCE the last issue of THE CLAY-WORKER the brick trade of Chicago has lost one of its most prominent men, Spencer Smalley Kimbell, who died at his home, 1493 Kimbell avenue, after more than a year of suffering. During most of this time he was able to be up and about to some extent, occasionally visiting his offices in the Chamber of Commerce Building, but for the most part he was closely confined to his home, and latterly to his room.

Mr. Kimbell, who was 64 years of age, was accounted one of Chicago's pioneer citizens, being the son of Martin A. Kimbell, one of the oldest settlers of Cook county, who took up a grant of 300 acres in Jefferson township in 1836. From very young manhood, S. S. Kimbell was identified with the development of the northwest part of the city, and thus became involved with the building interests, and at the close of the war, in which he served from 1862 to the close, with the Chicago Light Artillery, he went into the stone business. In 1885 he saw the coming importance of brick as a building material and went into the brick business, being for a number of years an associate of D. V. Purington, under the firm name of the Purington-Kimbell Brick Company. Later he became the resident manager of the Chicago Hydraulic-Press Brick Company, and in 1902 severed his business connections with that company, with which his brother, E. C. Kimbell, still continues, and organized the S. S. Kimbell Brick Company. He was a member of the National Brick Manufacturers' Association and attended the annual conventions regularly for many years.

In politics Mr. Kimbell was a Republican. He was at one time alderman from the Twenty-seventh ward, served two terms as county commissioner, was six years a trustee of the Jefferson township school. Mr. Kimbell's death is deeply mourned by his business associates. He is survived by his widow and three daughters.

THE WISCONSIN CONVENTION.

The clayworkers of Wisconsin will meet in annual convention in Madison, Wednesday, Thursday and Friday, February 27 and 28 and March 1. The program had not reached us to the time of going to press, but Secretary Hamilton writes that it will prove most interesting and instructive. The forenoon of the second day will be devoted to a side trip to the State University where, in the engineering department, the visitors will be shown the methods of testing brick and other structural material. Prof. A. Peabody will also entertain the visitors with an illustrated lecture on "Brick and Brickwork in Architecture." The Legislature will be in session that week, so that those desiring to see the lawmakers at work will have an opportunity of doing so. The annual banquet will be held Wednesday evening. The Capital House will be headquarters, and delegates are advised to write and secure quarters in advance of arrival. A large attendance is anticipated.

AN OLD FIRM WITH A NEW NAME.

John McLaren and W. J. Phillips have announced to the trade that the co-partnership heretofore existing under the name of Phillips & McLaren, by the undersigned was dissolved January 1, 1907, and that they have organized a corporation under the laws of Pennsylvania under the name of Phillips & McLaren Company, for carrying on the same business carried on by said partnership, of which corporation John McLaren is president, and William J. Phillips is secretary and treasurer. They assure their patrons that the corporation will maintain the same standard of excellence and the same fidelity to the interests of users of their machinery, which consists of their dry and wet pans, clay crushers, engines, roll lathes, castings, etc.

"THE N. B. M. A."

WRITTEN FOR ITS TWENTY-FIRST ANNIVERSARY
BY A CHARTER MEMBER.

We greet our hostess, kind Saint Louis, the fair,
The famous Exposition City, where
We've come to have our birthday party, and
Extend to all her sons a friendly hand.

Just twenty-one progressive years ago,
In motherly, and famous Ohio—
Distinguished for her hospitable heart,
And grace and beauty of the Plastic Art—

Was born a little clan, workers of clay,
Brothers in zeal, and named N. B. M. A.
No trumpet sounded for this brotherhood
Of compact, made for mutual help and good.

But silently, and strongly, too, it grew,
And did good work, till all the clay-world knew
It was a lusty youth of promise. Day
By day made fame for every son of clay.

Today, our little clan is twenty-one—
Attained its full majority, begun
Its work in man's estate, with power
And largeness, fitted to the larger hour.

And having reached this sphere, together, we
Look back across the early years, and see
The helpful, earnest work that we have done,
And vaster work in future, scarce begun.

Our work to study labor-saving force,
And speed our art upon a swifter course;
To wave this wand above our fields of clay,
And—presto! see the magic of its way!

From clay to factories, and better homes!
From earth to temple heights, and skyward domes!
Could there be nobler cause than ours, in which
To list the thought of good, and wise, and rich?

And he who does his part, however small,
Toward this perfected art, has helped us all.
And given us hope that, from this potent soil,
We may produce more, yet reduce the toil.

Then, honor be to our N. B. M. A.!
Each member is a royal Knight of Clay.
And may the birthday meetings of our clan
Find each of us a wiser, better man,

Filled with ideals of the Plastic Art—
That crowd the brain, and overflow the heart;
That sweeten life, and elevate the mind,
And help uplift, and comfort, all mankind.

—F. E. FREY.

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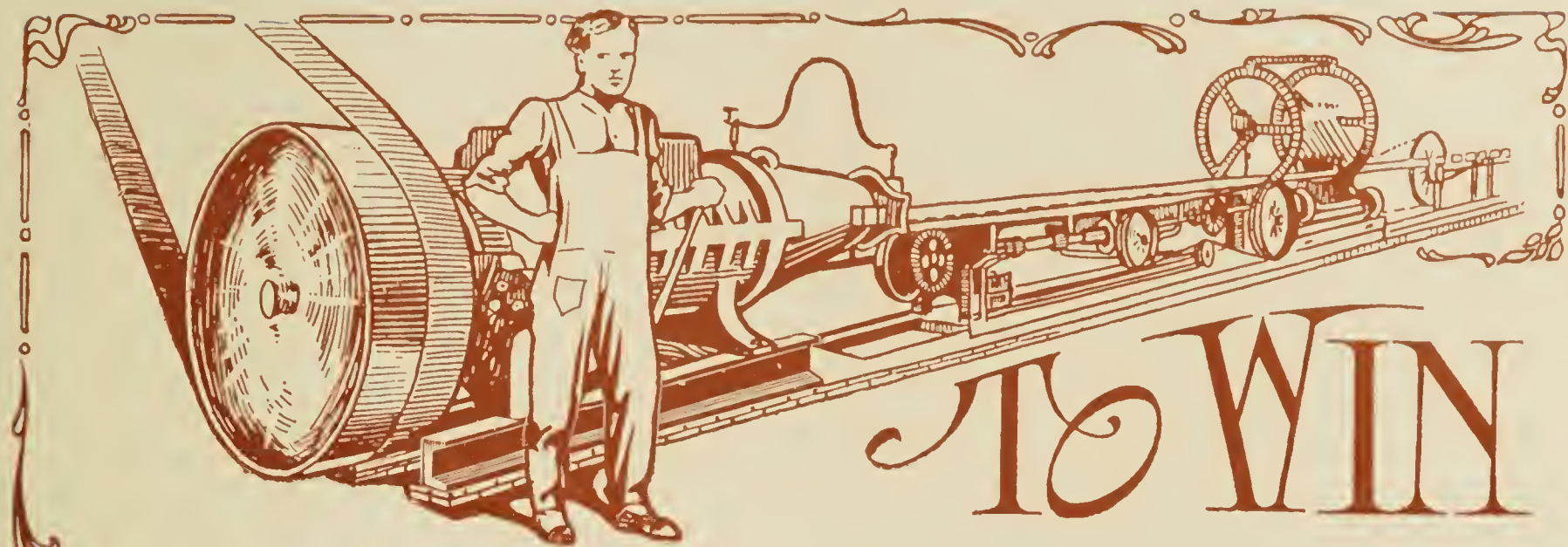
DRYING AND BURNING reduced to a reliable and economical system. See Parts IV and V of our catalog of Testing and Controlling Apparatus. The Richardson-Lovejoy Engineering Co. (See page 449.)

WANTED, FOR SALE, ETC.

FOR SALE—At a bargain, small brick plant. Henry Martin soft mud machine. Good town on railroad, central southern Illinois coal field. No opposition. Reason for selling, other business. Address A. J. BINKLEY, 111 dm Marion, Ills.

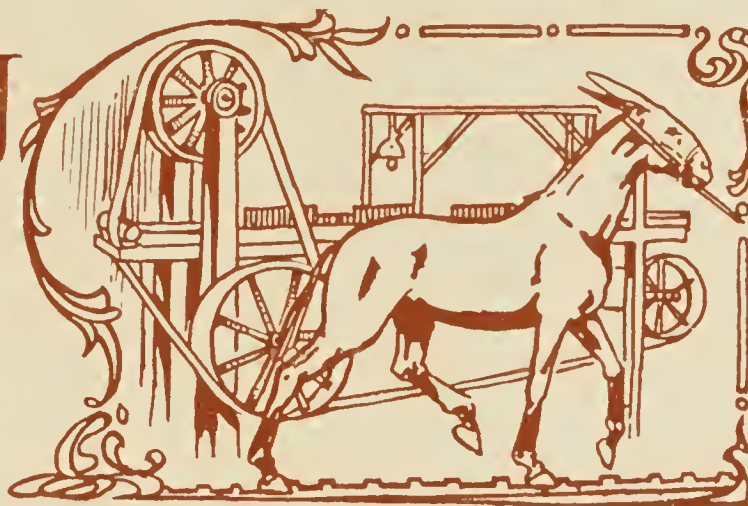
WANTED—Copies of Davis's Bricks, Tiles and Terra Cotta. Good price will be paid if same is in a good, presentable condition and free from mutilation. Address APPRENTICE, Care Clay-Worker. 10 1 L

For Sale, Wanted, Etc., Ads Continued on Pages 418, 420, 421, 422 and 423.



YOU MUST HAVE GOOD MACHINERY

Old methods and antiquated machinery will surely lose out for you in your race for success



In these days of keen competition the *best* brick-making machinery is none too good for you.

We mean machinery that will make bricks of the finest quality at the lowest cost—machinery that has the greatest capacity—machinery that requires the least repairs—machinery that will last the greatest number of years.

Such brick machinery is made by

The C. W. Raymond Co.

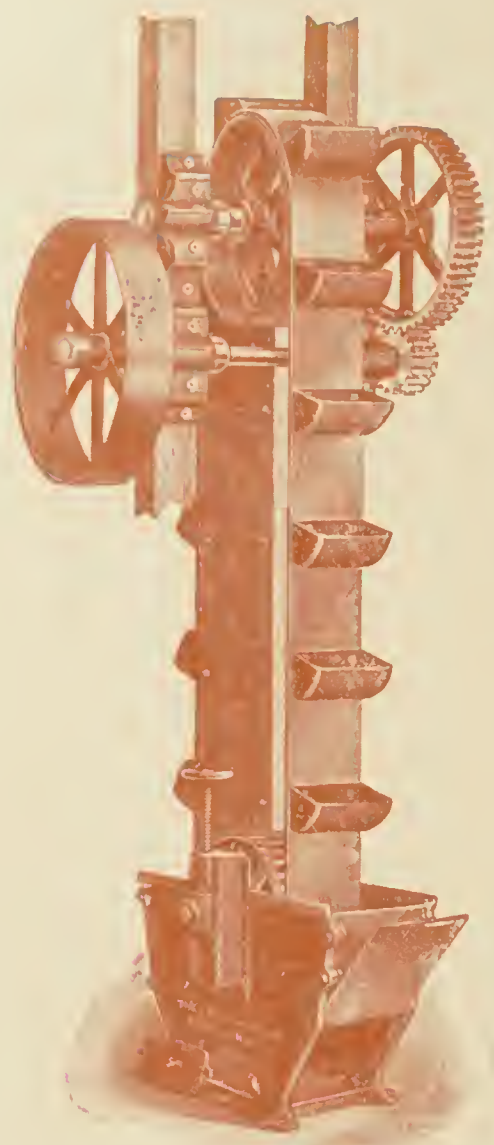
We manufacture everything necessary for the making of clay products.

Our catalog free.

THE C. W. RAYMOND CO.

Dayton, Ohio, U. S. A.





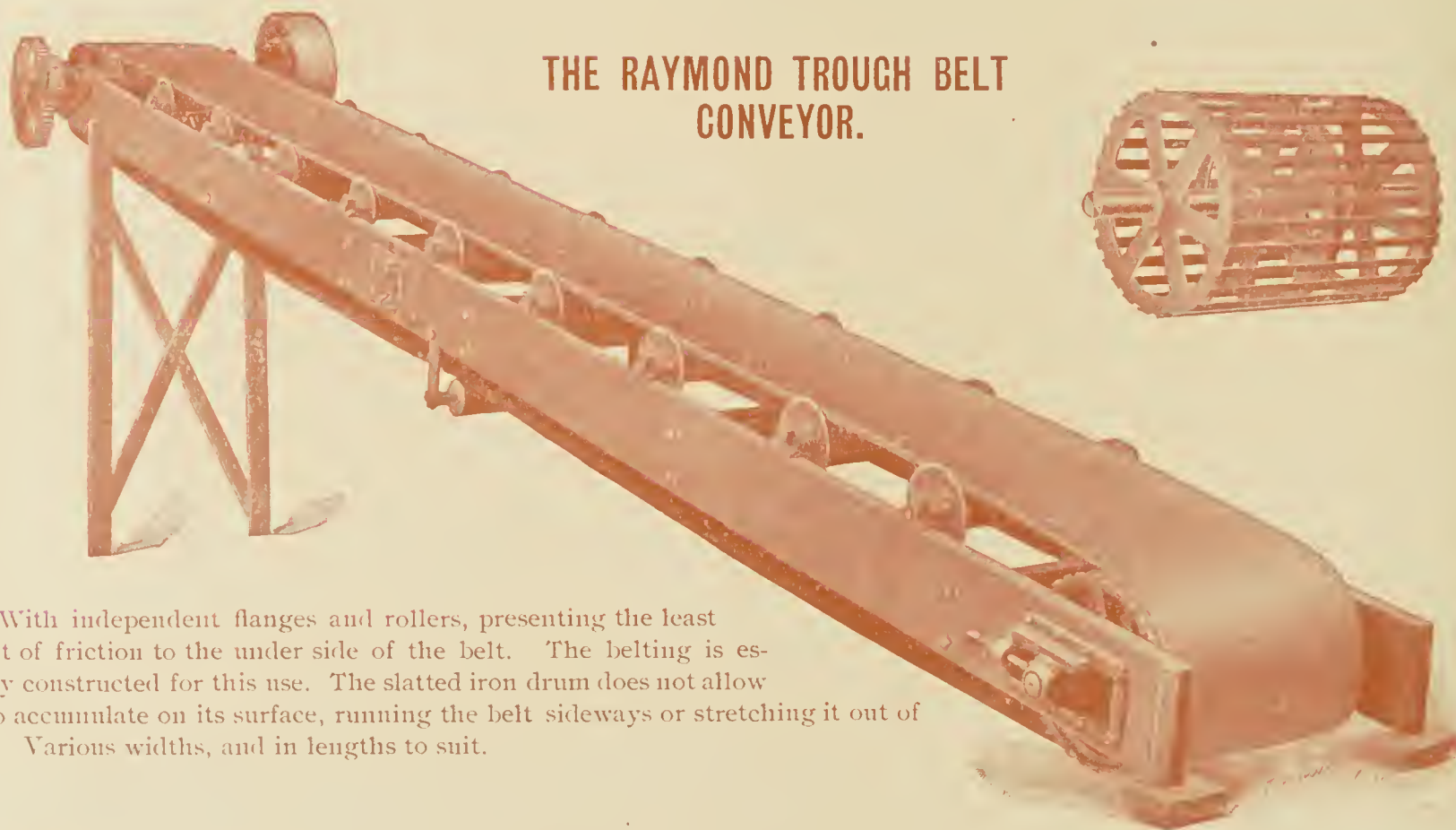
THE RAYMOND CUP ELEVATOR.

Some of 'em.

Just a Few of the Lesser Items.

The Raymond Cup Elevator, with open boot. This boot has gates on both sides, large enough to admit an ordinary size shovel. The entire end lifts out—it's easy to clean. We make it any height, and for various size buckets.

Also single and double strand link chain elevators for special use.



THE RAYMOND TROUGH BELT CONVEYOR.

With independent flanges and rollers, presenting the least amount of friction to the under side of the belt. The belting is especially constructed for this use. The slatted iron drum does not allow mud to accumulate on its surface, running the belt sideways or stretching it out of shape. Various widths, and in lengths to suit.



CATALOG FOR THE ASKING.

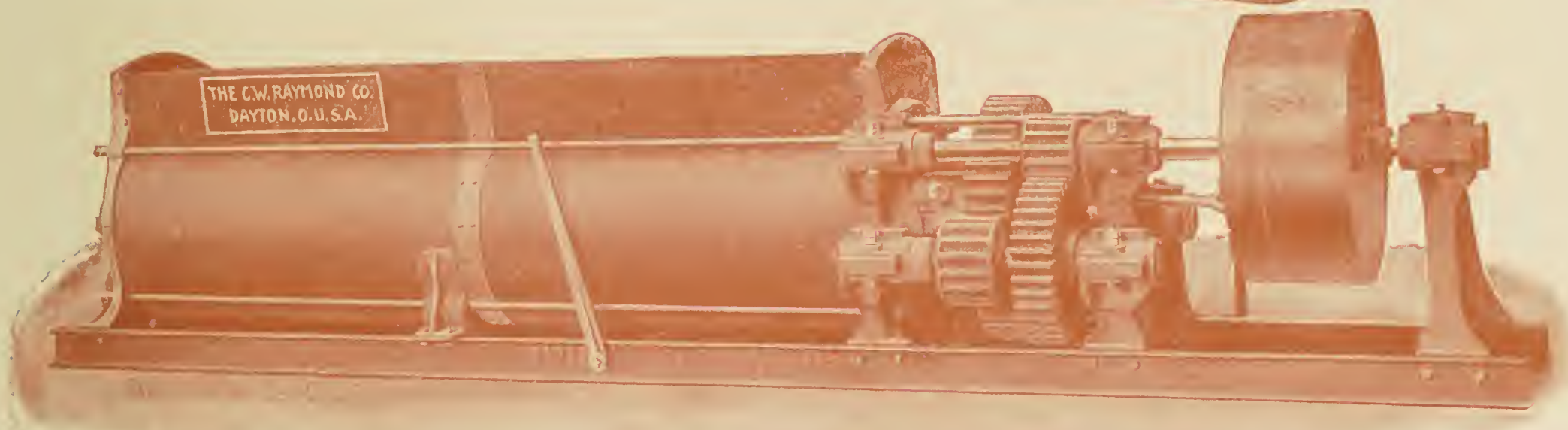
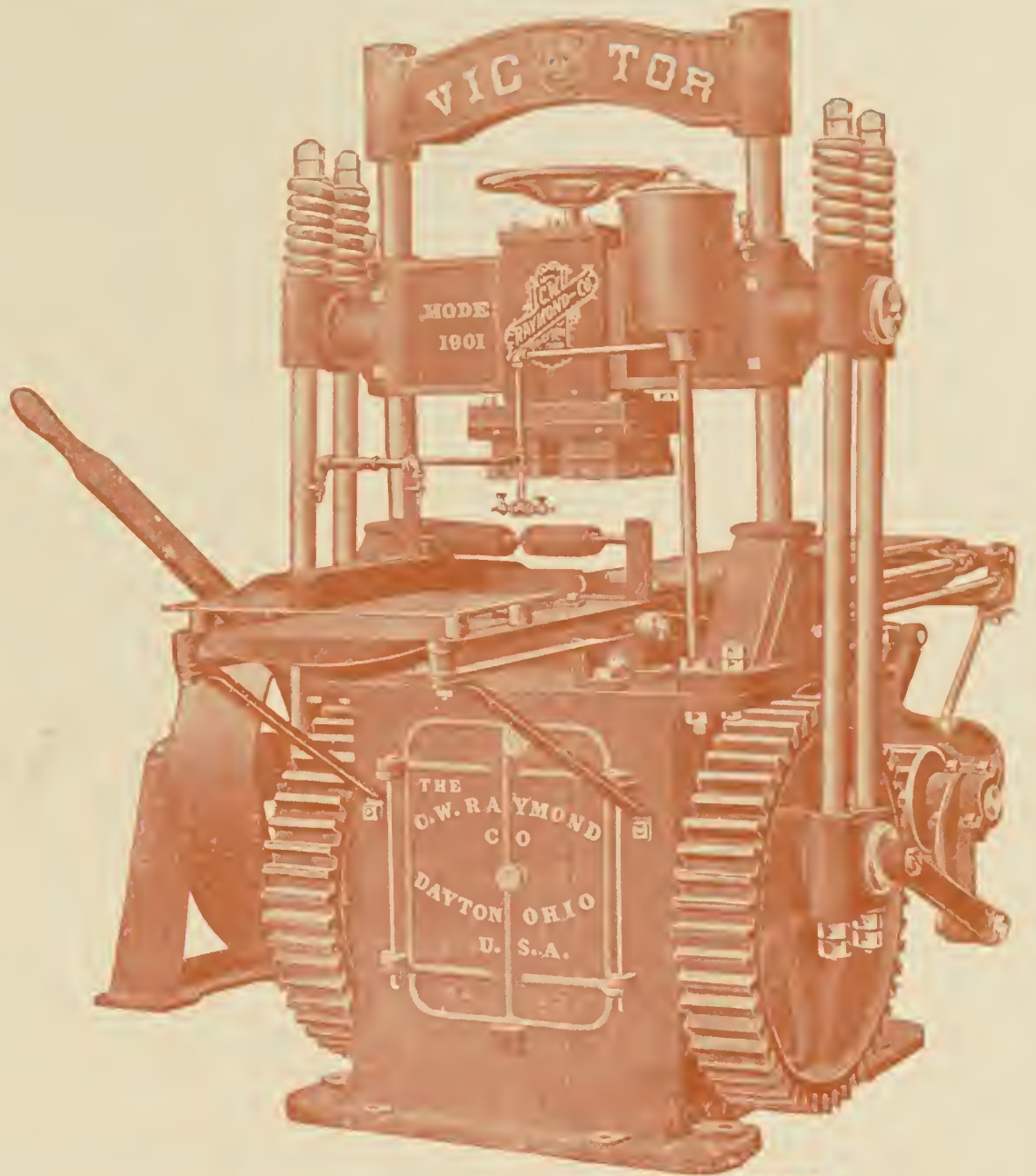
The C. W. Raymond Co.,

Dayton, Ohio, U. S. A.

Yesterday, Today and Forever.

The Victor is still victorious in the field of Modern Represses. Its simplicity and strength make it THE Repress which costs the least for repairs and operation. Its correct construction and smooth running qualities make its production the most nearly perfect.

Write now for information.



Raymond Pug Mills have always been successful in the past, are successful now and will continue to be successful because every detail in their manufacture is so carefully taken care of that the life of the machine is lengthened two-fold, with less cost for repairs and upkeep.

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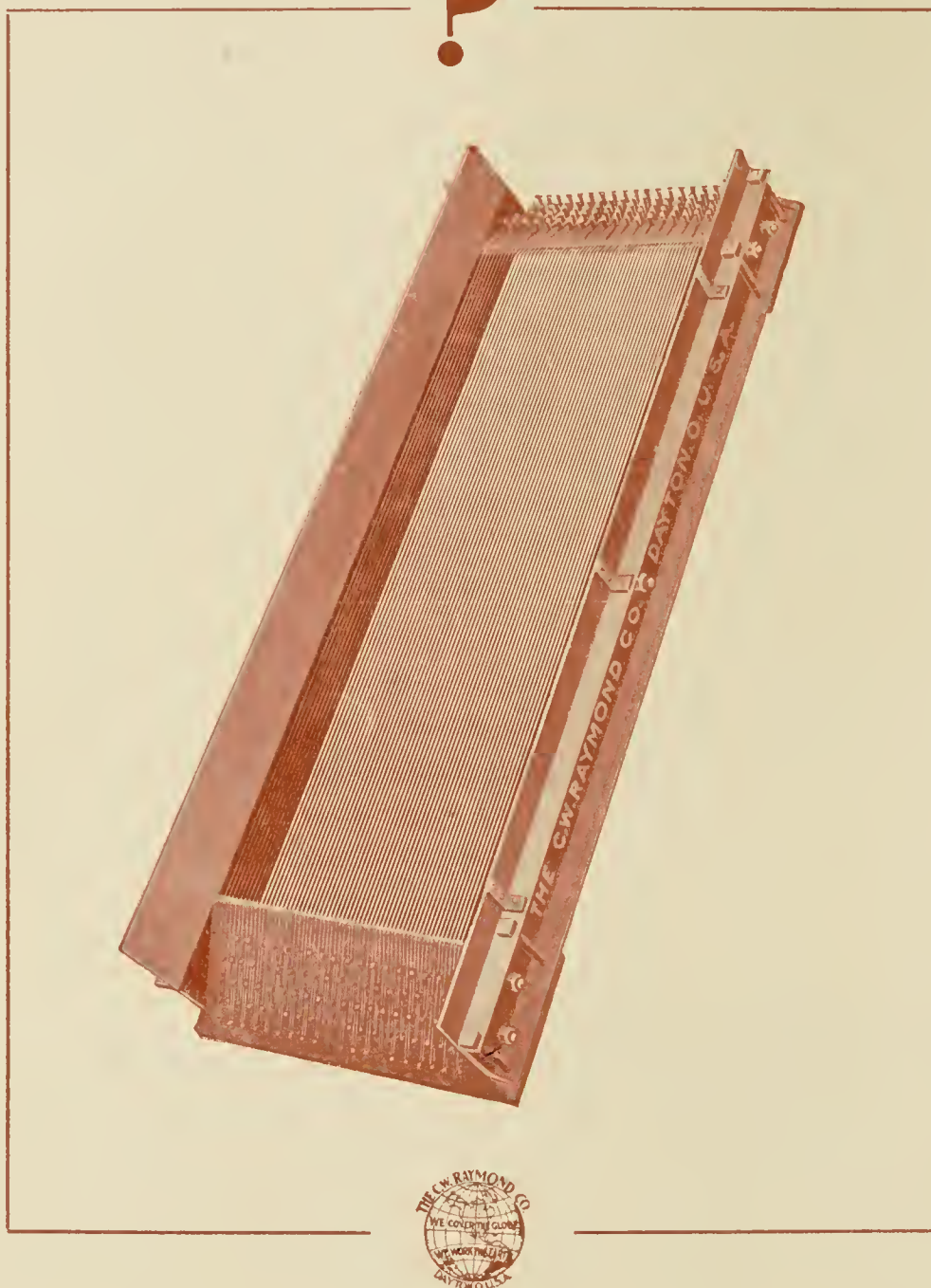
The C. W. Raymond Co.,

Dayton, Ohio, U. S. A.



How soon are you going to get rid of your SCREEN TROUBLES

?



THE RAYMOND PIANO WIRE SCREEN

Represents the highest attainment in modern economy, working by gravity, the cost of operating is eliminated. The frame work is built to outlive the remainder of the plant. The cost of upkeep is reduced to the replacing of a worn or broken wire. The product is strictly uniform. Write for Exhibit 76.

The C. W. Raymond Co.,
Dayton, Ohio, U. S. A.

A KIND OF A POSTSCRIPT.

We are constantly making new machinery and improving our old, keeping our output strictly up-to-date. For this reason it is impossible to have a large edition of a general catalog as late as we would like. Consequently if there is anything you need in the handling of your raw material, the manufacture or handling of your product, write us for the very latest on the subject. Our Exhibit Sheets cover these improvements.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.



ACTIVE preparations have been started in this vicinity for the resumption of spring work in all of the brick plants. Many of them have not been idle a moment during the winter, but others have been shut down during the cold weather to overhaul machinery and make necessary repairs and extensions. The outlook for the season is exceedingly bright and many of the concerns say that they have orders enough to keep them busy all year.

City authorities have been busy during the past few weeks in receiving bids and awarding contracts for street paving. The bugaboo of a paving combine is worrying the city paving department somewhat, but nevertheless the commissioner in charge of that work admits that a reasonable advance should be given over last year's prices on account of the general advance in the cost of labor and materials.

Already some fifty street paving contracts have been awarded, the prices for brick pavement varying from fifteen and a half cents to seventeen and a half cents per square foot. The city has enough work to keep all the paving contractors in Cleveland busy for the year and then have some streets left for which funds are available. Between 10,000,000 and 12,000,000 paving brick will be used in Cleveland this season. No more contracts than can be furnished this year will be awarded.

This winter has been an extraordinary one in Cleveland, for during the month of January a considerable amount of street paving was done, several streets being completed which would otherwise have gone over until the spring. Difficulty has been experienced in getting laborers, some of the contractors having literally to go out on the streets and beg men to go to work on the jobs.

Not only is the outlook bright for paving but also for the building of brick sewers. All sewers over 18-inch must be of brick. Some \$300,000 has been asked for general sewer work and \$200,000 more for the completion of the mammoth brick intercepting sewer.

Spencer M. Duty and Charles Deckman, the Cleveland paving brick makers, have been pulling out plums from the Detroit pie. Both have secured contracts for large orders. The Malvern Brick and Clay Company, of which Deckman is proprietor, has been awarded an order for 2,000,000 paving brick, and the Collinwood Shale and Brick Company, controlled by Mr. Duty, has also been awarded a 2,000,000 order. About 7,000,000 will be used in Detroit. Work has already begun in getting out these orders. In addition, both concerns are busy supplying brick for local work. The Carrollton Brick Company, jointly owned by Messrs. Duty and Deckman, resumed work this month with a capacity of 30,000 brick daily. Shipments were made on the Detroit orders this month.

The outlook for the common brick business is good. Next month all of the common brick plants will be running again full blast, getting a little stock ahead for the expected spring rush. Cleveland architects have been busy all winter evolving plans, and if the projected buildings materialize it means another record-breaking year for the brick men.

W. H. Hunt, an ex-president of the National Brick Manufacturers' Association, and a prominent brick man of Cleveland, being manager of the Cleveland Hydraulic Pressed Brick Company, has started an agitation in Cleveland for the appointment of an art commission, to supervise all municipal structures and to assist in securing a desirable uniformity. Mr. Hunt maintains that no public or private enterprise should be contemplated or executed without it being presented to the art commission. Structural monstrosities would then be avoided. This plan exists in Detroit and is very successful. Mr. Hunt has observed its effects abroad and maintains that Cleveland would do well to follow it.

The Hydraulic Pressed Brick Company, of which Mr. Hunt is general manager, has been making some extensive repairs and alterations at its plant at South Park. The ap-

pointment of John J. Hunt as superintendent of the plant has been announced. W. H. Hunt says that he looks for 1907 to be the banner year in the brick business in Ohio.

From Cleveland and Cuyahoga county the effects of good brick country roads is gradually spreading to other counties in Ohio. During the past month many inquiries have been made concerning the plan the county follows in laying its county brick roads outside of the city limits. A large delegation from Summit county met with the county commissioners a few days ago to see if some plan can not be evolved to have a continuous brick road from Akron to Cleveland, a distance of nearly forty miles.

Once more the Cleveland school for bricklayers has been set in operation. It is claimed by its promoters that this school was the first of its kind to be operated in America. It was started a year ago under the auspices of the Cleveland Mason Contractors' Association and operated for the season, turning out fifty full-fledged bricklayers, many of whom at once began drawing journeymen's wages. This year the school is located at 523 Champlain avenue, and is under the direction of George C. Ehbar, who was superintendent last year. Between twenty-five and thirty students are in attendance and more are expected.

The first lessons taught were in regard to the making of mortar. Then simple bricklaying was taught, leading up to the construction of corners, arches and the more difficult work. Classes are four hours in length and are held morning, afternoon and evening. A course in plastering is also given by the instructor.

A number of prominent brick men from Cleveland attended the meeting of the National Brick Manufacturers' Association at St. Louis early this month. William H. Hunt, who replied to the address of welcome, led the Cleveland delegation. The only architect to be awarded the honor of appearing before the National Association, Charles I. Schneider, who gave a paper on "The Life of Brickwork," is also a Cleveland.

A. BUCKEYE.

A High Compliment for Prof. Binns.

Editor THE CLAY-WORKER:

Enclosed find my check for \$2.00 subscription for THE CLAY-WORKER for the year 1907. I wish to thank Prof. Chas. F. Binns for his article on sulphur and sulphates. I think I am among the oldest of THE CLAY-WORKER's subscribers, and I consider it the best ever published on the subject. Its language is comprehensive to us who have a meager understanding of chemistry and certainly must be appreciated by a large number of readers of THE CLAY-WORKER. Come again, Mr. Binns.

Yours truly,

Clio, Mich., February 12, 1907.

THOS. OLIFF.

ST. LOUIS A SPLENDID CONVENTION CITY.

Dear Friend Randall:

I am back home and deep in my work again, trying to extricate myself from the large mass of correspondence accumulated during my absence at St. Louis.

Allow me to congratulate you on the very large assemblage of admirers that gathered to pay their respects to you on your twenty-first birthday and wish you many happy returns of the occasion.

St. Louis proved to be a splendid convention city and great credit is due to the St. Louis brick manufacturers for their generous entertainment of the largest gathering of the N. B. M. A.

Mrs. Youngren is untiring in expressing her gratitude toward the ladies' reception committee of the St. Louis convention, for the cordial reception and munificent entertainments accorded the visiting ladies during their entire stay.

By the by, it was rather fortunate for Brother Sibley that the ladies were present in large numbers, as otherwise he may have lost out on the election, even if he had Brother Eudaly engaged to manage his campaign.

With sincerest well wishes for the future of the N. B. M. A. and its beloved secretary, I am

Yours truly,

P. L. YOUNGREN.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



REPRESENTATIVES of the leading brick manufacturing plants of San Francisco and its tributary country say that they will be able to take care of most of the demand this year, although it is admitted that the demand for building materials of all kinds will be unprecedented. Even if the concerns now supplying brick should be unable to fulfill their expectations there will probably be several new plants erected this season. A half dozen or more representatives of Eastern capitalists who are contemplating the erection of as many brick and clayworking plants in California are making exhaustive inquiries of local experts with a view to securing valuable clay deposits that would suit their purposes.

While there may be danger of overdoing the manufacture of common soft mud brick for the San Francisco market, there will be an immense demand for several years to come for face brick and architectural terra cotta. Many Eastern firms are bidding on the latter class of work.

The Hyfire Brick Company, G. Abrahamson, president, which bought an old brick plant at Vallejo and remodeled it last year, is preparing to make important extensions and improvements at its works. A good quality of red pressed brick is being turned out at present as well as a high-grade silica fire brick. The clay for the manufacture of the fire brick is brought from the Sierra Nevada Mountains and a good demand exists for this very refractory article. The company's office is now located at 22 Market street, room 3.

Smith, Emery & Co., chemical engineers, who have been temporarily located in Oakland since the fire, will, on April 1, return to San Francisco and occupy a new two-story and basement brick building, 42x80 feet, which they are having erected at Hawthorne Place and Third street, for laboratory and office purposes. A prominent feature of the new laboratories will be a complete clay working plant, which will enable all sorts of practical working tests to be made of the great variety of valuable clays found in California and all over the Pacific Coast.

The newly established Carquinez Brick and Tile Company has recently incorporated and is pushing the construction of its plant at Eckley, Contra Costa county, vigorously. The capital is \$150,000. The officers are as follows: President, C. H. Harrison; vice-president, Donald J. McKay; secretary and treasurer, H. W. Smith; chief engineer, Charles P. Grimwood. Mr. Grimwood has just returned from the East, where he has been purchasing the new machinery for this company.

Notwithstanding the fact that the demand for ordinary building brick is not very brisk, the leading manufacturers in the vicinity of San Francisco have been compelled to advance prices to a certain extent by the increased cost of production. The advance will not, however, be sufficient to cause any material increase in the cost of brick construction. So far, the only effect has been to give the newspapers a chance to work up some "scare heads" on the "extortions of the brick trust."

The Butler Brick Yards, in South San Francisco, have been transferred to Alexander & Co., of this city, and the new management is preparing to treble the capacity of the plant.

The Pacific Coast Pottery and Terra Cotta Company has been incorporated at San Jose, Cal., with a capital stock of \$500,000 to engage in the making of brick, terra cotta, sewer pipe, tiles, etc. The incorporators are A. D. Campbell, R. R. Webb, W. K. Jenkins, S. L. Denton and N. E. Wertman.

The Corona Pressed Brick Company, of Corona, Cal., has put in a machine shop for the repair of its machinery at a cost of \$3,000. Thos. Gavin is in charge of the new department.

The Redding Brick Company, recently organized at Redding, Cal., has arranged with the Southern Pacific railroad company for the construction of a spur to connect the company's plant with the main line of the railroad at Redding. The company promises to be turning out brick by the end of April. The officers of the company are: M. T. Hill, presi-

dent; Chris Stabler, vice-president; G. A. Sparks, treasurer; and E. R. Burtis, secretary and manager.

E. A. Youngsby is to begin operations at his new brick making plant in a short time. He is putting in a new wire cutting machine and will add a hollow ware plant.

Hall Bros., of Los Angeles, Cal., are promoting the establishment of a brick manufacturing company at Santa Ana, Cal. The plan is to organize a company with a capitalization of \$100,000.

The West Coast Brick and Tile Company has filed articles of incorporation at Centralia, Wash. The company has a capital stock of \$25,000, the chief stockholder being Chas. A. Bartz, of Tacoma. J. E. Williams will act as superintendent. The new company will manufacture brick and drain tile.

San Francisco, February 6, 1907.

SUNSET.

Written for THE CLAY-WORKER.

BRICK NEWS OF NORTHWESTERN OHIO.

BRICK TRADE in Toledo is very dull. The same may be said with reference to business being done outside of Toledo, although some of the local brick men report that outside trade is fair, while trade in the city is very dull, only one plant, that of the Collingwood Brick Company, is running. Two other plants, those of the Ohio Brick Company and the Hydraulic-Press Brick Company, being equipped with standard dryers, could be running, but they are closed down for the annual repairs, while trade is dull, anyhow.

Local brick men are merely looking to the future to bring forth good results. The prospects are good for big building operations in the spring. At present, the weather prevents any marked building activity outside of finishing up jobs already started. This section has had a cold spell on since the middle of January, and since that time the ground has frozen to a depth of fully eighteen inches.

On the other hand, the city building inspector reports that the number of permits issued for January total 62, or only two less than the number issued in January, 1906, while the total valuation of the permits for the past month runs considerably over the total valuation of the same month, a year ago. From this, it would appear that property owners are getting ready. This may be verified by a visit to the various offices of the local architects, who report that they are getting busy on projects that promise to materialize just as soon as the weather will permit of building being done. Architects, not all of them, but a number of them, have been quite busy for the past few weeks.

In further reviewing the situation, W. O. Dakin, secretary of the Toledo Brick Supply Company, stated that the delivery of brick for the past month was about 60 per cent. less than the total delivery for January, 1906. This is explained by reason of the winter of 1905-1906 being open, so that building operations continued throughout the entire season without abatement. Dealers here have given up all hope of seeing anything like any marked activity in building until spring arrives.

The Kohler Brick Company held its annual meeting the fore part of the month, re-electing the old list of directors and officers for the ensuing year.

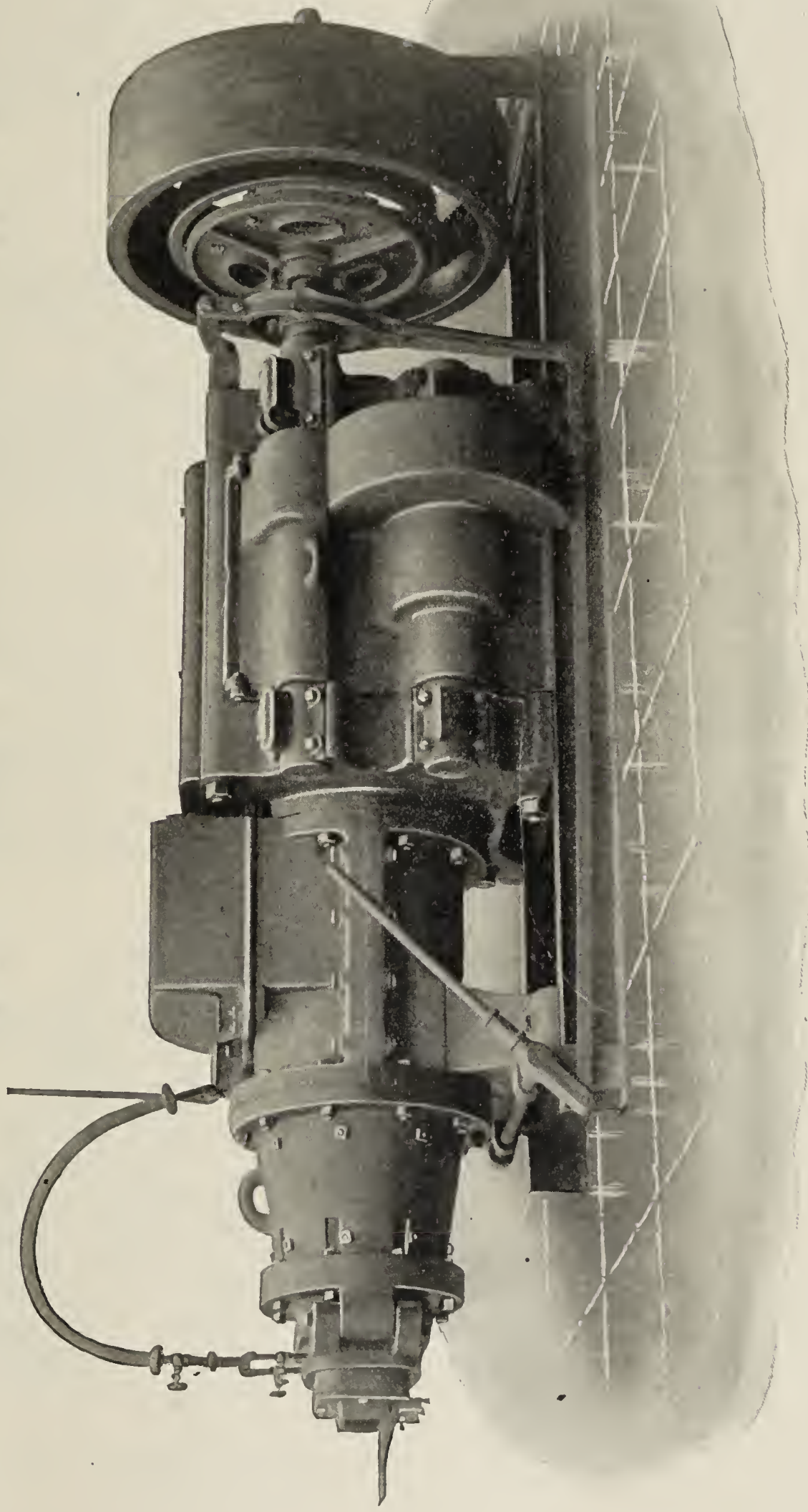
The following prices for brick prevail on this market: Common or building brick, \$7.00 per thousand; hard or foundation brick, \$7.50; sewer or paving brick, \$7.75; round corner brick for inside, \$8.50; face brick, \$8.75; round corner or angle brick, \$9.50.

To give an idea of what may be expected in the line of paving, Claude W. Filer, of Logan, Ohio, stated, while here a few weeks ago, that paving brick manufacturers are looking forward to a year of unprecedented activity. "More towns are planning extensive paving operations this year than ever before," continued Mr. Filer. "Even small villages are going to have pavements and be up-to-date. This year will undoubtedly see more miles of pavement put down in America than any previous year in the history of the country."

B. F. Wagner, of Custar, Ohio, has sold his tile mill and yards to E. A. Hill for \$4,000.

T. O. D.

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

Written for THE CLAY-WORKER.

WESTERN PENNSYLVANIA BRICK AND BUILDING NOTES.



WING TO THE heavy falls of snow and the first really cold weather of the year during the past month, business, from a retail standpoint, showed a large falling off for this period.

In many cases this was really welcome to the manufacturers, however, as stocks are rather badly depleted, and this lull will give them an excellent opportunity to prepare for the rush that is anticipated by all with the coming of the warmer weather of the spring.

The outlook, particularly as concerns fire brick, vitrified paving and all kinds of building brick, is most promising. Building operations will be immense during the summer, particularly in residence and smaller business buildings, while the steady use of many of the blast furnaces in the Pittsburgh district will make necessary new linings for many of these furnaces and stoves, orders for which are now being placed with manufacturers. Brick as a paving material will be largely extended to the paving of roads and state highways this year, it having been found to stand up well under the tests that have been made during the several years of experimental construction in this vicinity. Plans have now been practically completed for the paving of several sections of state highways with brick, bids for which will be taken in a month or two.

Sewer pipe plants continue busy, and heavy stocks will have to be laid up to properly take care of the immense quantities that are now under requisition for the many towns and boroughs that will start to install sewerage and sewage disposal systems during the year.

Fireproofing conditions remain unchanged, the demand being good, with the plants running in excellent shape in the endeavor to lay up adequate stocks for immediate shipment when called for, orders having been placed for large quantities subject to purchasers' directions in the spring.

The Clymer Brick and Fire Clay Company, of Clymer, Pa., will make an application this month for a charter to manufacture and sell fire brick, tile, fireproofing and other clay products.

W. H. Wynn & Co.'s new fire brick plant at Blue Ball, Clinton County, Pa., which was recently rebuilt after having been destroyed by fire last fall as we have reported, has just completed a fine electric power and lighting plant, which the company will use in lighting the big works when double turns of workmen have to be placed on duty, to keep up with the long list of orders that have not been filled owing to the fire. The plant is now employing one hundred and fifty hands, and more will be put on this month.

The Ohio Face Brick Company, of Pittsburgh, has been incorporated with a capital stock of \$300,000, to manufacture face and ornamental brick. The incorporators are C. E. Wolff, Pittsburgh; E. R. B. Martin, St. Marys, W. Va.; F. D. Miller and J. S. Klinefelter, Alliance, Ohio; and Charles Swisher, of Charleston, W. Va. A plant will be operated this year, and offices opened in this city.

The rebuilt and reconstructed works of the Clinton County Clay Company, near Lock Haven, Pa., have been started, and within a few weeks will be in full operation, with enough orders on hand to run continuously through the entire summer. For the present Louis Streuber, of Erie, Pa., the largest stockholder in the concern, will personally look after the plant, after which his assistant, Mr. D. B. Anderson, will assume charge. The name of the company has been changed to the Clinton Terra Cotta Company, and machinery of the latest and most improved design has been installed. The clay will be mined with a steam shovel, which has already arrived.

John Swan, Jr., Director of Public Works of Allegheny City, has specified "Savage" fire brick and "Savage" fire clay for use in the city pumping stations and other work requiring refractory materials for the ensuing year. F. A. C.

Written for THE CLAY-WORKER.

POTTERY NEWS.

Prosperity spells the conditions of the pottery industry, which opens the year under brighter prospects than ever before known. In these three branches of the clay industry, orders are exceedingly heavy. Not only are road salesmen being favored with a heavier business, but mail orders were never known to be so extensive as they were during January and February.

There is not a brick or sewer pipe plant or pottery house in the Ohio valley that is idle because of a lack of orders. There are five potteries in the Pennsylvania and Ohio district which are idle, but litigation occupies the attention of these. One is located at Derry, Pa., one at Salineville and Crooksville, Ohio, and two at Columbus, Ohio.

While these plants are idle, the mammoth pottery at Newell, W. Va., which is owned by the Homer Laughlin China Company, of East Liverpool, Ohio, is now in active operation. This plant has thirty-two kilns, and because of this, a greater kiln capacity is being worked in pottery even if five potteries are idle.

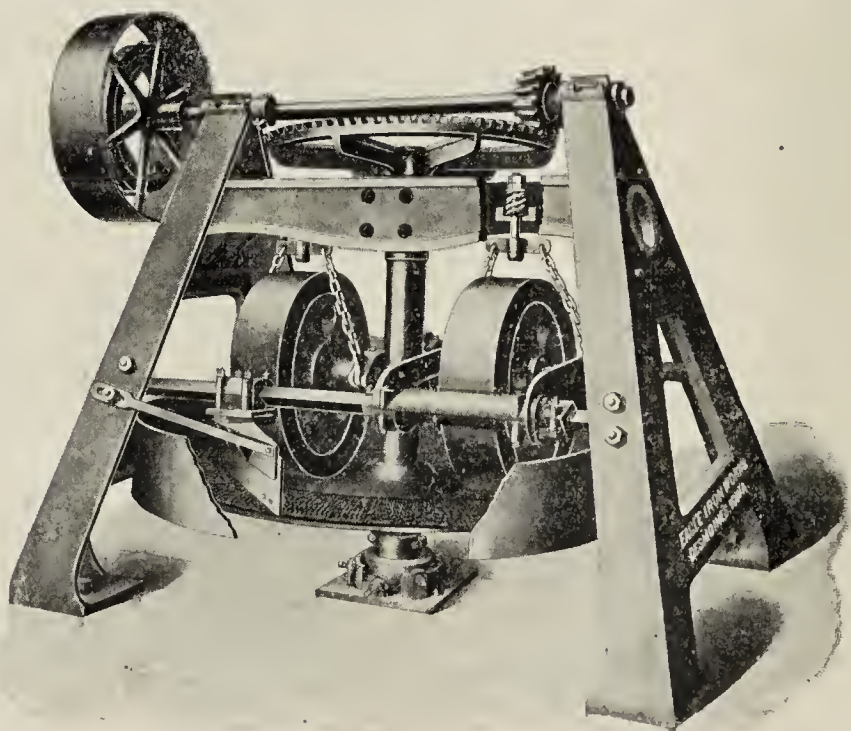
Ransbottom Brothers, of Roseville, Ohio, have incorporated their company under the Ohio laws and will hereafter do business as a corporation. The firm will add three brick buildings to its Roseville plant, measuring 60x150 feet each, and also erect three 30-foot kilns for the burning of stoneware. The company has a capacity of four car loads of ware a day at this plant, while at its Buckeye plant at Saltillo, the capacity is two car loads per day.

The shortage of gas in the Ohio Valley district has greatly hampered shipments of pottery, the manufacturers being unable to fire their kilns off on time. About one-half of the pottery kilns in the East Liverpool district are under coal fire.

The first shipment of ware has been made from the mammoth Newell pottery, at Newell, W. Va. It comprised a car load of white ware to a western firm. The company will continue the shipment of white goods until the battery of decorating kilns are completed. O. MEGA.

East Liverpool, Ohio.

Independent and Suspended Mullers

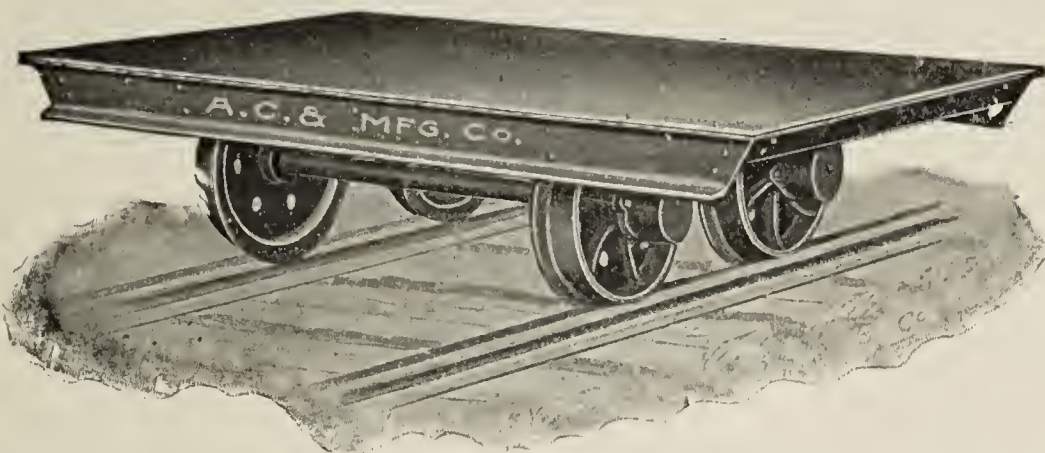
the distinguishing feature of our **DRY PANS.**

Other valuable features which our catalogue fully describes.

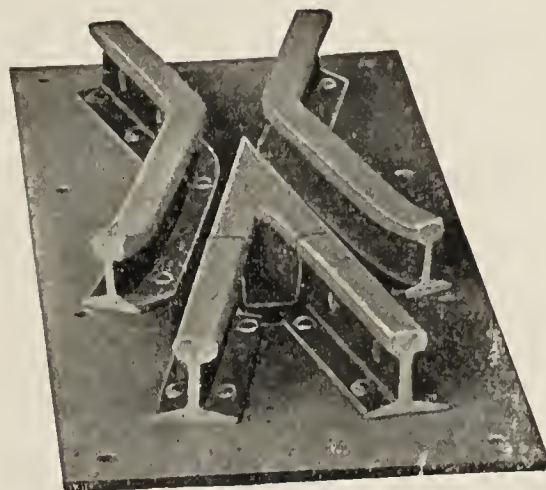
EAGLE IRON WORKS,
Des Moines, Iowa.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



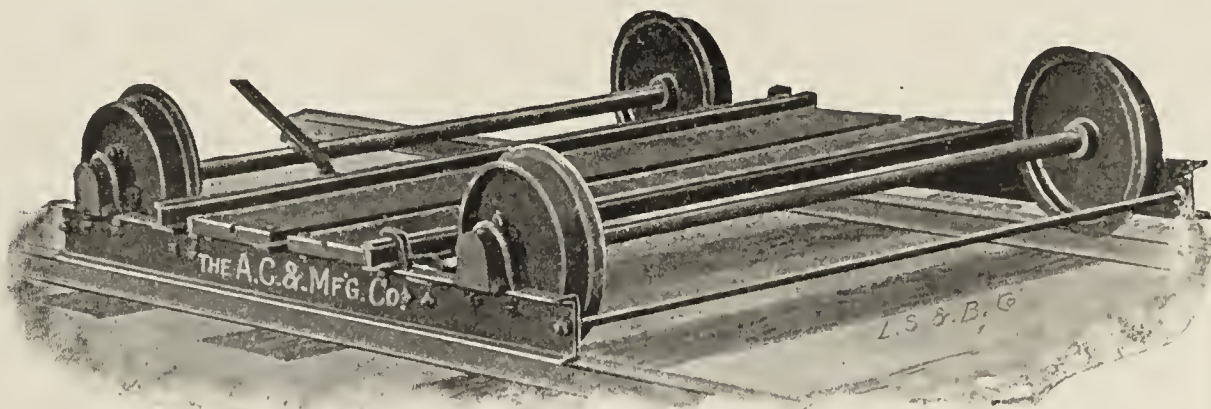
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co., CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



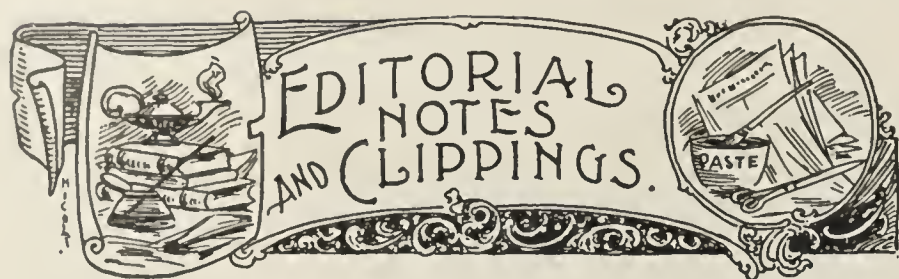
No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.



The Penbryn Brick Company is the name of a new concern recently organized at Bridgeton, N. J.

Canton, Ill., is to have a paving brick plant of 40,000 daily capacity. W. W. Ellis & Son are the proprietors.

F. A. Slate, Kernersville, N. C., is in the market for a hand-power brick machine for making dry press brick.

D. W. Carle has purchased twenty acres of fine clay land at Manchester, Va., on which he will erect a brick plant.

I. F. Pinkham, a pioneer brick manufacturer of Dover, N. H., died at his home in that city recently, at the advanced age of seventy-three years.

The Buffalo Forge Company, with headquarters at Buffalo, N. Y., has moved its Cleveland, Ohio, office from 311 Citizens Building to Room 618 of the same building.

The demand for the product of the Beaumont Brick Company, Beaumont, Texas, is so great that the plant is now being run day and night, thus enabling it to turn out 100,000 brick daily.

The plant of the Mason Brick Company, at Marion, Ohio, was damaged to the extent of \$500 by a fire, which is supposed to have been of incendiary origin. The office building with its contents was completely destroyed.

Drs. Carter and Fitzpatrick and W. F. Nolan have purchased the plant of the Bessemer (Ala.) Brick Company, formerly owned by Arthur Sharpley, who has retired from active business on account of ill health.

Rudolf R. Hoffman, 468 Third street, Brooklyn, N. Y., will soon start a brickmaking plant in the Canadian Northwest, and desires to purchase a complete equipment for an up-to-date stiff mud plant. He will be glad to receive catalogs, etc.

The Western Brick Company, of Hastings, Neb., has been reorganized under the name of the Western Brick and Supply Company. A large warehouse will be erected near the plant in the near future. A. H. Farrens will be manager of the concern.

The Junction City Clay Products Company has been organized at Junction City, Ohio, and a plant will be erected at once for the manufacture of pressed and common building brick, hollow block and fireproofing. Work will commence on the erection of the plant at once.

The name of the Spink-Genter Brick Company, Chattanooga, Tenn., has been changed to the Genter Brick Company, and the capital stock has been increased from \$10,000 to \$20,000. A number of improvements will be made in the plant, which will increase the capacity.

W. H. Horrum, of Auburn, Neb., will make a number of improvements in his plant, putting in a repress machine that will enable him to make paving brick. The outlook for the coming year is very bright and Mr. Horrum will put his plant in condition to meet the demand.

Mr. F. E. Hayward has resigned his position as president of the Ashland and Ironton Fire Brick Company, Ironton, Ohio, and has been succeeded by Mr. W. B. Seaton, of Ashland. Mr. Hayward retires from active participation in the affairs of the company on account of ill health.

The Badger Brick Company, recently organized at Fond du Lac, Wis., will erect a modern dry press brick plant at Oakland, Wis. The machinery for the plant will be furnished by the Ross-Keller Brick Machine Company, of St. Louis, Mo. The product will be a fine grade of buff or golden mottled brick.

Messrs. John P. Cahoon and George Curley, general manager and director, respectively, of the Salt Lake Pressed Brick Company, Salt Lake City, Utah, are contemplating the erection of a brick plant in Nevada, probably between Ely and McGill. At the latter place a large smelter is to be erected, and it will require at least 12,000,000 brick to complete the structure. The contract for furnishing the brick

has been awarded to Messrs. Cahoon and Curley and associates.

The Lindenwall Brick Company, of Hamilton, Ohio, has been incorporated with a capital stock of \$15,000, by Frank X. Duerr, Henry Pater, Brandon R. Millikin and Robert N. Shotts.

Edward Johnson, of Sioux Falls, N. D., will organize a company at Waterville, S. D., for the purpose of manufacturing brick. Mr. Johnson has the option on a large deposit of excellent clay.

The Marita Brick and Tile Company has been chartered to manufacture brick and tile at Everett, N. C., by W. H. Adkins, W. S. Barnhill, J. G. Barnhill and others. The company is capitalized at \$20,000.

David Dibert, manager of the Dibert Brick Manufacturing Company, Pittsburg, Pa., died at his home in that city February 4. He was thirty years of age and had been manager of the plant for ten years. A widow and one child survive. Mr. Dibert was a brother of Grant Dibert, so well known to members of the N. B. M. A.

H. C. Hollenbeck, brick manufacturer of Missoula, Mont., contemplates the establishment of a pottery at that point, where he has a deposit of fine potter's clay. He has just contracted for machinery for his brick plants at Missoula and Stevensville.

A company has been organized at Kingston, Ont., Can., for the manufacture of a high grade of brick. The new concern will be known as the Perfect Brick and Tile Company and is capitalized at \$50,000.

The Mansfield Brick Company is the name of a new concern recently incorporated at Rockmart, Ga., where a plant of 50,000 daily capacity will be erected. The following gentlemen are interested: J. A. Scott, Charles K. Weller, J. E. Brown, Robert H. Brown, I. F. Mundy, all of Atlanta, Ga.

The Seaboard Brick Company, of New York City, has purchased 553 acres of clay land at Catskill, N. Y., where they will build an immense brickmaking plant, with a capacity of 300,000,000 brick annually. A. A. Gery, president of the U. S. Brick Company, of Reading, is vice-president of the Seaboard Company.

The American Blower Company, Detroit, Mich., is at present furnishing dryer equipment for the following firms: Missoula (Mont.) Brick and Supply Company, Green and Hunter Brick Company, Thurber, Texas; Detroit Roofing Tile Company, Dearborn, Mich., and the Chattahoochee Valley Brick Company, Omaha, Ga.

The Nelsonville Brick Company and the Nelsonville Brick Company, Nelsonville, Ohio, have consolidated, and will hereafter be known as the Nelsonville Brick Company. The following officers have been elected: President, C. H. Doan, of Columbus; vice-president, J. M. Hyde; secretary, treasurer and general manager, R. A. Doan.

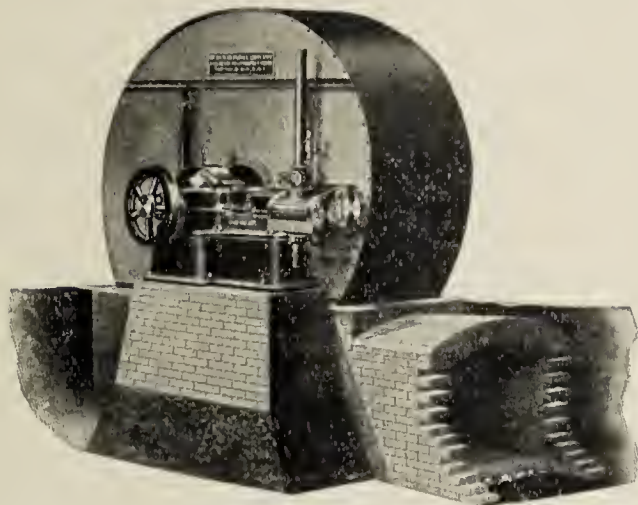
The plant of the Veedersburg Clay Company, Veedersburg, Ind., has been purchased by the Adams Brick Company of Indianapolis. The plant, which will be put in running order as soon as possible, will be under the direct supervision of A. S. Pritchard, of Indianapolis. The concern will hereafter be known as the Veedersburg Brick Manufacturing Company.

At the recent annual meeting of the Purington Paving Brick Company, Galesburg, Ill., the following officers were elected: President, D. V. Purington; vice-president and general manager, W. S. Purington; secretary, W. H. Terwilliger; treasurer, C. H. Chamberlin; directors, D. V. Purington, W. S. Purington, George C. Prussing, C. D. B. Howe, W. E. Phillips, F. G. Matteson and Charles H. Chamberlin.

The Castanea Brick and Tile Company has been incorporated with a capital of \$125,000 and the following officers have been elected: W. B. Holloway, president; C. A. Holloway, vice-president, and Dr. L. M. Holloway, secretary and treasurer. The plant is located at Castanea, Pa., near Lock Haven. Considerable preliminary work for the construction of the plant has already been done and work on the construction of the plant will begin as soon as the weather permits. The company will construct a first-class and substantial plant, with an outfit of the latest improved machinery and

(Continued on page 416.)

BUFFALO WASTE HEAT DRYER.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"**BUFFALO**" **WASTE HEAT FANS** take the **WASTE HEAT** from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" **FANS** have water-cooled bearings where necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

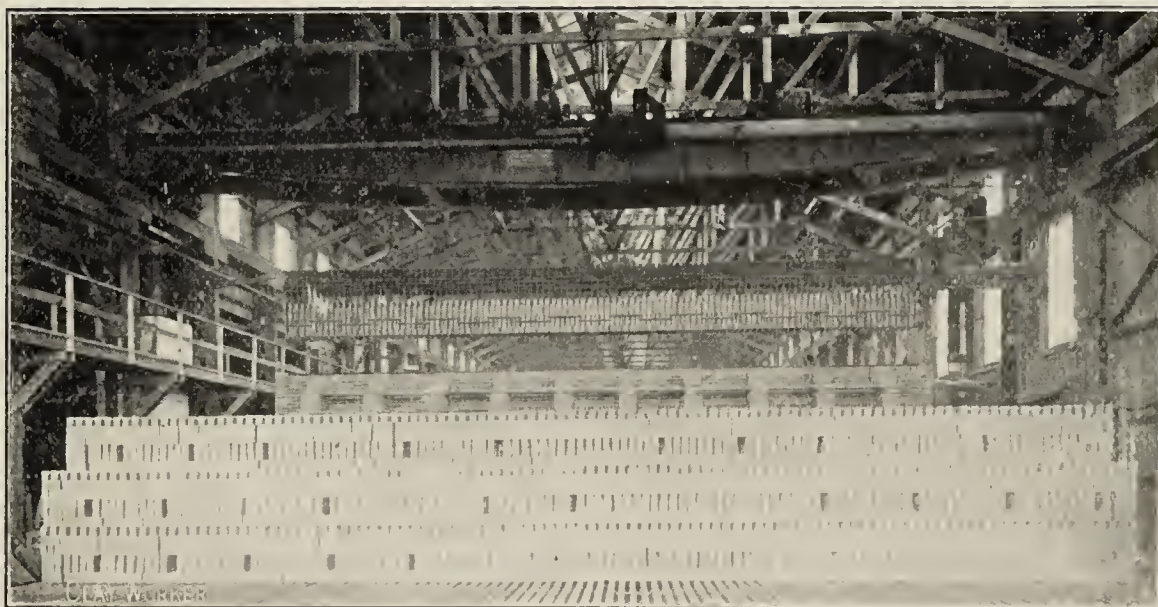
FISKE BRICKMAKING SYSTEM

J. Parker B. Fiske, Patentee,
Flatiron Bldg., New York City.

Eliminates all
hand labor
of wheeling,
drying, tossing
and kiln setting.



No cars, tracks,
turntables,
trucks, pallets
or wooden racks.



No breakage of
green bricks.
No waiting
for cars.
No delays.



Practically
no depreciation.



Write for
particulars.

PLANT AT DOVER POINT, N. H.

Two men with crane can move 100M bricks per day from the setting-up stands at the machine to the dryer and from the dryer to the kiln, and set them for burning at a total

Labor Cost of 4c. Per M.

EDITORIAL NOTES AND CLIPPINGS—Continued.

appliances for making high grade red building brick and clay products.

The Carlisle Brick Company's plant at Carlisle, Pa., of which Thomas McDonald is manager, will make a number of improvements in the plant, including a dryer.

The Gleason Brick Company has been organized to erect a brick plant at Gleason Station, Tenn. The incorporators are J. L. Alexander, W. B. Edmonson, R. W. Bandy, G. W. Bennett and R. H. Smith.

Norcross & Castberg will make a number of improvements in their brick plant at Detroit, Minn., putting in new machinery and appliances that will enable them to increase the capacity of the plant to 40,000 brick per day. They have a good demand for their brick, and can dispose of all they can make.

The Bangor Brick Company has purchased a large tract of land adjoining its plant, and will enlarge the plant, installing two more steam-power brickmaking machines. The capital stock of the company has recently been increased from \$10,000 to \$50,000, all paid in, without increasing the number of stockholders.

George Neff, an employe at the Springfield Paving Brick Company's brickyard, Springfield, Ill., was seriously injured recently while dumping the cars at the top of the incline. He was caught in some unaccountable way by one of the ropes controlling the mechanism and was hurled up in the air, alighting on his head when he fell.

Charles A. Hoshour, Oklahoma City, Okla., who has been identified with the Cleveland Vitrified Brick Company and the Oklahoma Brick Company for a number of years, has severed his connection with same, and is at the head of a new company that will erect a new plant in that vicinity for the manufacture of dry pressed, paving and common building brick.

At the recent election of the Illinois Brick Company, Chicago, Ill., C. B. D. Howell was elected to succeed Mr. George Prussing as president; C. B. Vernooy succeeded A. J. Weckler as vice-president; J. H. Gray succeeded Mr. Howell as treasurer; William Schlake was re-elected secretary, and Messrs. Lamson, Porter and Gray, the retiring directors, were re-elected.

A charter has been granted at Trenton, N. J., for the incorporation of the United Porcelain Faced Brick Company, of Newark, N. J. The capital stock is \$500,000 and the incorporators are John L. Meeker, William P. Meeker, Thomas Fish and Edward S. Rankin, all of Newark, N. J., and J. Taylor Roth, of Allentown, Pa. The porcelain brick which this company is manufacturing is the invention of William P. Meeker, of Newark.

Jacob Roscewez, a teamster for J. C. McDonald & Son, brick manufacturers, Detroit, Mich., was almost instantly killed by an Ann Arbor line freight car at Michigan avenue and Larkins road recently. Roscewez had been walking along beside his team in the effort to keep warm, and stepped on the track in the path of the rapidly moving freight car, which knocked him down, fracturing his skull.

The plant of the Roseville (Ohio) Brick and Terra Cotta Company, which has been closed for more than a year, has been purchased by a firm of Columbus capitalists and will be put in shape to resume operations immediately. Before the shutdown, one year ago, the plant was turning out paving brick at the rate of 40,000 daily. The new company, known as the Devonshire Brick and Ceramic Company, will change the plant from a paving brick plant to one for the manufacture of face and glaze brick.

J. D. Hutchings, Fort Smith, Ark., writes that there is a first-class opening there for a drain tile, roofing tile, or sewer pipe plant. Mr. Hutchings says "Fort Smith is a particularly good location for such a plant, as it is on the line between Arkansas and Oklahoma, and the admission of Oklahoma as a State will make a demand for such goods for years to come. Court houses, school houses, churches and all public and business houses will require roofing tile, drain and sewer pipes, then every county seat or town large enough to justify it will put in a sewer system. This should make a market right at our door for the output of such works, with all material at hand, and market so near the works, and the saving

of freights on heavy goods like this, it seems that all requirements for such an industry are supplied here."

The Wyandotte Pressed Brick Company has recently been incorporated at Augusta, Maine, with \$200,000 capital stock. Brick and terra cotta will be manufactured. J. Berry and L. A. Burleigh, both of Augusta, are interested.

G. W. Reutter, T. F. Downey and A. Jeffries, of Detroit, Mich., are interested in a movement to start a brickmaking plant at Corunna, Mich., where they have a fine deposit of shale, from which they will make paving brick.

The Southern Clay Company has been organized at Paducah, Ky., and is capitalized at \$100,000. It has several hundred acres of clay land near Hardin, twenty miles from Paducah, on the Nashville, Chattanooga and St. Louis railroad.

The Plymouth Clay Products Company has been organized at Fort Dodge, Iowa, and ground for the plant will be broken at once. At first only glazed sewer pipe will be made, but later on they expect to turn out terra cotta, conduits and pottery. Otto Simonson, of Red Wing, Minn., an experienced sewer pipe man, will have the management of the plant.

At the annual meeting of the Michigan Paving Brick Company of Saginaw, Mich., held recently, the following officers were elected: William T. Mueller, president; Dr. E. Frenz, vice-president; John S. Dederich, secretary and treasurer. The following are the directors: William T. Mueller, Dr. E. Frenz, Peter Heller, John S. Dederich and Jacob Racquet.

The plant of the Banner Clay Works, at Edwardsville, Ill., was damaged to the extent of \$20,000 by fire recently. The engine and boiler rooms, machine room, drying houses, press rooms and stack rooms, together with the connecting buildings, were totally consumed. All the machinery was supplied by the American Clay Machinery Company, Bucyrus, Ohio. On the portions burned insurance of \$11,700 was carried. The company had a number of large contracts on hand, and the plant will be rebuilt at once.

Application for a charter for the Tennessee Brick and Manufacturing Company, Chattanooga, Tenn., has been made by C. E. James, William Parks, M. B. Ochs, R. B. Henderson and M. H. Clift. The capital stock of the company is placed at \$50,000, with the privilege of increasing it to \$100,000, and reserving the right to commence operations when \$20,000 has been paid in. They will engage in the manufacture of brick, terra cotta and tile, though at first it will confine itself to the manufacture of building brick alone. The company has purchased a site on the Tennessee river just north of Citico Furnace.

Under the name of the Maine Clay Products Company, eight men have organized a close corporation under the Maine laws for the purpose of manufacturing clay products, principally brick, with their plant, headquarters and offices at Thomaston, Maine. The machinery and power purchased is of the best and up-to-date in improvements made during the past four years and calculated to make a superior quality of brick. It is understood that as soon as the plant is installed and in good running condition that it is contemplated to increase the product of brick from 50,000 to 75,000 per day during the entire year.

At the recent annual election of the Robinson Clay Products Company, of Akron, Ohio, the following officers were elected: President, B. W. Robinson; vice-president, J. F. Townsend; treasurer, H. B. Manton; secretary, J. J. Starr; assistant secretary, F. W. Butler. The board of directors consists of B. W. Robinson, H. B. Manton, J. Starr, J. F. Townsend, F. W. Butler and F. C. Reed. This company had a very prosperous year in 1906, having completed the erection of an additional plant to be known as Plant No. 8, where silica brick only will be manufactured, and started the erection of Plant No. 9, which they expect to have in operation by the first of June.

The brick plant of the Bessemer Limestone Company, at Bessemer, east of Youngstown, Ohio, is to be enlarged so that by July 4 the capacity of the plant will be doubled. The ground has been measured and the plans are being drawn for the additions. The rapidly growing business of this prosperous concern is responsible for the improvements decided on. The company has orders for millions of brick for the coming summer and orders are pouring in every day. Many new pavements are to be laid in Youngstown and neighboring towns of Bessemer brick, and it was impossible to supply the market locally without increasing the capacity of the plants. Bessemer brick are a high-class product.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK NEWS.

THE LAST HALF of January and first part of February has not been exactly the best weather for building operations, and as a result of the continued snow and cold weather building operations have dropped down to a very low point. Some building continues, but it is nearly all on jobs which have progressed to the state where the building is enclosed, and workmen are shielded from the weather.

All brick men agree that there never was so good a prospect for a big year's business. The present outlook would indicate that the railroads will regulate the building here, as they will not be able to deliver enough brick to supply the demand. As far as the local factories can supply the demand the railroads will not be interested, but it now appears like the local plants will be kept pretty busy supplying the brick for the large office buildings which are to go up in the down-town district.

All are now predicting better prices for brick this summer. Brick has been a very cheap building material here for the past few years, compared with other materials, and also compared with the price of brick in other markets; \$7.00 to \$7.50, delivered on the job, is still a low price, compared with the prices being obtained in other locations. So if the contractors have to stand a raise in prices it will still be a good price as compared with what most other points are paying.

The fact that the Dwyer brick plant was destroyed by fire, and the Stukenberg plant will probably be dismantled, as it is hardly thought any one will try to operate the plant where it is now located, would indicate that there will be a larger demand for outside brick, even though there was no more brick used here than last year.

On the other hand, the Lyle Brick Company has already ordered the material for construction of kilns, and has placed the order for machinery for its new plant in the south part of the city, as mentioned in these columns before. They will construct three 18-arch Reppell patent kilns to begin with, and will put in a duplicate of their other plant, all the way through. It is expected by them that they can begin to make brick by the middle of April to first of May.

The report of the superintendent of buildings for January shows that there was a considerable decrease in the value of permits issued, although the number was practically the same. The total number of permits issued was 208, as compared with 213 the same month of last year. The total value of permits last month was \$444,355, as compared with \$631,410 the same month of last year, or a decrease of \$187,055.

John J. Nesch, son of Robert Nesch, of the Pittsburg Brick Company, has moved from this city to Sycamore, Kan., where he will assist in the management of the brick plant of the company which is located there.

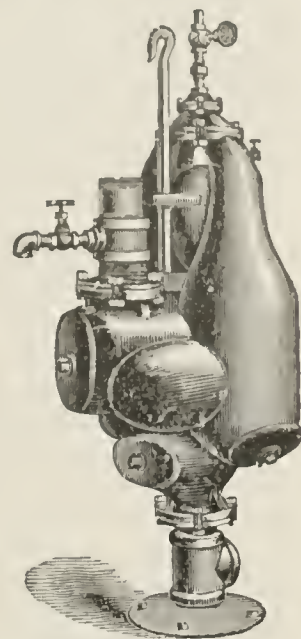
In speaking of the freight situation at the present time, Mr. Eadie, of the Eadie Building Supply Company, remarked: "Just at the present time we are not having so much trouble in getting cars as we have had, but I fear that the spring will show the railroads to be in a bad condition for handling freight, for they must have a great shortage of motive power. Conditions right now are not so good that we need brag about them, however. We have just delivered a car of brick from Fredonia, Kan., which the 'Frisco had on the road fourteen days, before it reached this city, and then it took four days to make the delivery after it reached here, making eighteen days in all. This shows the condition of a western road. On the other hand we have just received a car from an Indiana plant which came through St. Louis and reached here five days after shipment was made. This would indicate that the roads running east are in much better shape to handle their business, or are not getting as large a percentage of business, as compared with the western roads."

The Weir City Brick Company has been organized in Weir City, Kan., with a capital stock of \$50,000. The organization is composed of a number of prominent business men of that city, J. W. Stewart being president; L. G. Scranton, vice-president; Rome Allen, treasurer, and W. J. Vane, of Arcadia, Kan., secretary. The plant is to be located half a mile south of the town, and will be under the management of W. J. Vane. A test of the shale showed the brick to be of a very dark red color, and tough enough to make good pavers.

KAW.

Drain Your Clay Pits

with a pump
that gritty, muddy
water cannot
injure.



The Pulsometer Steam Pump

is built for hard work. Has
no easily deranged inside
or outside mechanism.

It is simple, handy, effi-
cient and durable.

Requires neither engine,
belt, oil, packing, nor
special foundation; merely
a steam pipe from the
boiler. It will operate as
well suspended as placed
stationary.

The fact that more than
25,000 of them are in use,
is evidence of their utility.

You are welcome to our cata-
logue, which will tell you more
about them.

**Pulsometer Steam
Pump Co.,**
14 Battery Place, New York.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

WANTED.

One second-hand four-mold dry press; must be a bargain. Address ACME,
2 1 c Care Clay-Worker.

FOR SALE—Brickyard located in Southern Ohio; a good proposition. Immediate sale for all brick manufactured. Address P. W. S., care Clay-Worker.
1 3 c

FOR SALE—Eight thousand new all steel 9 foot pallets, 34x10 inches. In good order. Can be had at a bargain. Address THE CLEVELAND CAR CO.,
1 tf L West Park, Ohio.

FOR SALE—Cheap. 7,500 wood pallets in good condition; white pine; size 35 in. by 10 in. by 7/8 in., with foot 3 1/2 in. high. Address SUBURBAN BRICK CO.,
2 tf d Wheeling, W. Va.

FOR SALE—Neat little brick and tile plant; capacity, 1,000,000 brick per year. Or will sell interest to some one to run it. Will take but little cash. Address TERPENING BRICK & TILE CO.,
1 3 cm Farmington, Ark.

FOR SALE—One new Erie gas engine in good condition; price \$175. 20,000 pine pallets, 10 in. by 32 in., \$30 per thousand. 10,000 linden pallets at \$20. per thousand. Address BROOKLYN BRICK CO.,
2 1 c Greenfield, Ind.

WANTED.

Sober and competent man to take charge of brickyard. State salary and experience and enclose references. SULPHUR SPRINGS BRICKYARDS,
2 1 d Fort Smith, Ark.

FOR SALE—A well equipped brickyard, located in Mississippi. Capacity 40,000 per day; well located; good clay, and up-to-date machinery. Will sell at a bargain. Address J. S. LOVE,
1 3 cm Lumberton, Miss.

FOR SALE—Will sacrifice for \$5,000 cash medium sized stiff mud plant; Freese machinery; 100 horsepower boiler. Good prices from local market. Address JOHN B. THOMAS,
1 2 cm Lakewood, N. J.

WANTED—An intelligent foreman for a lime bond, silica brickyard. Must be capable of taking full charge of yard from quarrying of the stone to the burning and loading of the brick.

Apply to X. Y. Z., care Clay-Worker.
1 3 cm

WANTED.

We have the best clays and have foundation laid for great clay works.

Have two plants.

Need superintendent for one making fireproofing and an office man and salesman combined. Must take moderate amount of stock, not to buy position, but as guarantee of good intentions. THE ORCHARD KNOB CLAY WKS. CO.,
2 1 d Ironton, Ohio.

FOR SALE—Dump car, nearly new, steam power Quaker brick machine. Truck borrows, several thousand hacking pallets. Cheap. Address D. E. KRETSINGER,
2 1 c Egan, Ill.

WANTED—A second-hand pug mill and crusher. For particulars, address ALEXANDER SCHUTT,
518 United Bank Bldg.,
2 1 dm Sioux City, Ia.

WANTED—A man who understands the art of brick burning, both in up draft and down draft kilns. Address "J. C. B.,"
2 1 L Care Clay-Worker.

WANTED—Position as superintendent or manager of stiff mud, fire brick or dry press brick plant; 20 years' experience; best of references. Address J. H., Care Clay-Worker.
2 1 c

FOR SALE OR RENT.

Brick plant; 11-foot vein of shale. Burns first-class pavers and a beautiful red or buff face brick. Will make terra cotta and dry pressed brick. Address Box 12, Bidwell, Ohio.
2 1 cm

FOR SALE—Brick and tile plant, with 36 acres land. Two kilns. Established trade. Market for all output. Shipping facilities. Rare bargain. Address ALVORDTON BRICK & TILE CO.,
2 2 cm Alvordton, Ohio.

WANT TO SELL—All or part of modern plant, making drain tile, brick and building blocks, to parties who can take charge. Good clay, good equipment and good market. Liberal terms and unusual opportunity for right parties. Address B. O. DuBOIS,
2 2 cm Lehigh, Iowa.

NO SCUM. NO WHITEWASH.

No More Trouble from Scum or Whitewash. Scum or whitewash eliminated in burning without the use of chemicals. No change in kiln or furnaces. Compensation when results are obtained. Full particulars on request. Address JOHN MCALISTER,
12 3 c 50 E. Third Ave., Columbus, Ohio.

FOR SALE.

Well established brickyard near South Atlantic port, sixty thousand population. Chambers end-cut machine, 45,000 daily capacity; Success drying system; track to clay hole. A bargain. Satisfactory terms to good party. Address J. C. HAGLER, Augusta, Ga.
1 3 c J. G. HAGLER, AUGUSTA, GA.

FOR SALE.

One second-hand No. 4 Hercules brick machine and one mold sanding machine. Brick machine was made by Horton Manufacturing Company, of Painesville, Ohio, and is a first-class soft mud machine, as good as new. Reason for selling is, that we have stopped use of all soft mud machines.

UNITED STATES COAL & COKE CO.,
2 2 d Gary, McDowell County, W. Va.

FOR SALE.

The following machinery, not used by us, but all in good condition. Will be sold at a very reasonable figure:

One Penfield single-mold power repress, capacity 10,000 a day.

Two Fate Bensing automatic side-cutting tables.

Address AMERICAN ENAMELED BRICK & TILE CO., 1 Madison Ave., New York City.
2 1 d

FOR SALE

High grade brick plant at a special offer. An exceptional opportunity. Good reasons for selling. Business established. Large orders for next season's delivery. Only working capital required. One of the best plants in the country for the manufacture of high grade vitrified white brick. Only parties of experience and meaning business need apply. Address, P. O. Box 595, Harrisburg, Pa.
1 2 dm

WANTED

Employment in farm drainage, and surveying. Have all instruments necessary for surveying, locating, establishing grades, and mapping same. Satisfactory results guaranteed. Correspondence solicited. Address, STONE, care Clay-Worker.
2 1 c

FOR SALE.

One four-mold Boyd special dry press machine, complete with 36-inch Williams' cage pulverizer, screens, mixer, all ready for use, in first-class condition. One extra set of dies and die plates for the above. This machine can be seen installed at the Rayne brick plant, Rayne, La. Apply HAUBTMAN & LOEB CO., Ltd.,
228 S. Peters St.,
2 2 dm New Orleans, La.

WANTED—First-class shale paving brick burner, down draft kilns, coal for fuel. Want results. Give full particulars, references, wages, etc. Works located in north-western Pennsylvania, town of 4,000 population. Plant has reputation of producing high-grade goods. Old burner retiring on account of sickness.

Fine situation for the right man. Address SUCCESS,
2 1 d Care Clay-Worker.

ENGINES AND BOILERS.

Engines, 12x36, 16x42, 18x36 and 20x48, Corliss; also, 40 other sizes; all styles in stock.

Boilers, 84x18, 78x16, 72x18, tubular; also, 60 other sizes; all styles in stock.

Let us know what you need and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.,
1735 Powers St., Cincinnati, Ohio.
1 tf d

ATTENTION! ATTENTION!

Brickmakers if you want a good market for Roman, Pompeian white and buff brick, why not locate a plant on the Philadelphia, Baltimore and Washington railroad. We have clay suitable for all kinds of face brick, also fire brick. Clay runs 22 feet thick. Would have the best of markets, such cities as Philadelphia, Chester, Wilmington, Baltimore and Washington and smaller towns. Will sell the land or let out on royalty. Railroad siding on the property. For further information write,

AMERICAN CLAY CO
1012 Spring Garden St., Philadelphia, Pa.
2 2 cm

OF SPECIAL INTEREST TO BRICKMAKERS.

Norfolk, Va., the natural gateway for the West and South, to the markets of the World, offers to the brick manufacturer opportunities unexcelled anywhere.

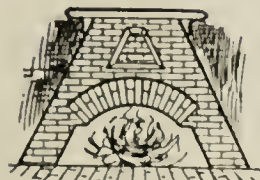
I have an immense body of 250 acres of the finest plastic red clay, with an average depth of 25 to 30 feet. Extends along the river front for two miles affording excellent shipping facilities. Loading vessels lie within 100 feet of the kilns, so that loading can be done with endless belt or conveyor. Brick net \$7.00 at the kiln. To hollow brick manufacturers special rates. Will give long lease and low royalty. It will pay you to investigate.

Address, W. L. JONES,
2 1 cm Box 5, Williamsburg, Va.

[Continued on page 420.]

Written for THE CLAY-WORKER.

NEW YORK AND THE EAST.



ND NOW has come winter. Early in February came twenty inches of snow in New Jersey and from that the fall ranged up to more than two feet farther north. All work about the yards, which had continued later than ever before, stopped.

Also there has been a cessation in building operations, excepting upon those structures which are already closed in. The consumption of brick in such work has practically ceased for the season. Not much more will be done until the snow goes in the spring and it is possible to get about again. The conditions are, perhaps, not quite as favorable as they were at the close of the season last year, but there is little reason to doubt that the spring will see greatly enlarged activity in some directions, though it may be questioned whether there will be such a development of building as has characterized the trade for the past few years.

Along the Hudson river there are brick enough to supply the early spring demand, but just how the quantity now on hand compares with previous years it is impossible to say. Detailed reports have not yet been received. But enough is known to show that the supply is larger than it was last year.

Of course, questions of this sort naturally bring up the matter of the competition of concrete. Until the latter part of the season of 1906, there was little or no injury noted. Competition was not severe because it had been used as foundation material only. But toward the close of the year 1906, some superstructure work had been made of concrete, chiefly re-inforced. The total number of buildings in the vicinity of New York made from concrete can not be definitely determined, the records being rather lax in that respect, but the number is too small to exert much actual influence. The fear of the competition has been more injurious than the actual use of the material.

Of course, no one who has studied the subject at all thinks

for a minute that concrete, reinforced or ready to collapse, or concrete blocks are ever going to supplant brick, but at the start any innovation assumes an importance it doesn't possess and creates impressions which have no reason for their development. Brick will never be supplanted, but one might as well be candid and admit that manufacturers of brick better watch their competitors in the cement business. A few of them could obtain some valuable suggestions for the conduct of their own trade.

The development of building will depend upon the attitude of the unions the coming summer. It is impossible to say now exactly what will be done, but there is going to be a controversy over the price paid to bricklayers and the price paid to the workmen who spread concrete. Heretofore the concrete layers have not been paid union scale. They have been paid as laborers, but if the material is to come in competition with brick, as some of the unions fear it will, then the unions say that the men doing the work must be paid union scale. In other words, they must get as much money as skilled workmen. The effect of this will be to push up the cost of using concrete to about the same level as brick. It must be remembered that a considerable proportion of the increased cost of brick construction, which is complained of by builders, arises wholly from the increased cost of labor not only in the making, but in the laying. Bricklayers are the highest paid men among labor unionists and the effect has been disastrous in some instances. Now, if the bricklayers' unions succeed in getting cement spreaders included in the union scale, the effect will be to increase the cost of using cement to such an extent that few builders will want to use it. Then brick will be in favor again in those places where high cost may have temporarily driven it out. Not many men who are having nice buildings erected care to see the unsightly scaffolding and the ugly system of braces which are required in cement construction and could the element of cost be adjusted, there would be a return to brick in all instances. Further than this it is impossible to go at present.

BURTON.

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WANTED, FOR SALE, ETC.

FOR SALE—One 30,000 Martin steam pipe dryer. One 15,000 Martin steam pipe dryer. Will be sold at a big bargain. Address "DRYER."
2 1 d Care Clay-Worker.

FOR SALE.

One H. Brewer No. 5 brick machine. One Brewer stone separating crusher. One 8-foot pug mill. Address H. L. SWIFT, Riverside, Iowa.
2 2 c

WANTED—Position as superintendent or manager of dry press or stiff mud yard. Have been in the business 15 years. Can erect yard from ground up. Address "C. P. B."
2 1 c Care Clay-Worker.

FOR SALE OR TRADE—Up-to-date brick plant in Northern Mississippi. Good location. One-half cash, remainder in hard brick, or will accept desirable real estate. Address SOUTH,
2 1 c Care Clay-Worker.

WANTED—A No. 1 dry press brickmaker, a hustler, capable of taking entire charge of an up-to-date brick plant of 30,000 daily capacity. Address, giving references, etc., "W. A. B."
2 1 d Care Clay-Worker.

WANTED—Position as superintendent or foreman of stiff mud brick and tile plant, by practical man. Have had 25 years' experience. Can give good references. Address "INDIANA."
2 1 c Care Clay-Worker.

FOR SALE—50 acres undeveloped brick property; River street, Granton, N. J. Water, rail and ten million wagon trade. Reason for selling, must devote entire time to develop my brickmaking patents. Address H. H. WALSH,
2 1 dm Little Ferry, N. J.

WANTED—A superintendent who is thoroughly experienced in manufacturing and burning vitrified paving brick. Location Minnesota. Address, with full particulars, "PAVING BRICK,"
2 1 d Care Clay-Worker.

FOR SALE—Cheap. One 40,000 daily capacity brick plant, complete with land. Almost new machinery. Run only short time. Nearest competition 50 miles. Town booming. Owner deceased. Address C. G. HUSTON,
2 1 cm Mena, Ark.

FOR SALE.

Brickyard in operation. Dry press system. Orders now booked for upwards of 800,000 bricks. Best-paying brick proposition in the State. Will sell at a bargain, because of press of other business. D. J. YOUNG, Prop.,
2 1 d Fort Smith, Ark.

FOR SALE—A good tile and building brick plant, with a good kiln and plenty of clay and good demand. Also one cider mill, apple butter factory and saw mill combined. Plant located on the Nickle Plate railroad. For particulars, address, E. A. FULLER,
2 1 lp Oakwood, Ohio.

FOR SALE OR TRADE—Modern brick plant, 25,000 to 30,000 daily capacity. Fine local market in best city of Indiana. Large railroad center. Plenty good surrounding clay. A bargain on easy terms, or will trade for good well located farm. Address BRICKMAKER,
2 1 d 717 E. Main St., Muncie, Ind.

TO SELL OR LEASE.

To a good potter, a good newly built pottery brick building, 40x50 feet; two foot-power wheels, one 14-foot down draft kiln. Clay the best. Will cost \$1.30 per ton. Trade good, but little ware on hand. Am no potter, but a brickmaker. Will sell cheap or lease on good terms. Write if interested to R. F. ECHOLS,
1 3 cm Longview, Texas.

WANTED—A second-hand steam shovel of small capacity. Answer quick. THE HANCOCK BRICK & TILE CO.,
2 1 d Findlay, Ohio.

WANTED—Position by a thoroughly practical man, who understands the manufacture of fire brick, gas supplies, retorts and tile. Clay expert. Address F. M.,
2 1 cm Care Clay-Worker.

FOR SALE—One iron brick machine. Ideal Horton make, nearly new, in good condition, with molds, trucks, barrows, 5,000 pallets, at a bargain. Address
1 2 cm A. W. HALL, Houghton, N. Y.

WANTED—Thorough mechanic to take charge of brick plant manufacturing paving and face brick. Must have knowledge of burning. Plant located on Ohio. Address "OHIO,"
2 1 d Care Clay-Worker.

WANTED—Position as superintendent of paving or building brick plant. Have had 15 years' experience. Understands brickmaking in all its departments. Would like position in Central West. Address
2 1 cm "D," Care Clay-Worker.

FOR SALE—80 acres Fullers earth in Southern Florida. Will sell or mine and load f. o. b. cars, or will entertain the location of a factory on the ground. Plenty of water. Analysis first-class. Who wants it? State price. Address S. D. HANNA,
2 1 d Box 353, Brownsville, Texas.

FOR SALE—One Premier brick machine; one Bensing automatic brick cutter; one Hummer brick and tile machine, with vertical attachment; automatic tile and block cutters; hollow brick and block dies, all of the J. D. Fate Company make; all complete and in good condition. For particulars, address C. C. COMPANY,
1 3 cm Care Clay-Worker.

FOR SALE OR TRADE.

Two brick and tile plants in Iowa and Illinois, now running. Address the KILN DOCTOR,
514 W. Fourth St.,
Dayton, Ohio.

2 1 L

WANTED—Position as head burner of round or square kiln. Can burn all kinds of brick, flash brick, shale, vitrified paving brick and block, and can get the best results. Have had 25 years experience in burning. Can also take charge of a common brickyard. Address, "CANTON,"
2 1 c Care Clay-Worker.

FOR SALE.

One complete stiff mud brick plant, 30,000 capacity, with railroad switch to kiln, good buildings, with 40 acres of land; plenty of wood cheap, and a good demand for brick at \$7.00 and \$8.00 per thousand. Everything in good working order. Will sell at a bargain. Address, N. ST. ANTHONY,
2 1 cm Clarissa, Minn.

WANTED—A superintendent and manager to run a soft mud brickyard, with capacity of 30,000 brick per day. Yard equipped with steam heat drying process. Round and clamp kilns. Burn with coal. A permanent job for a good man, or will sell an interest to the right party. When writing, state by whom last employed and other references.

YORK BRICK AND TILE COMPANY,
2 1 d York, Neb.

WANTED—Large sewer pipe manufacturing concern in the middle West wants to engage services of competent superintendent or manager for sewer pipe works. Must have had good experience and be able to supervise manufacture and burning of kilns, as well as office and sales work; in other words, must be a capable executive, with wide knowledge of the sewer pipe business. To the man who can give results, a lucrative proposition will be offered. Address, ALLEN, Care Clay-Worker.
2 1 L

Philadelphia **LINK-BELT COMPANY** Indianapolis
New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY

Converted to Leviathanism.

"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

"Thanking you for your courteous dealing, and assuring you of our patronage for anything in your line we may need in the future, we beg to remain,

"Yours very respectfully,

"Signed: VALLEY BRICK & TILE Co."



Send for "FACTS."

MAIN BELTING COMPANY,

CHICAGO—55-57 Market St.
BOSTON—140 Pearl St.

PHILADELPHIA—1215-1245 Carpenter St.

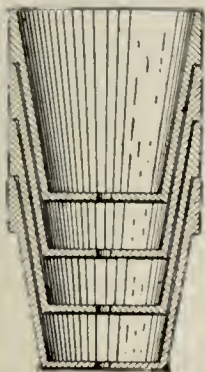
BUFFALO—40 Pearl St.
NEW YORK—309 Broadway.

COX'S Special Drawn Coil Wire is
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

GEO. S. COX, East Liverpool, Ohio.

For End-Cut, Side-Cut
and Automatic Tables.
Satisfaction guaranteed.
Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.

The Rockwood Mfg. Co.,

1801 English Ave.

INDIANAPOLIS, IND.



The Kiln of Kilns is the "IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

For full particulars please apply to

J. OSMAN & CO., Ltd.,

Cable Address: Dampening, London.

Arundel St., Strand, London, W. C.

THE WEBB WIRE WORKS

MANUFACTURERS OF

MUSIC WIRE

NEEDLE WIRE

NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE
CUTTING WIRE, drawn especially
to withstand abrasion.

Send for prices of wire in coils.



CANADIAN TRADE.

Wooden Brick Pallets.

WRITE US

BARCHARD & Co., Limited,

135-151 Duke St.,
TORONTO, CANADA.

FOR SALE—Jeffrey Swing Hammer Pulverizer; practically new. Price \$700.
MILTON PRESSED BRICK CO. (Ltd.),
1 3 c Milton, Ont.

FOR SALE—A going coal mine, with 24-in. fire clay bottom. Utilization of the fire clay would make this a highly profitable proposition. For particulars, address
JEROME A. TUCKER,
11 5 cm Birmingham, Ala.

FOR SALE—Dry presses, 2-mold U. S. dry press, 3-mold Boyd dry press, 4-mold U. S. dry press; 500-horsepower Allis Corliss engine. Address
B-K BRICK CO.,
1 2 d Denver, Colo.

WANTED

BY THE FRASER-JOHNSTON BRICK CO., Emory, Texas, first class face brick sorters, who know how to handle and sort a high grade product. Steady position the year round to the right man. When writing state wages wanted
2 1 d

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND
CONTRACTING COMPANY,
1 1 f d Zanesville, Ohio.

WANTED.

EASTERN FACE BRICK PLANT working plastic fire clay by dry clay process desires operating superintendent. Exceptional opportunity for able man well qualified to produce results without assistance. Address
1 2 d NEW YORK, Care Clay-Worker.

FOR SALE—One American Clay Machinery Co. stock brick machine, four trucks, dumping table, one lot of six brick molds. For \$100 machine can be made as good as new. Price for lot, \$250.

E. W. FACE & CO.,
11 3 d Norfolk, Va.

WANTED.

A first-class foreman for a new paving and building brick plant, present capacity, 30,000 to 50,000 daily. Will double capacity this year. Location central Western Pennsylvania. Quality of product unquestioned. We want a live and energetic worker. State fully, age, experience, references, etc. Address
1 2 dm BOX 356,
Care Clay-Worker.

FOR SALE.

One Chambers end-cut brick machine and pug mill, line shaft, pulleys and hoxes, capacity 30,000 brick per day; also six steel trucks and pallets and covers to hold 400,000 brick. This machinery is as good as new, having been run one season only. It is being taken out to install a plant of 100,000 per day, on account of increased demand. Address
THE ALTAMAHA BRICK & TILE CO.,
1 1 f d Theo, Ga.

FOR SALE.

One Chambers style "B" brick machine, with Chambers' latest patent automatic cut-off, 110 feet of off-bearing frame, pulleys, shafting, etc. One 100 horsepower Westinghouse 13½x12 automatic standard engine. Also tempering machinery, consisting of three overhead-gear, steam-driven Carnell tempering wheels, with necessary shafting, etc., complete. All in good condition. Price moderate for quick sale. Address
WM. CONWAY,
5800 Walnut street,
1 2 c Philadelphia, Pa.

FOR SALE.

Either whole or half interest and management of best stoneware plant in Texas. In constant operation (summer and winter) since 1882. Clay, abundant and perfect, labor reasonable, facilities ample, prices good, demand greater than output, climate best in United States. Mining interests exact owner's attention. Cash proposition only considered. Address
"TEXAS,"
12 3 cm Care Clay-Worker.

[Continued on Next Page.]

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States.
WESTERN CLAY DEVELOPMENT CO.,
 6 tf d Van Meter, Iowa.

WANTED.

Intelligent young man with experience in farm drainage and engineering skill necessary to make levels, locate outlets and determine sizes and quantities of drain tile required to properly and economically underdrain any given area of land. Engagement for three months sure and possibly permanent. State salary expected, also give experience and references.
 1 2 dm Address "POST," care Clay-Worker.

FOR SALE.

Grand opportunity to buy a brick, tile and hollow block plant; 10 acres shale; electric power; railway switch to kilns.

Close to the best manufacturing cities in Canada; big demand; now running. Good orders being received daily. Good reason for selling. Apply to W. G. E. BOYD,
 1 3 cm Hamilton, Ont.

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH,
 5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE

Soft mud plant, capacity 25 thousand. Rack and Pallet system. C. & A. Potts all iron machinery new, 3 up draft kilns, 865 thousand capacity. Twenty acres of land located on two railroads, also suburban line. Within half mile of center of city of 10,000. Cheap fuel and labor. Good local trade, fine shipping point. For further particulars address

WM. READ,

1 3 c

Princeton, Ind.

WANTED.

By a man thoroughly proficient in the manufacture of fine front brick, by either the dry press method or the plastic clay method, the manufacture of fire brick, sewer pipe, common brick and fireproofing, a position as manager or superintendent of a large plant that has the capacity.

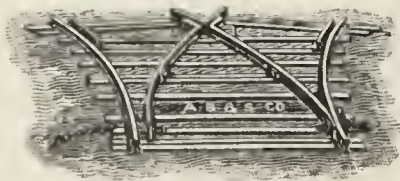
The advertiser at the present time has the management of one of the largest dry press plants in the country, making nothing but a high-grade face brick of different shades, which is not excelled by any one in the business; but owing to climate being unhealthy, has got to make a change for the sake of his family.

Thoroughly understands the erection of new plants to save labor, the remodeling of old plants to get the desired results, the erecting of all kinds of machinery, kilns, both up and down draft, and the successful handling of labor.

Want to hear from people that want to make a first-class article, and want a first-class man to make their plant go, and people that can appreciate the services of a first-class man.

Address

2 1 d

"NORTHERN,"
Care Clay-Worker.

SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,

7 tf d

Cleveland, Ohio.

26-foot vein, covering 200 acres. Located on Chicago & Alton R.R., 70 miles north St. Louis. Miners and shippers of red, white mottled and yellow buff clays for all varieties of manufacture of front, face, enameled brick and terra cotta work, including the encaustic tile, semi-porcelain, pottery and fire brick, fire clays; also red mineral paint clay.

Hicks Clay Co.

Grand Prize and Gold Medal,
 St. Louis World's Fair, 1904.

Prices and samples free upon request.

Correspondence solicited.

CHARLES T. HICKS, Pres., Drake, Ill.

H. C. WORCESTER Sec'y, Roodhouse, Ill.

Warwood Kiln Co.

SEMI-CONTINUOUS, ROUND AND SQUARE DOWN-DRAFT KILNS

MUFFLE KILNS and

DIRECT AND WASTE HEAT DRYERS.

Warwood's Semi-Continuous Kiln, the cheapest, simplest and most effective first-class kiln on the market. It combines all the advantages of the best type of single down-draft kilns with the fuel saving features of the continuous kilns.

It can be built either round or square and each kiln can be used individual or continuous, as desired.

Your present kiln, now constructed, can be easily and cheaply changed to Warwood's Semi-Continuous System, and in most cases your own style of kiln bottom can be used, and without any perceptible difference to its working features.

Warwood's Semi-Continuous System can be successfully applied to all kilns for burning all grades of Brick, Sewer Pipe or Fireproofing. In fact, anywhere a single down-draft kiln is now used.

In a correctly weighed test in a 100,000 capacity round down-draft kiln, we have burned all hard brick with 300 lbs. of coal per M, a saving of more than 60% of the fuel formerly used, and will guarantee to burn 95% hard brick.

Warwood's Kiln will burn any kind of fuel that any ordinary down-draft kiln, either coal, oil or gas. Address:

WARWOOD KILN CO.,

Southern Address,
 Augusta, Ga.

BEAVER FALLS, PA.

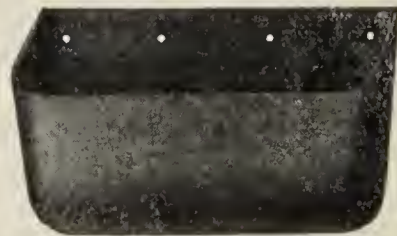
We Manufacture

These Buckets

In All Styles, Sizes and Gauges.

Orders Shipped Promptly.

SALEM BUCKETS



COLD ROLLED

SPIRAL STEEL CONVEYOR.



**We Also Make Shafting,
 Pulleys, Friction Clutches,
 Sprocket Wheels, etc.**

WEARS BEST, Costs No More.
**WE MAKE this Conveyor in All Styles
 and Gauges.**

SKILLIN & RICHARDS MFG. CO., CHICAGO.

"Latest Improved Wonder of the Age."



I now propose to give all a chance to try "The Swift System" by remodeling one kiln or building one new one for \$100.

Write for particulars to

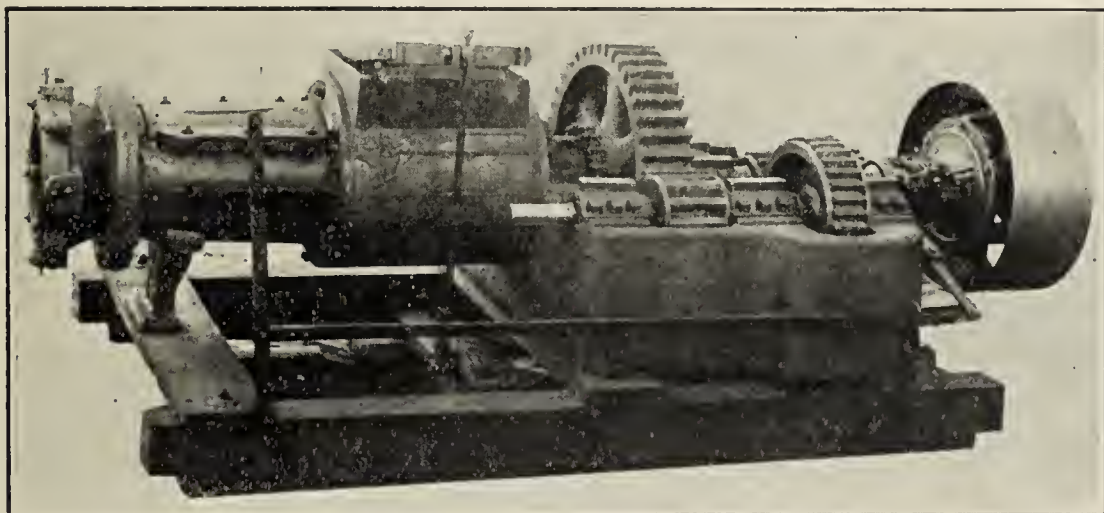
F. E. SWIFT,

514 West Fourth St., Dayton, Ohio.

MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers of Brick and Tile Machines.



No. 5 Auger Tile and Brick Machine with our New Endless Belt Cut-off Table, which has no equal for handling tile of all sizes from 3 to 12-inch. This table has carriers which move with the tile, and can be readily and perfectly adjusted to any size tile.

Our Upright Tile Machines are unequalled for large tile, 10 to 24-inch. These machines are all sold on their merits, and warranted to do first-class work. We also manufacture Soft and Stiff Mud Brick Machines.

Full line of Tile and Brickyard Supplies kept constantly on hand. Get our prices.

MADDEN & CO., Rushville, Ind.

[See ads on pages 478 and 479.]

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,

Saginaw, East Side Mich.

FOR SALE—Finely equipped shale clay brick and tile plant of 20,000 capacity, at Boone, Ia., in coal field; 144 car dryer, Corliss engine, Freeze mill, dry pan, seven kilns; all in good shape and now running, doing fine business. Will be sold for less than it is worth, as the owner, after seventeen years in the business in this location, is forced to quit on account of loss of eyesight, and must sell.

J. B. McHOSE,
Boone, Ia.

12 4 d

FOR SALE CHEAP.

One iron horsepower soft clay machine.
One steam power soft clay machine.
One hand repress.
One disintegrator.
One second-hand sand grinder and sifter.
One 4-mold Boyd Dry Press, never used.
One 250 horsepower heater.
About 500 feet of one-inch wire cable, never used, one-fourth price.
Second-hand dryer cars for sale cheap.
All in first-class condition.

THE HORTON MFG. CO.,
Painesville, Ohio.

1 tf L

(See additional ads under Table of Contents.)

DRY PRESS BRICK MACHINERY

New or Second-Hand.

Correspondence solicited.

H. S. SIMPSON,

817 Chamber of Commerce,
CHICAGO, ILL.

The Department of Clayworking and Ceramics

Established by the Legislature
in 1902 at the

New Jersey State College,

RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

C. W. PARMELEE, B. Sc., Director.
W. H. S. DEMAREST, D.D., Acting President.

OHIO STATE UNIVERSITY

Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture. Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

For information or catalogue address,

Prof. EDWARD ORTON, JR.,
Department of Ceramics.
DR. W. O. THOMSON, President.
Columbus, Ohio.

MANGANESE
FOR ALL USES.
LUMP, GRAIN AND GROUND
60-70% 70-80% 80-90% OXIDE.
CLAY WORKERS GOODS A SPECIALTY.
SAMPLES AND PRICES ON INQUIRY.
KENDALL & FLICK
WASHINGTON, D.C.

C. K. WILLIAMS & CO.,
EASTON, PA.

Largest Manufacturers in
United States of

Brick and Mortar COLORING.

Correspondence solicited.

Samples and estimates cheerfully furnished
on application.

GABRIEL & SCHALL

P. O. Box 1712. 205 Pearl Street.
NEW YORK.

Sole Importers in the United States of the

Precipitated  Carbonate
of Barites

The only preventative for scum and discolor-
ation on Facing Brick and Terra Cotta, neu-
tralizing the Sulphate of Lime in the Clay and
Water.

Circulars and Particulars on Application.

Chattanooga Paint Co.,

Chattanooga, Tenn.

Manufacturers of

**Red Oxides for Brick-
makers' Use.**

**Eclipse
Mortar Colors,**

Red, Brown, Buff, Black.

Do You Want
EXPERIENCED HELP?
See Clay-Worker
Want Ads.

CALDWELL'S
HELICOID

HELICOID SCREW CONVEYOR is heavier, stronger and better made than
any other. Requires fewer repairs—no lapped and riveted joints to come
apart—flight all one piece. We are the only people who actually roll a con-
tinuous flight conveyor by either the hot or cold rolling process. All other
steel conveyors have sectional flights. Our No. 28 Catalogue explains the dif-
ference. Elevating, Conveying and Power-Transmitting Machinery.

H. W. Caldwell & Son Co., 17th St. & Western Ave. **Chicago**

New York, 95 Liberty Street

Woodward, Wight & Co., Ltd., New Orleans

Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air
Brick Dryers show many new features that make them superior to all others.

Economical, durable and strong in construction and operation. having many points of ad-
vantage that appeal to practical brickmakers.

Salisbury, Md, August 11, 1906.

Mr. F. W. Dennis, Norfolk, Va.:

Dear Sir—I must congratulate you on your
kiln, for I have had lots of experience with
other down draft kilns, but I made the best
burn that I have ever seen this time, in this
kiln. We burnt part of one chamber of tile,
and they are all O. K. The kiln holds about
400,000 brick when set right. Wishing you lots
of success with your kiln.

Yours respectfully,

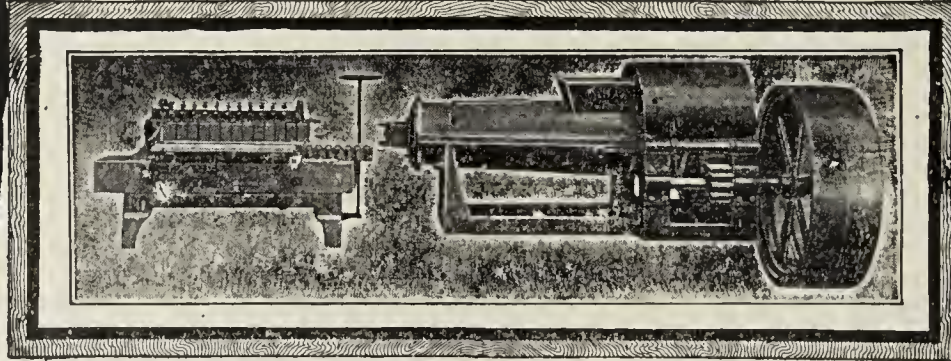
C. LANO.



Double Up and Down Draft Kiln.

Brick plants installed and put in operation.
Write for booklet. Correspondence solicited.

F. W. DENNIS,
145 Water Street, Norfolk, Va.



THE PIONEER. Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-
working industry for the past thirty years.

It has had few rivals and no superiors. Improved from
year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of
the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed informa-
tion desired.

The Kells Foundry and Machine Co.
ADRIAN, MICH.

Mention the CLAY-WORKER
When writing to Advertisers.

Testing and Controlling Apparatus for Clayworkers.

Draft Gauges, Pyrometers, Cones. Watersmoking and Dryer Thermometers, Test Kilns, Electric Furnaces, Experimental Ball Mills, Automatic Brick Counters, Watchmen's Clocks and other apparatus. All designed to keep a record of your business. Prices on application.

S. GEIJSBEEK, 112 Sixteenth Avenue, Seattle, Wash.

MANGANESE.

BEST QUALITY MANGANESE, CAREFULLY AND UNIFORMLY PREPARED FOR BRICKMAKING. WRITE US FOR SAMPLES AND PRICES.

NATIONAL PAINT AND MANGANESE CO.,
LYNCHBURG, VA.

MINERS AND GRINDERS.

Why not wash your clay and eliminate losses caused by Sulphur Balls, Iron Pyrites or Unequal Mixture?

The "CROSSLEY" process will save money for you, as it has for others.

THE CROSSLEY MFG. CO.,

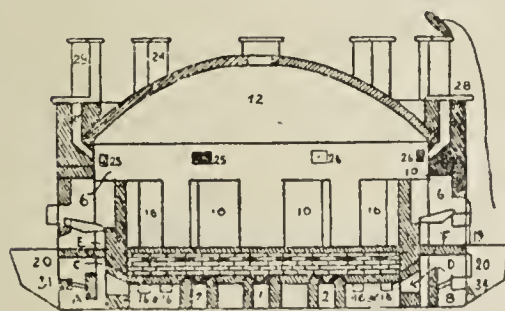
MANUFACTURERS OF

CLAY WASHING
POTTERY
TILE

MACHINERY

TRENTON, N. J.,
U. S. A.

Waste Heat and Furnace Dryers.



Up and Down-Draft and Continuous System of Kilns for drying and burning brick and fire proofing.

ANDREW BOWNE, Matawan, N. J.

THE secret of **successful burning** of any clay product lies in the **right application of heat**. To apply heat **where it is needed** it is obvious that **draft control is necessary**.

Positive draft control is provided by our

IMPROVED FLUE SYSTEM

which has the **right principle** and is simple and easy in operation and construction.

Our kilns are profit makers, burning the brick with the **minimum fuel, shortest time; all the same color and all hard**.

We welcome correspondence from those who intend building new kilns, and from those having old kilns that are not giving satisfaction. Address

J. P. BRADLEY & CO., New Cumberland, W. Va.

TAPLIN, RICE & CO., AKRON, OHIO.

Sewer Pipe and Clay-Working Machinery.

ESTABLISHED 1862.

— AN — Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



for sewer pipe plants, paving and pressed brick plants and potteries. Full information furnished upon application. In writing please be specific in your inquiries.

Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

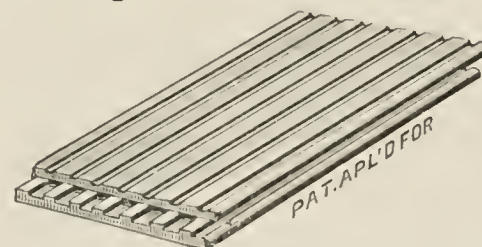
M. SCHULTER,

Industrial Commissioner,

Rock Island-Frisco Lines,

1144 Frisco Building, ST. LOUIS, MO.

Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles. Dies for all shapes, Hips, etc., in metal or plaster.

Special Roller and Auger Presses for Shingles, Interlocking Spanish Tiles, Automatic Shingle Cutting and Punching Tables. Special Tile Tables.

Stiff Mud Machinery for smaller capacity and horse power. stiff mud brick and hollow block dies, dry press liners.

MUELLER BROS.,

39 South Channing Ave.

St. Louis, Mo.

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Do you want to buy a

Good Clay

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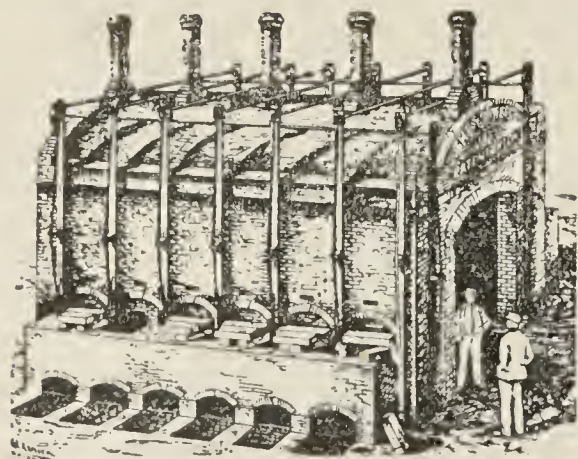
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For Economy of Fuel and Percentage of Hard Burned Brick, This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns. Hot air dryer. Continuous and muffle kiln.

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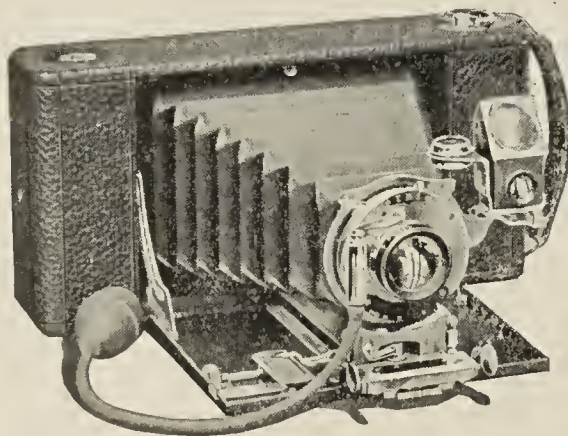
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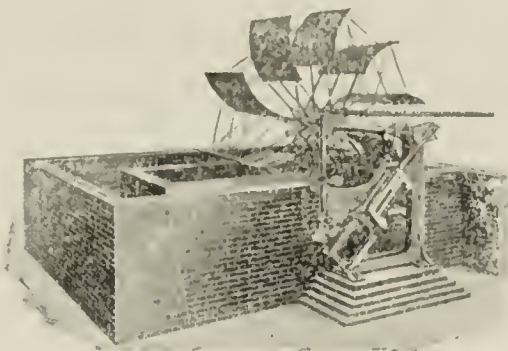
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A New Clay Feeder and Mixer.

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Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men, besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

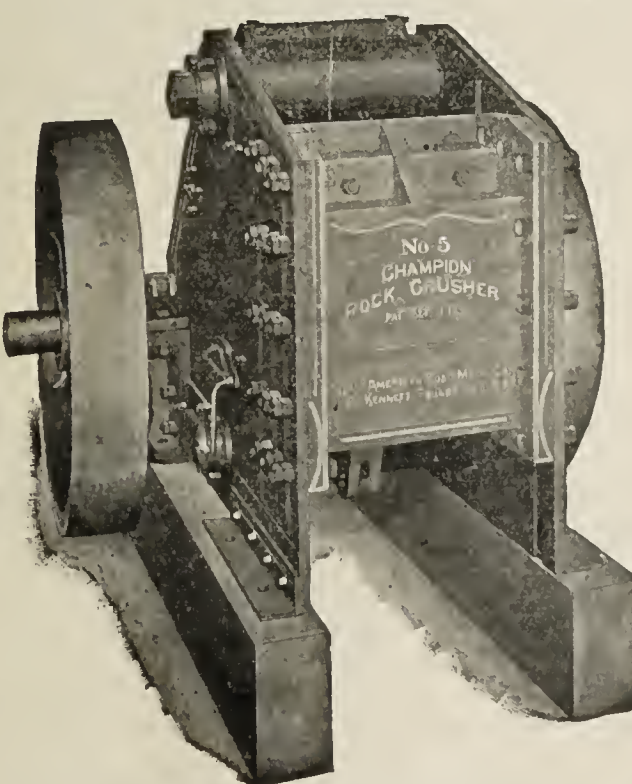
(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

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It Looks Good
on paper.

It Looks Better
crushing shale, fire clay,
rock and other hard material.

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is expensive, *to do without*, because it saves you money.

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NO. 5, 11x26 CHAMPION CRUSHER.



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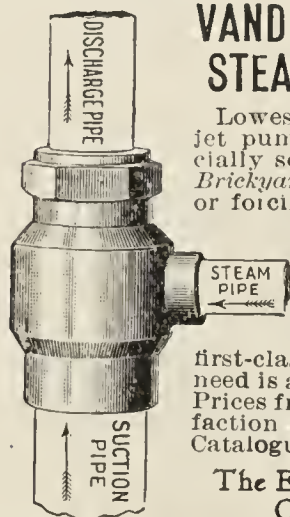
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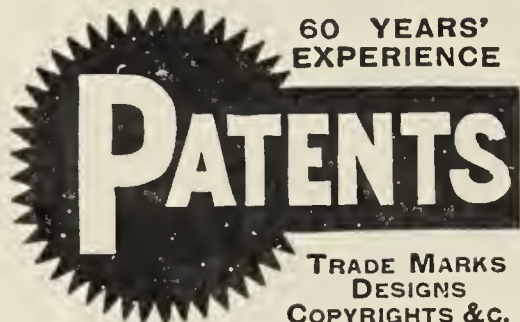
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or driven wells. No
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\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

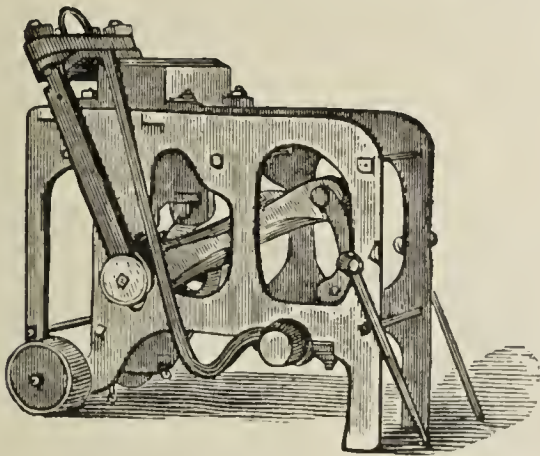
Roofing Tile, Dry Pressed Facing,

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POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

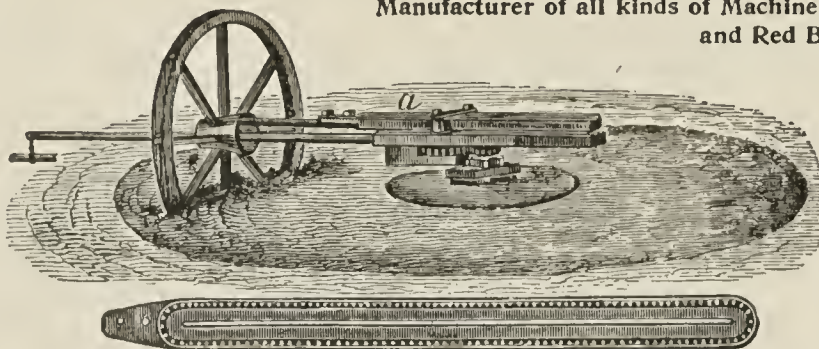


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Fire and Red Brick Presses all Sizes. Machinists and Engineers.

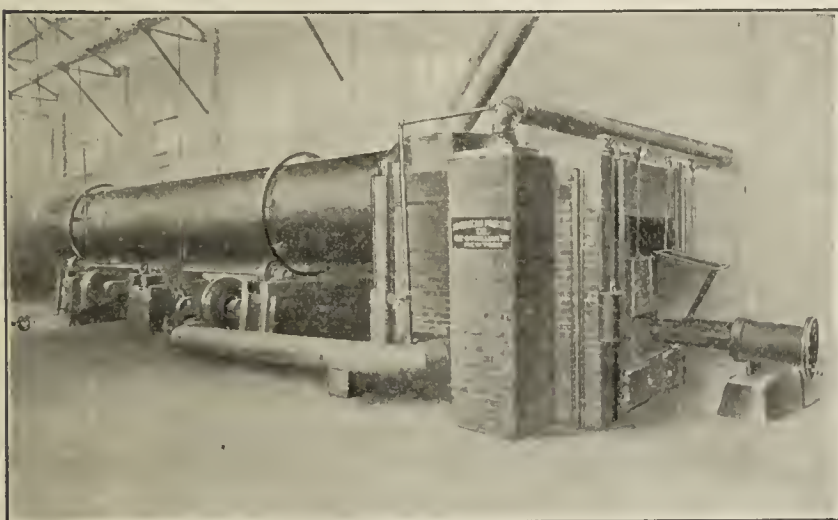
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

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Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

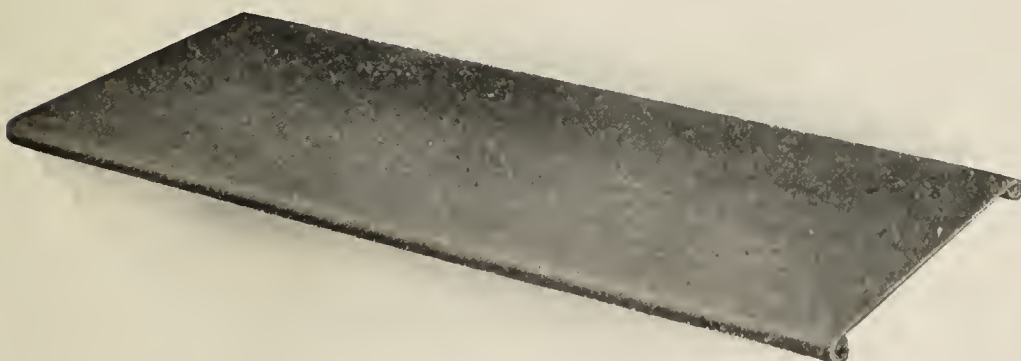
For Clay, Coal, Sand, Marl, etc.

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THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.

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Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

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P. O. Box 756.

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The
**ROESSLER-HASSLACHER
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CARBONATE OF BARYTES
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Oxide Tin,
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Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

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Accurate Cost Systems, Giving Cost at Any Time, are Essential to Good Management.

USE OUR BUSINESS ACCOUNTING and RECORD SYSTEM and know at any time.

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THE COST IN ANY DIVISION.

COMPLETE TIMEKEEPING SYSTEM.

PERPETUAL INVOICE.

KILN RECORDS. FUEL RECORDS and all
Knowledge Essential to Success.

If you wish to enter the clay business, either to buy an old plant or start a new one, write us, we have some bargains.

We own original kiln patents of the triple draft system, now being extensively infringed. Write us about round kilns. We have some bargains in Stiff Mud Machinery.

WESTERN CLAY DEVELOPMENT COMPANY, Van Meter, Iowa.

STEAM SHOVELS FOR BRICK YARDS.



We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

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THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

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Dear Sir—We write to give expression of our experience with the BOSS SYSTEM of burning brick, and take pleasure in saying during the past year we have had the BOSS SYSTEM applied to five kilns. The results have been very satisfactory. The burning is better, the time is reduced, and the amount of fuel is lessened. Very truly,

FULCHER BRICK CO.

R. H. Howell, Sec. and Treas.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

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ELKHART, IND.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.



Restaurant Building of General Electric Co., Schenectady, N. Y.

The Hercules did it.

The new Hercules catalog is a beauty—it tells lots of things about Concrete Construction that every Contractor, Architect and Builder should know. Sixty-six pages of meaty matter, including illustrations.

The Chicago Convention proved one thing—that the **HERCULES CEMENT STONE MACHINE** is still 365 days ahead of them all. It makes more sizes and larger variety of blocks than any other machine. It makes two blocks of the same and design, or of different sizes and designs on the one machine at the same time. It is the simplest machine in the world—no pins—cogs—chains—springs or levers.

In strength, durability and adaptability it leaves all others far behind. Send for Catalog V today—it's free to you.

Century Cement Machine Co.,

288 W. Main St.,

ROCHESTER, N. Y.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906.

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,

West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of 5,000 each,	15,000
2 " 4 "	" 3,000 "	6,000
1 " 5 "	" 2,040 "	2,040
2 " 10 "	" 550 "	1,100
2 " 12 "	" 415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.

The 10 " " 6 ins. and 4 ins.

The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am

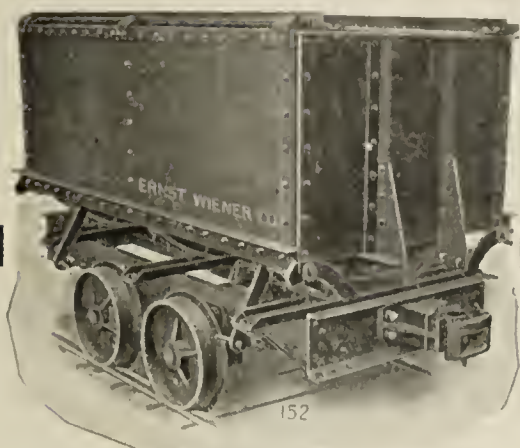
Yours truly, H. A. YARGER

Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,

West Elizabeth, Pa.



DOUBLE SIDE DUMP CARS

For Sand and Coal.

Carried in stock with hinged sides, and in capacities up to 40 cubic feet, and of 36-inch gauge.

We carry a LARGE STOCK of industrial railway equipments for all kinds and conditions of service. We can therefore render prompt shipment of standard material, such as Rails and their accessories, Steel Ties, Portable Track, Switches, Frogs, Turntables, Steel and Wooden Cars of all gauges, sizes and capacities.

20 YEARS' EXPERIENCE.

Write Our Dept. 13 for Catalog N.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
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64 Broad St., New York. Works: Youngstown, Ohio
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COAL — HEAT MONEY

All Saved by Using Our
WASTE HEAT DRIERS.

Get Catalogue 56F.

ESTIMATES AND PLANS FREE.



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Stewart Ave. and 25th Place,
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B. E. BECHTEL.

We Are
PRACTICAL BRICKMAKERS.

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

Handle Your Clay With One Man and The Thew Steam Shovel.



Type No. 1—Traction Wheels or Car Wheels, $\frac{3}{4}$ -Yard or One-Yard Dipper.

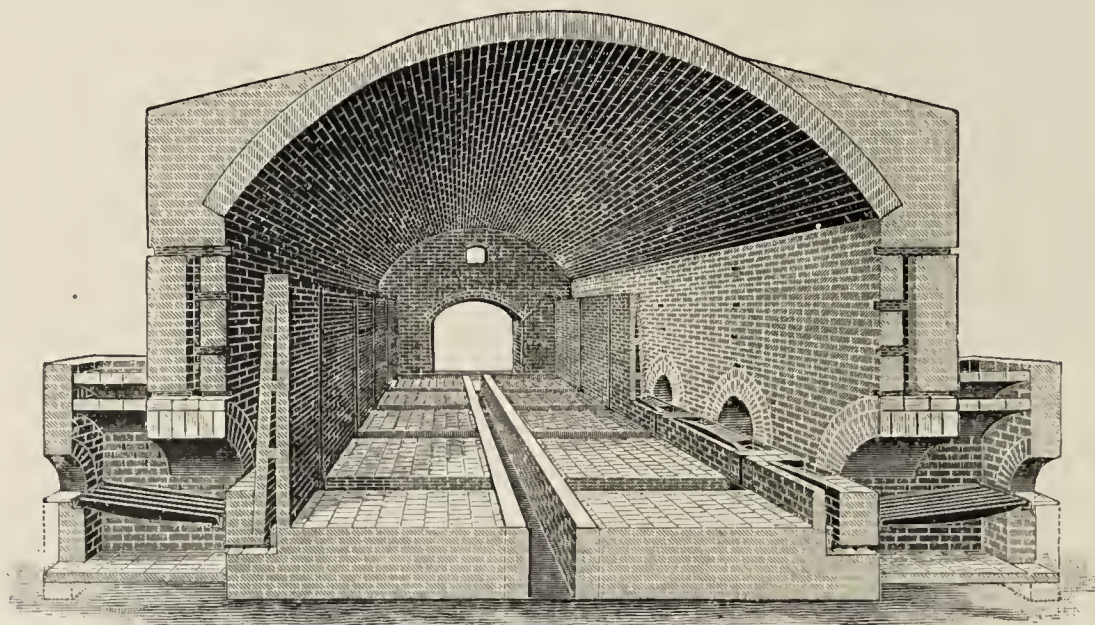
Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

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The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

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IT'S IN THE BLOWER.



The success of a Waste Heat Dryer is largely in the Blower.

We know that our Blower Dryers are best because our specialists on Dryers design the fan to meet the needs of each case

Because every fan for every dryer is built in our factory. We know its quality and can guarantee it.

Because we do not have to depend upon the workmanship of some other factory but build ALL OUR OWN FANS.

Because these fans are of extra heavy and substantial construction, designed especially for handling the hot gases from the cooling brick kiln, and are much heavier and more substantial than an ordinary fan intended for heating and ventilating factory or office buildings which are sometimes sold for installing in waste heat dryers and invariably give poor results.

Because the American quality is in our equipment and will maintain it as a permanent success.

Because we have the best Waste Heat Dryer men in the country. With the best Engineers, the best Material and long experience, we know that we can give you the best service and a better value for the money invested than can others whose equipment is assembled from various factories.

Then again we are Dryer Specialists in every sense of the word. We are not content with making one kind of dryer, but make every kind. We are, therefore, in a position to consider your interests without any bias or prejudice toward any one kind of dryer. This insures your getting a dryer which will most successfully handle your clay, whether that dryer be a Waste Heat, Steam, Hot Air or Furnace Dryer. We build a full equipment for every dryer in our own factory, including Fans, Heaters, Cars, Transfers, Turn Tables, etc. We also build and equip dryers to be operated by the carless system.

If you are in the market for a Dryer let us look over your plant, consider the clay and conditions and design you a system that will be a success. Then if you place the order with us the equipment will be made in our own factory and will be of our standard quality.

As it is with Dryers so it is with every class of Clayworking Machinery. We build a full line for making Clay products by every known process.

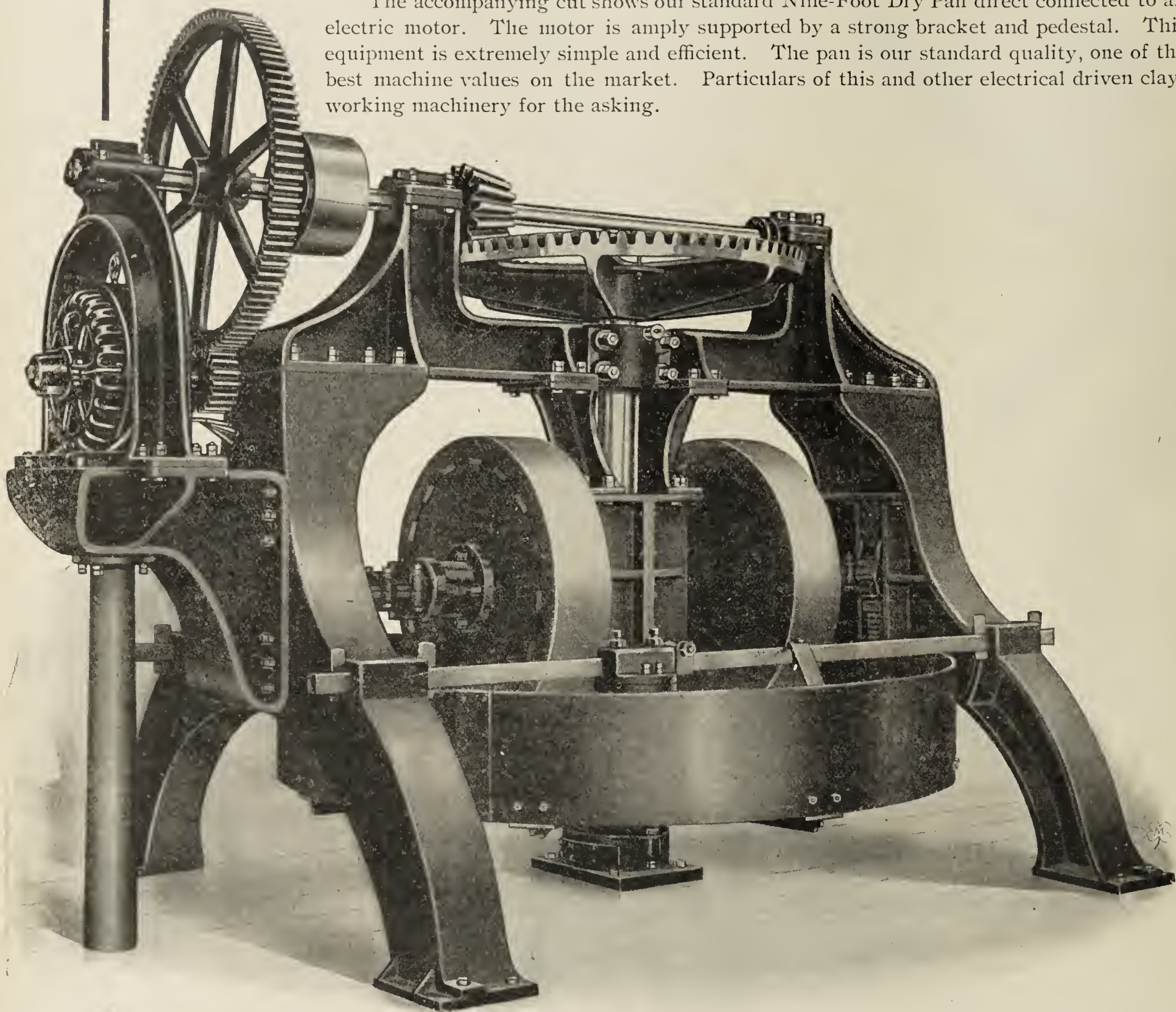
The American Clay Machinery Co.,

Bucyrus, Ohio, U. S. A.

Electrical Driven Pan



The accompanying cut shows our standard Nine-Foot Dry Pan direct connected to an electric motor. The motor is amply supported by a strong bracket and pedestal. This equipment is extremely simple and efficient. The pan is our standard quality, one of the best machine values on the market. Particulars of this and other electrical driven clay-working machinery for the asking.



We build a line of Dry Pans which can be depended upon, not only on Promise, but Performance. Note the lines of strength embodied in this pan. There is Flawless material and Faultless workmanship. The men who build these pans in our shops are pan builders the year around. They thus become pan specialists. Every pan is erected and thoroughly tested in our factory. We know every pan to be perfect because of the care with which we watch its building. We can guarantee it. We build two dozen sizes and styles of Dry and Wet Pans, as well as every machine and appliance used in the manufacture of Clay Products by all processes. Write for catalog.

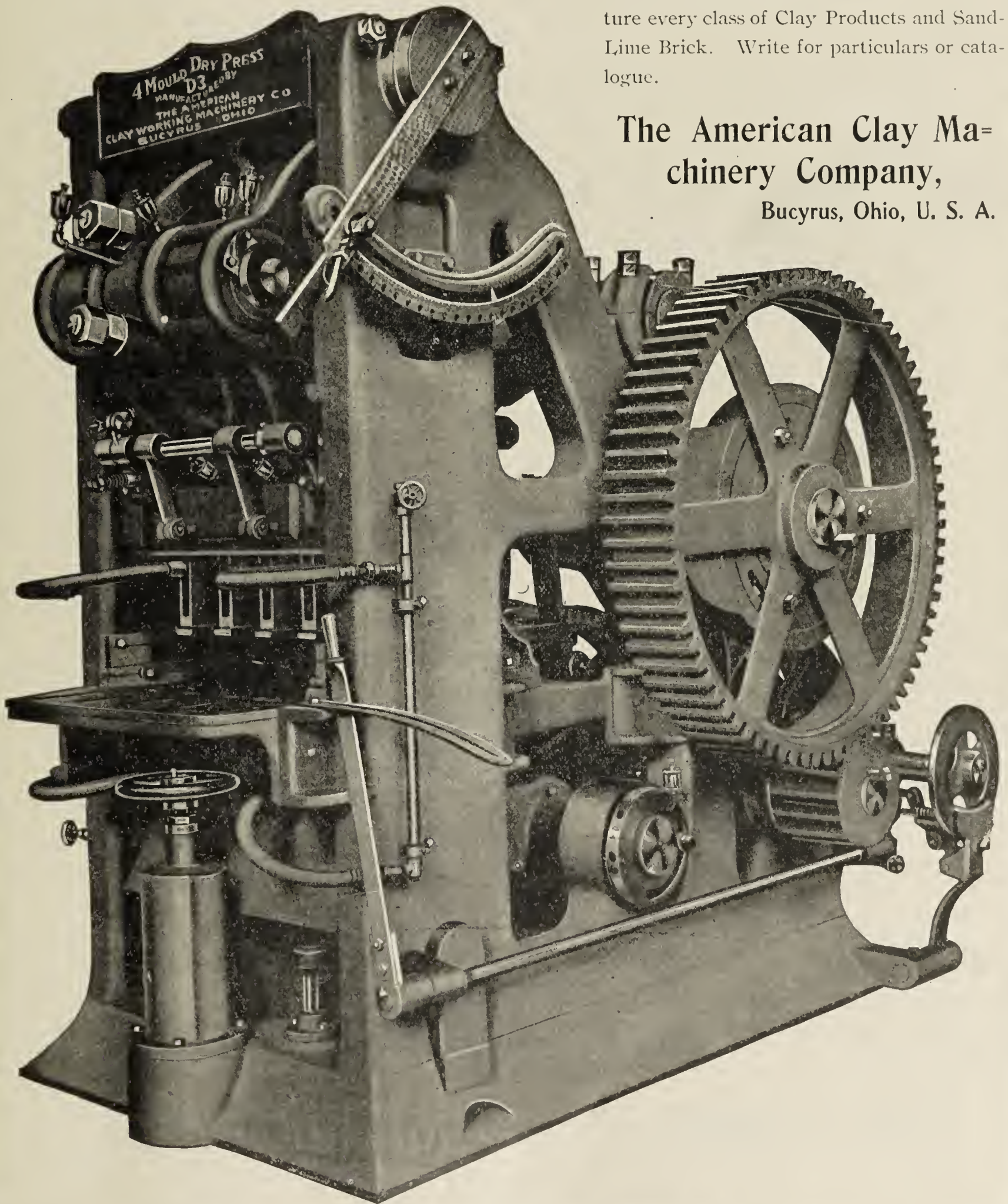
The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

Presses for Performance Not Promise



From our Six Mould Dry Presses down to our Hand Presses we can guarantee the quality and performance of each machine. Our Press Builders are experts who build nothing but Dry Presses in our own factory under our close supervision. The quality of material, the design and workmanship combine to make our Presses as near Perfect as it is possible to get. All capacities and all sizes. We also build every machine and appliance needed to manufacture every class of Clay Products and Sand-Lime Brick. Write for particulars or catalogue.

The American Clay Machinery Company,
Bucyrus, Ohio, U. S. A.



Soft Mud Brick Machinery

There is many a clay which can best be worked on Soft Mud Machinery. To handle such clay on Stiff Mud or Dry Press Machinery would prove a failure in the long run.

We build a complete line of Soft Mud Brick Machinery and appliances to meet the needs of such clays. We are not interested in selling you machinery which may prove a failure. We have the very machinery you re-

quire to make a success of your business, and that is the only machine we will sell you.

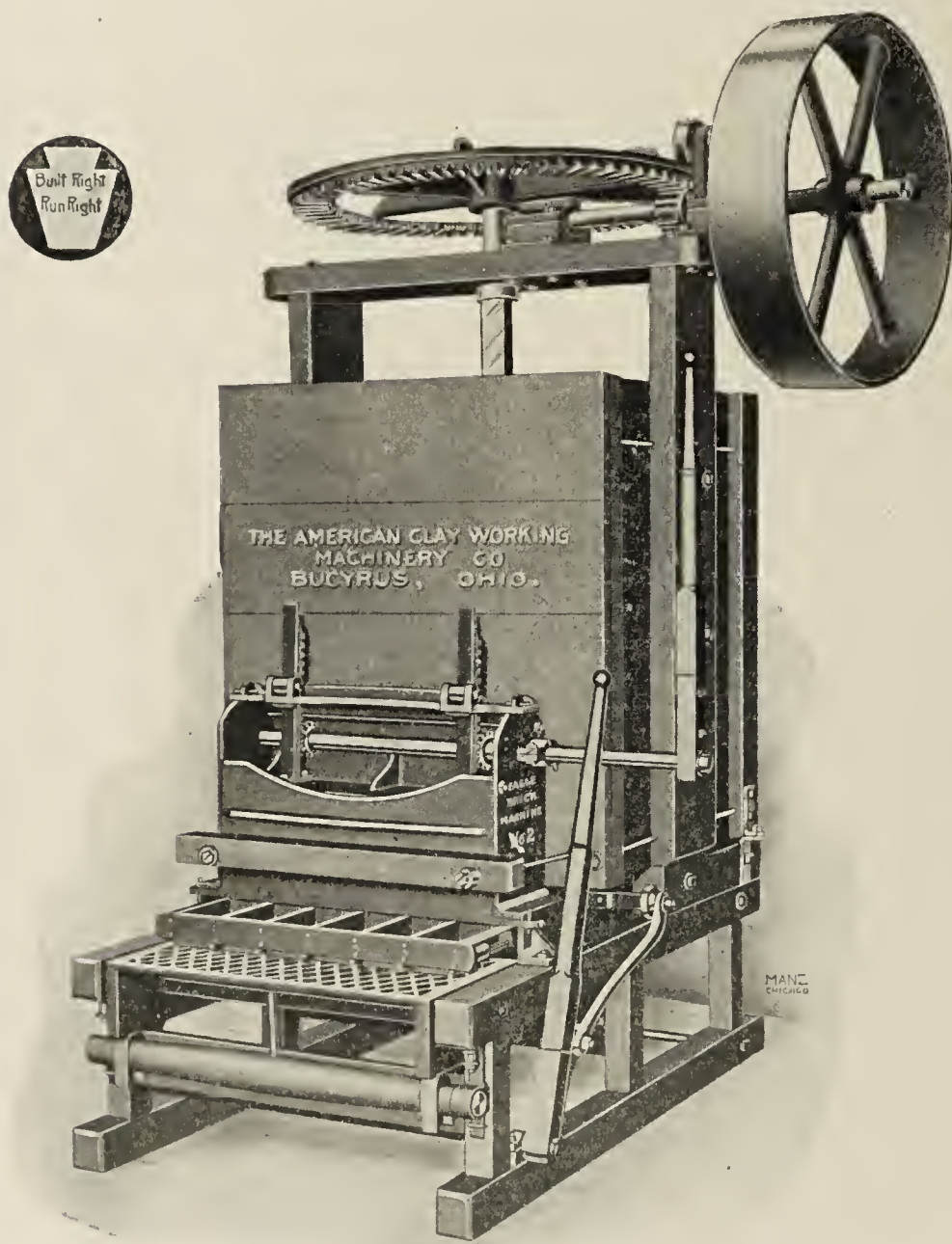
Our Upright Stock Brick Machine is built for long and continuous use. It has many satisfied users who will cheerfully recommend it.

Our line of Plunger machines is complete with a size range to meet your requirements.

Our Eagle Horse Power and Eagle Steam Power machines are popular favorites in their class.

Every machine we build has a quality behind it attained only by faultless designing, excellent material and superior workmanship.

In buying the "Built Right Run Right" line you buy quality and that means successful operation.



The Eagle Steam Power Brick Machine.

We build every machine and appliance needed to manufacture Clay Products by any known process. Every machine built in our own factory, so that we are able to guarantee the quality, because we know that quality to be all that material and workmanship can attain. Sand-Lime Brick Machinery a specialty.

The American Clay Machinery Co.,

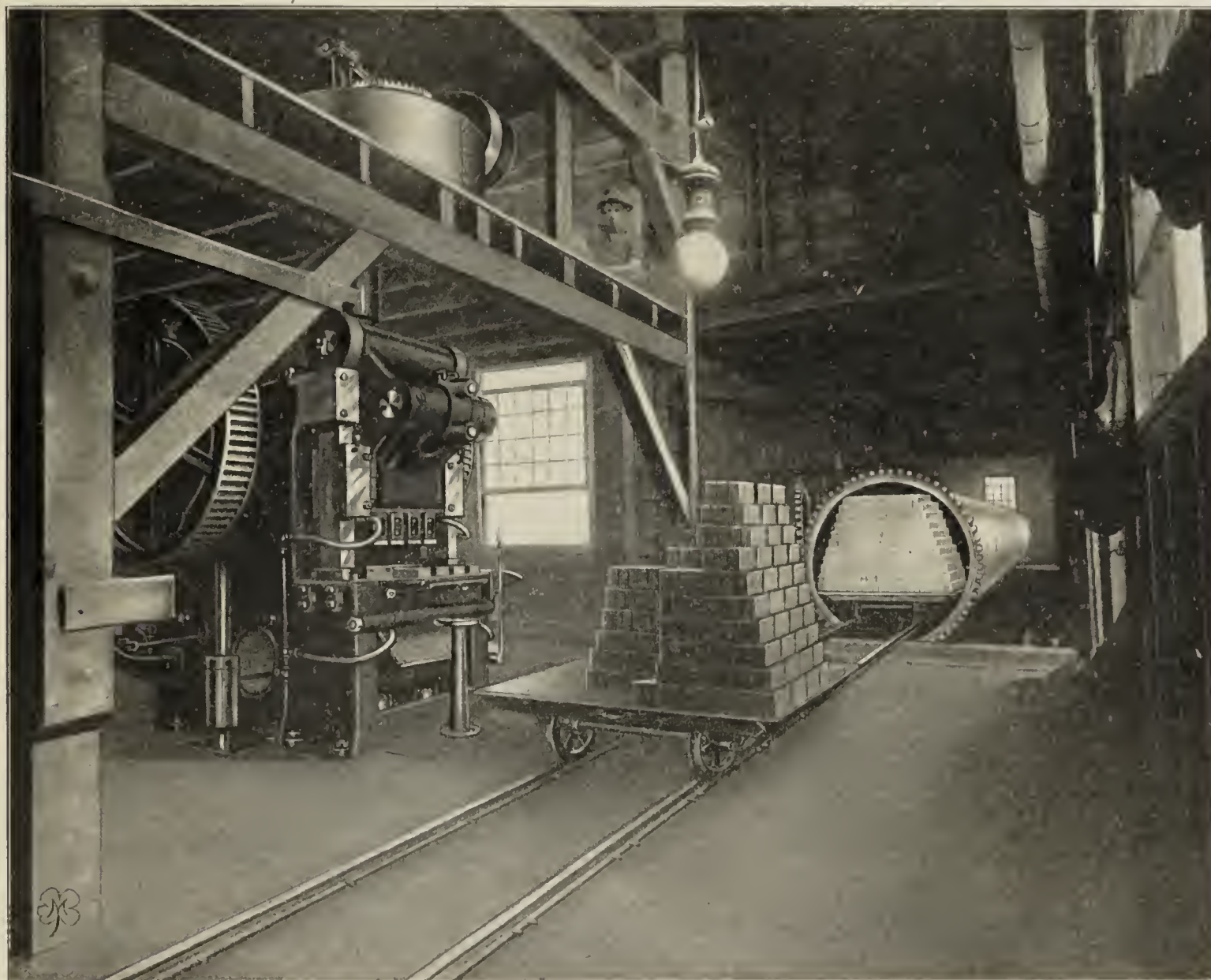
Bucyrus, Ohio, U. S. A.



Up to the Minute Plant

Here is a strictly modern, "up to the minute" Sand-Lime Brick Plant equipped throughout with machinery built by The American Clay Machinery Co. Note the detailed excellence and simplicity. Note the proportions of the Press. There is not a plant in the country which is better equipped for profitable operation.

We build complete equipments for Sand-Lime Brick plants. Our testing department will test your material and deliver you samples of the finished prod-



INSTALLATION OF SAND-LIME BRICK MACHINERY

in the plant of The Schenectady Brick Co., Schenectady, N. Y.

Manufactured by The American Clay Machinery Company, Willoughby, Ohio.

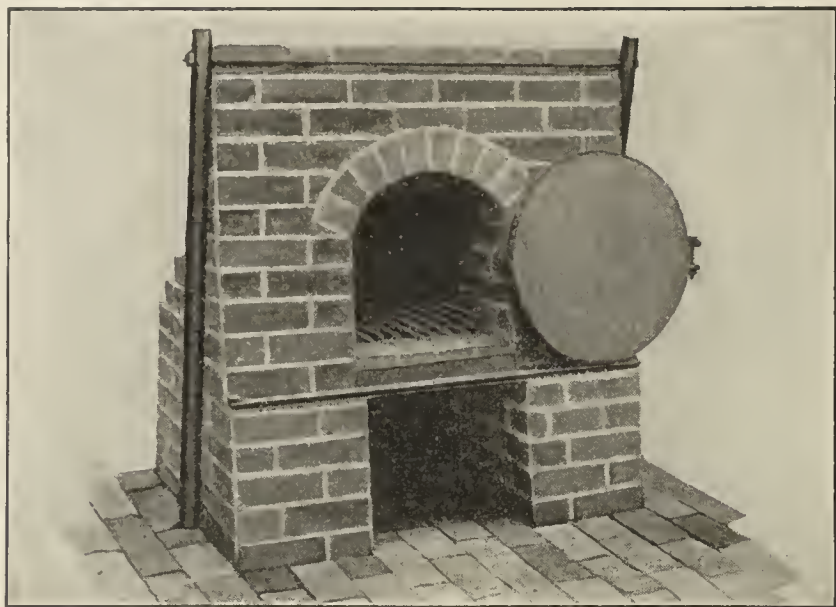
uct. Our machine department will build an equipment to make millions of brick equal to the sample. Correspondence solicited.

We also build a complete line of Clay-Working Machinery for the manufacture of Clay Products by all processes. Write for catalog.

The American Clay Machinery Co.,

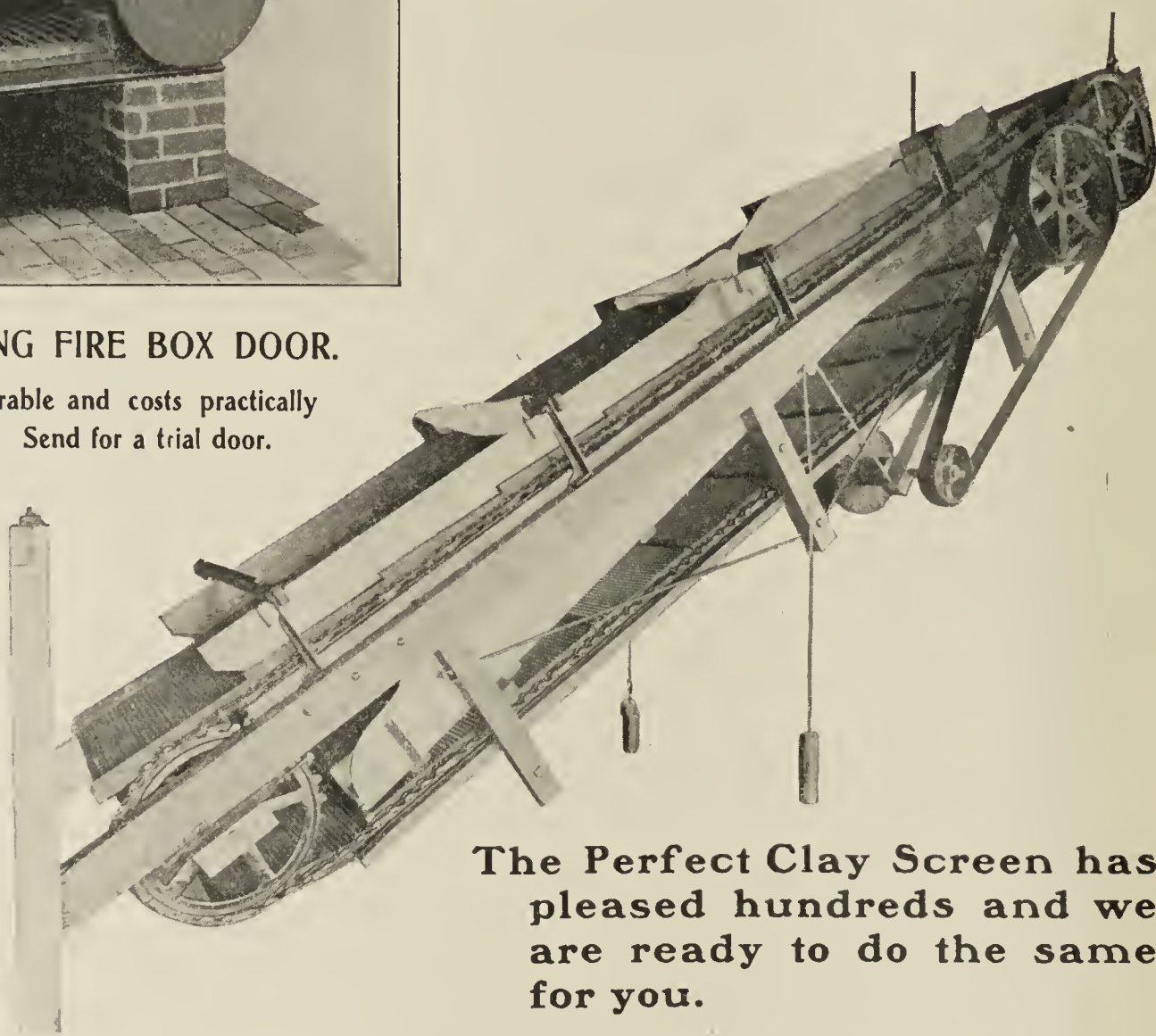
Willoughby, Ohio, U. S. A.

TWO GOOD ONES.



DUNLAP'S ROLLING FIRE BOX DOOR.

Cheap to install. Durable and costs practically nothing to maintain. Send for a trial door.



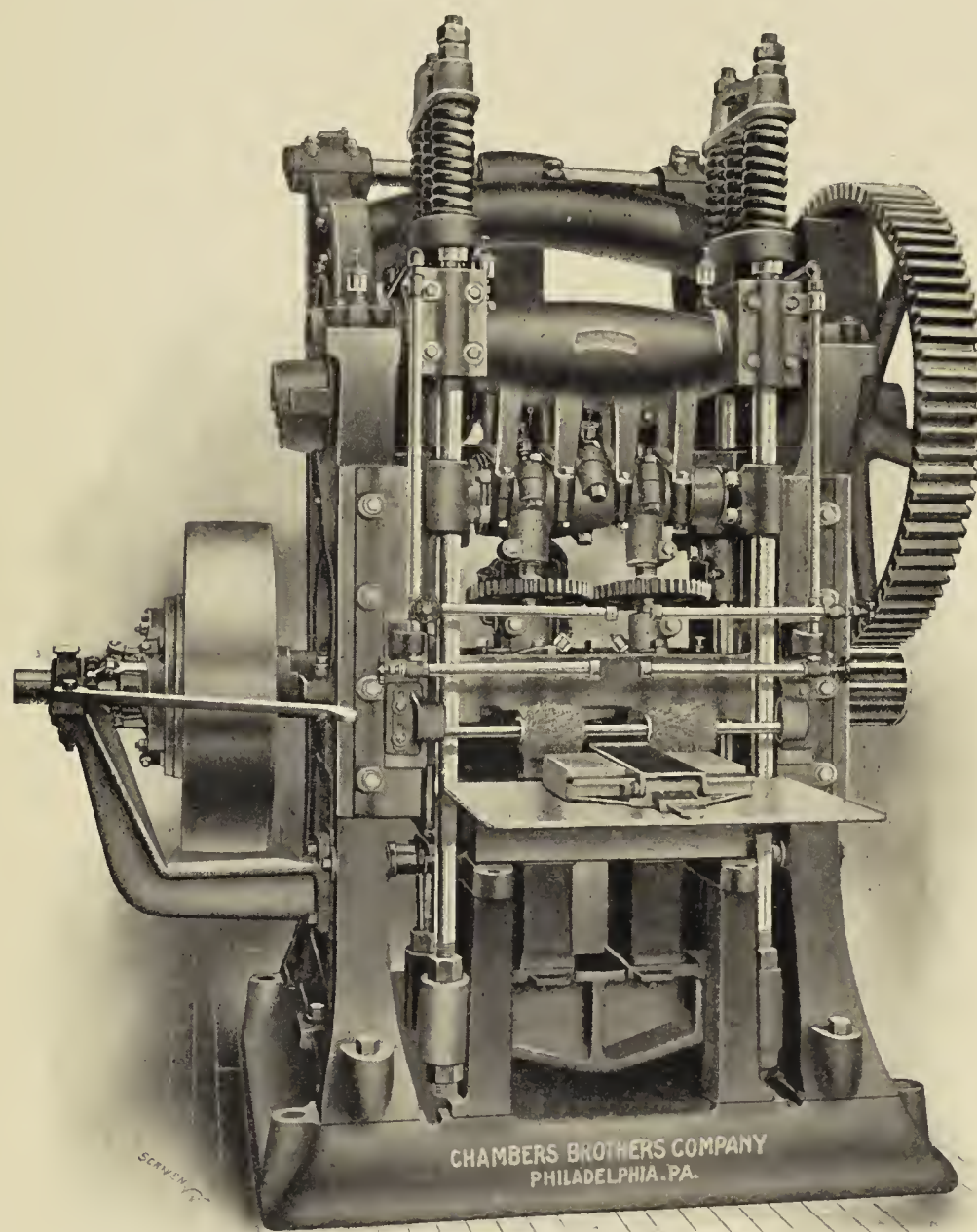
The Perfect Clay Screen has pleased hundreds and we are ready to do the same for you.

We can save you some money this year, beside increase your output and improve your product. We guarantee results. Satisfaction or no pay.

It is for you to say the word.

Dunlap Manufacturing Co.,
Bloomington, Ill.

BRICK REPRESSES



THE PHILADELPHIA REPRESS

Built by

Chambers Brothers Company

Fifty-Second and Media Streets

PHILADELPHIA, PA.

CHICAGO WAREHOUSES
59 West Jackson Bl'vd

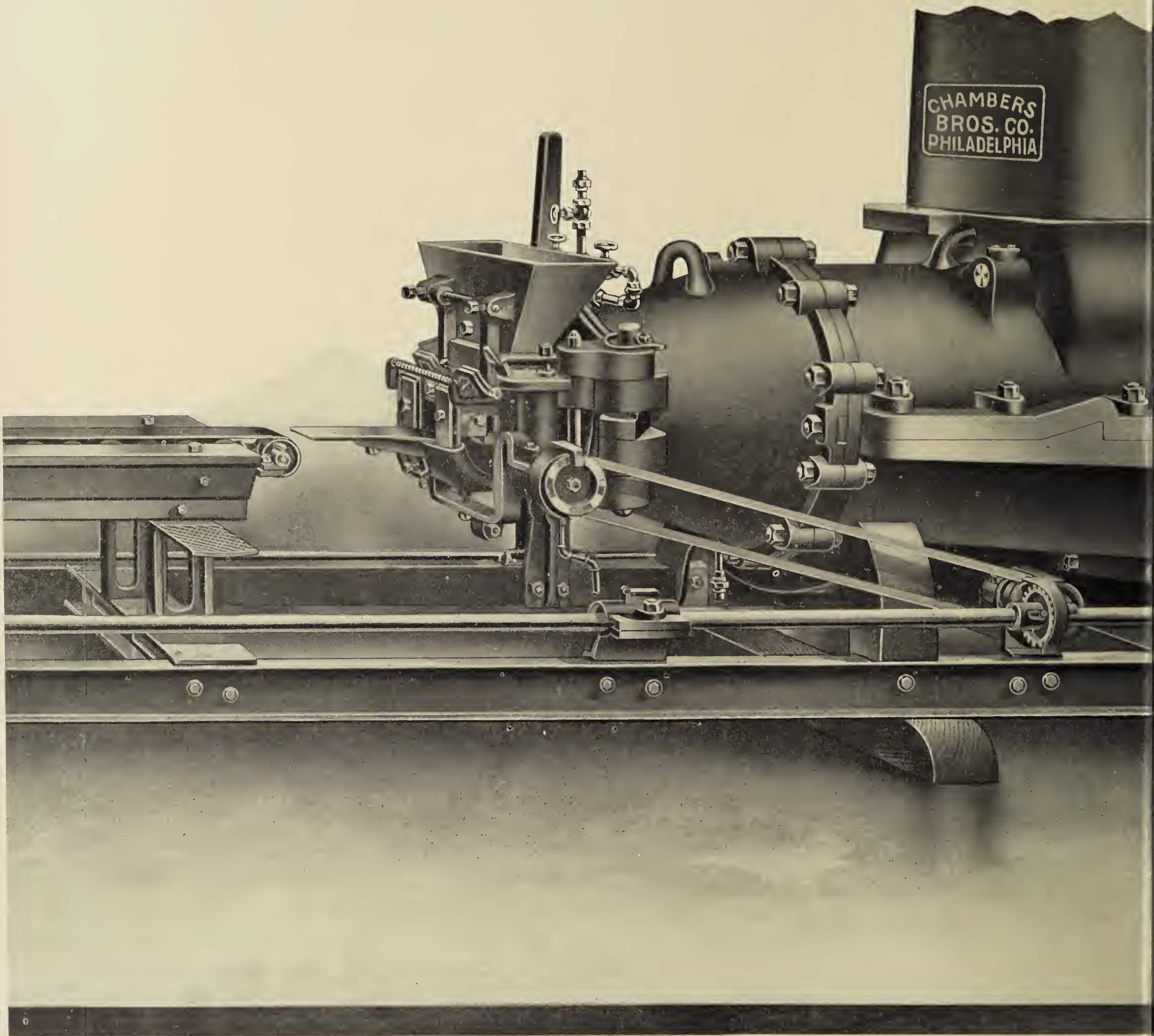
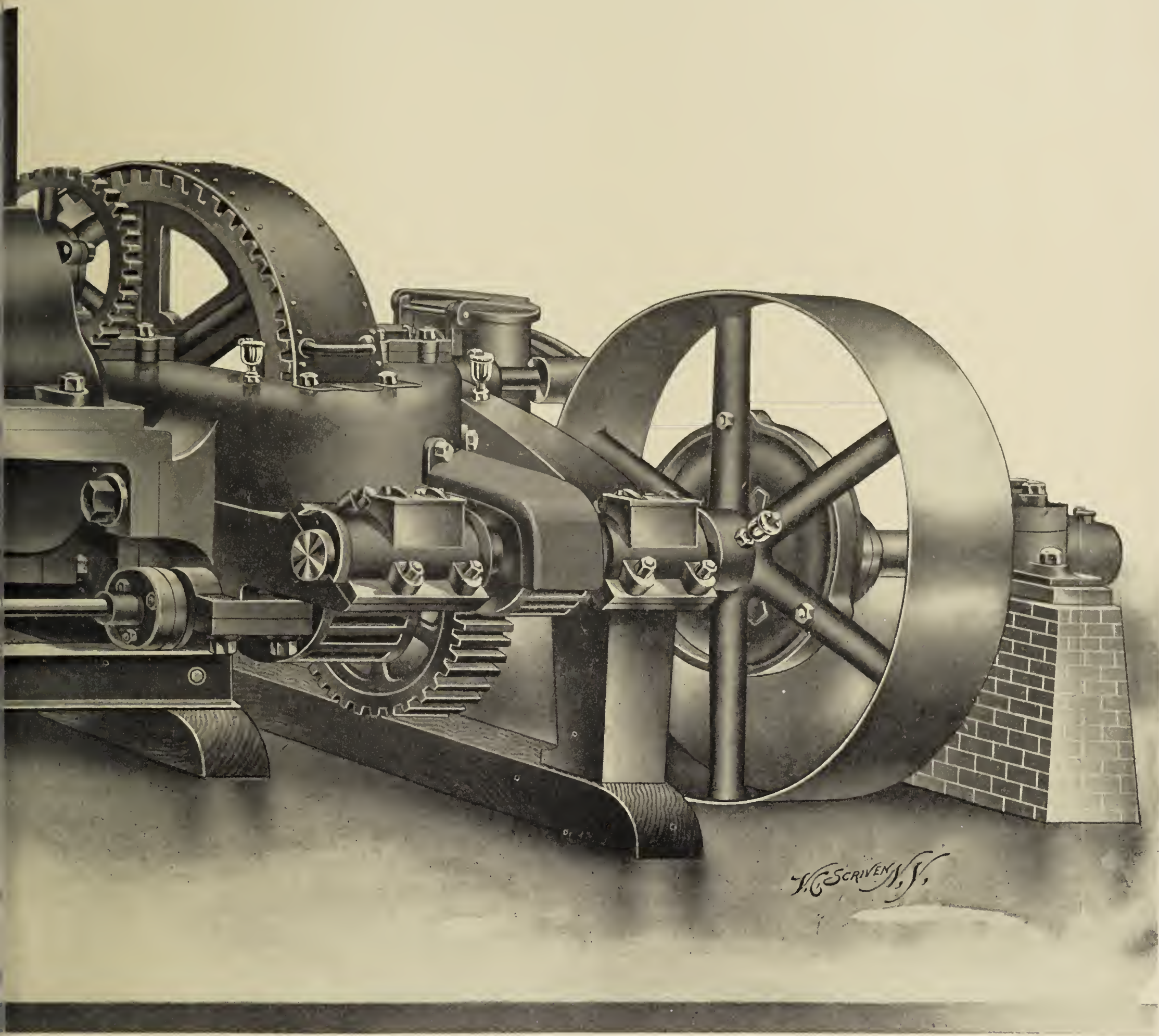


Illustration of the large heavy pattern CHAMBERS' AUGER BRICK MACHINE without cut
speed use, or cut steel driving gears for high speed. Tempering shaft
Weight of complete machine

We make a full line of Crushers,

CHAMBERS BROS.
FIFTY-SECOND STREET, CORNER OF
CHICAGO OFFICE: 59 V



This machine built as either end-cut or side-cut. Constructed with moulded gears for normal 9 inches diameter; countershaft, 5 $\frac{5}{8}$ inches diameter between journals. Weight about 24,000 pounds.

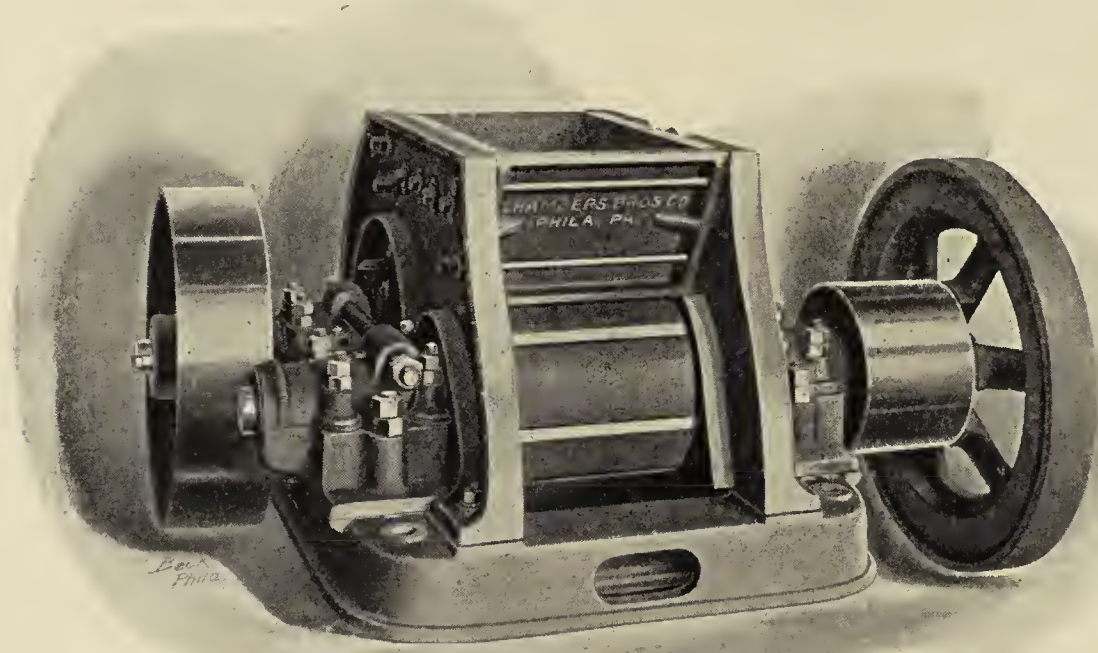
Integrators, Pug-Mills and Mixers.

HERS COMPANY,

EDIA STREET, PHILADELPHIA, PA.

T JACKSON BOULEVARD.

Clay Disintegrators



We build five sizes of these valuable clay grinders. They are well designed and well built. The principle embodied in this machine has been fully proven.

Chambers Brothers Company

Fifty-Second and Media Streets
PHILADELPHIA, PA.

JEFFREY "CENTURY"

Rubber Belting

Conveys Material in Bulk,
Bags, Barrels and Boxes.

Catalogue 67 A
on Conveyors
Mailed free
With



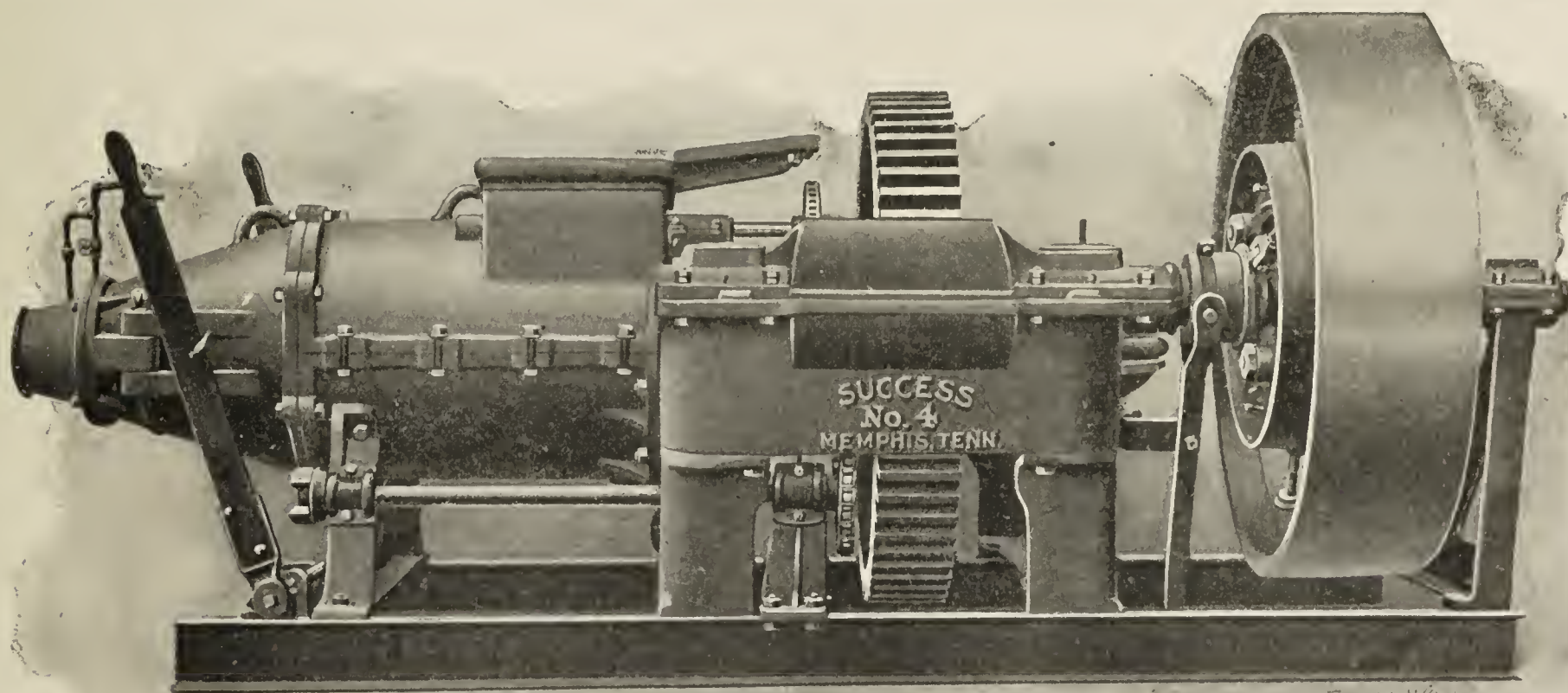
Elevating=Crushing=Screening
Drilling Machinery
Catalogues.

Correspondence solicited.

THE JEFFREY MFG. CO.

Columbus, Ohio, U. S. A.

New York. Boston. Chicago. Denver. St. Louis.

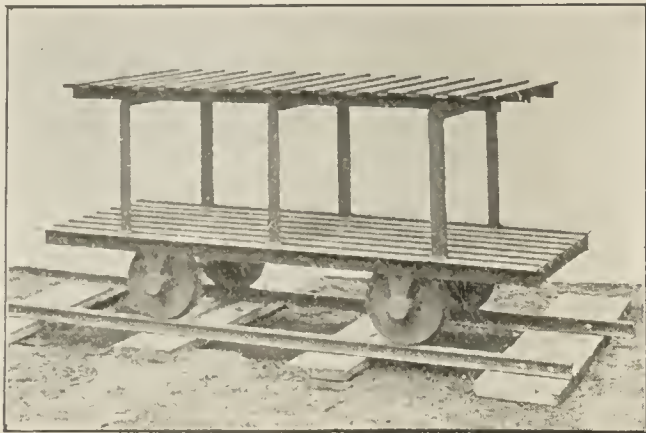


Cut represents our SUCCESS No. 4 Stiff-Mud Machine, constructed on **steel** foundation, **self-contained** and fitted with **steel** gears throughout. The strongest, most desirable and modern brick machine on the market.

Success Brick Machinery Company,

1403-4-5 Tennessee Trust Bldg., Memphis, Tenn.

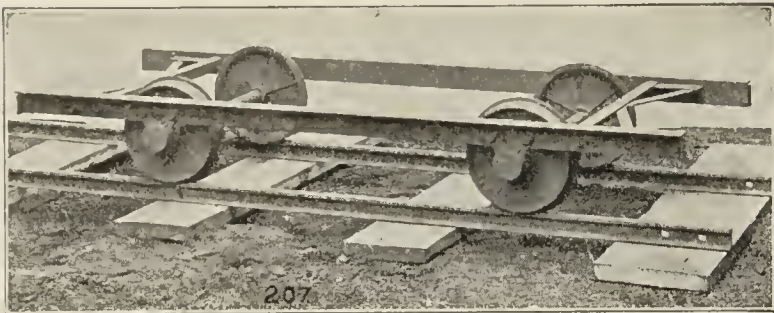
INDUSTRIAL RAILROAD EQUIPMENT.



No. 244.
DOUBLE DECK DRYER CAR,
STEEL DECKS.



No. 52,
TRUNION DUMP CAR.
FOR GENERAL USE.



No. 207. SOFT MUD FLAT CAR FOR FOOT PALLETS.

The Cleveland Car Co.,
West Park, Ohio.

**Builders of Light Steel Cars of
Every Description,**

**Switches, Turntables,
Portable Track Crossings,
Steel Pallets, Rail, Etc.**

SAND-LIME BRICK MACHINERY

Furnished and installed by the

International Sand-Lime Brick & Machinery Co.

(Incorporated under the laws of the State of New York.)

Under the Safest and Strongest Guarantees.

Inventors and Owners of the "Division Method" (patented in the
United States and all Foreign Countries.

Installed and Successfully Operated in Over Twenty Factories
in the United States.

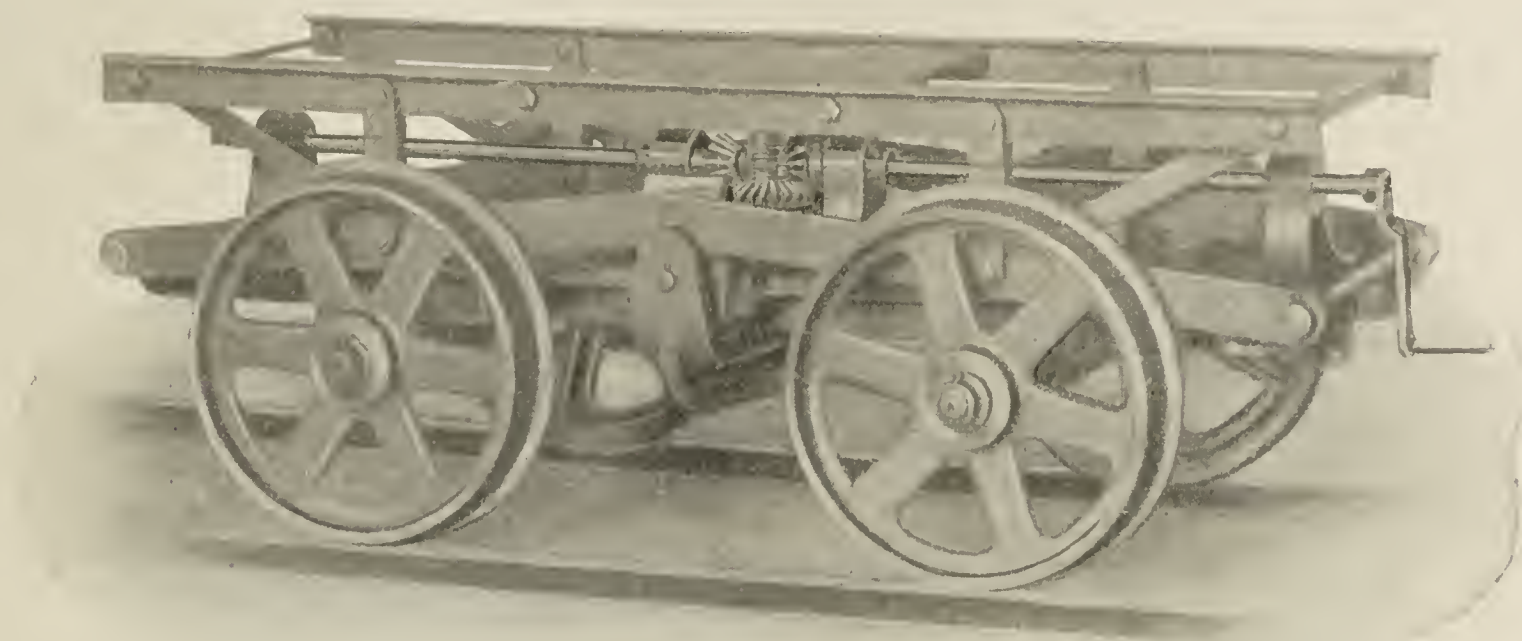
Write for information to the

International Sand-Lime Brick & Machinery Co.

**136 Liberty Street,
NEW YORK.**

COMPETITION COMPELS

the brickmaker to reduce the cost of manufacture to the lowest possible point. If **two** men properly equipped will accomplish what **all** your truckers now do, and at the same time deliver the ware to the setters in perfect condition, can you afford to continue as you are? An inquiry from you will receive prompt attention.



OPEN AIR AND ARTIFICIAL DRYERS—Car and Carless.

The Drymore System, 7th and Chestnut Sts., St. Louis, Mo.

The Exhaust Steam Dryer is THE NATIONAL.

CARROLLTON BRICK CO.

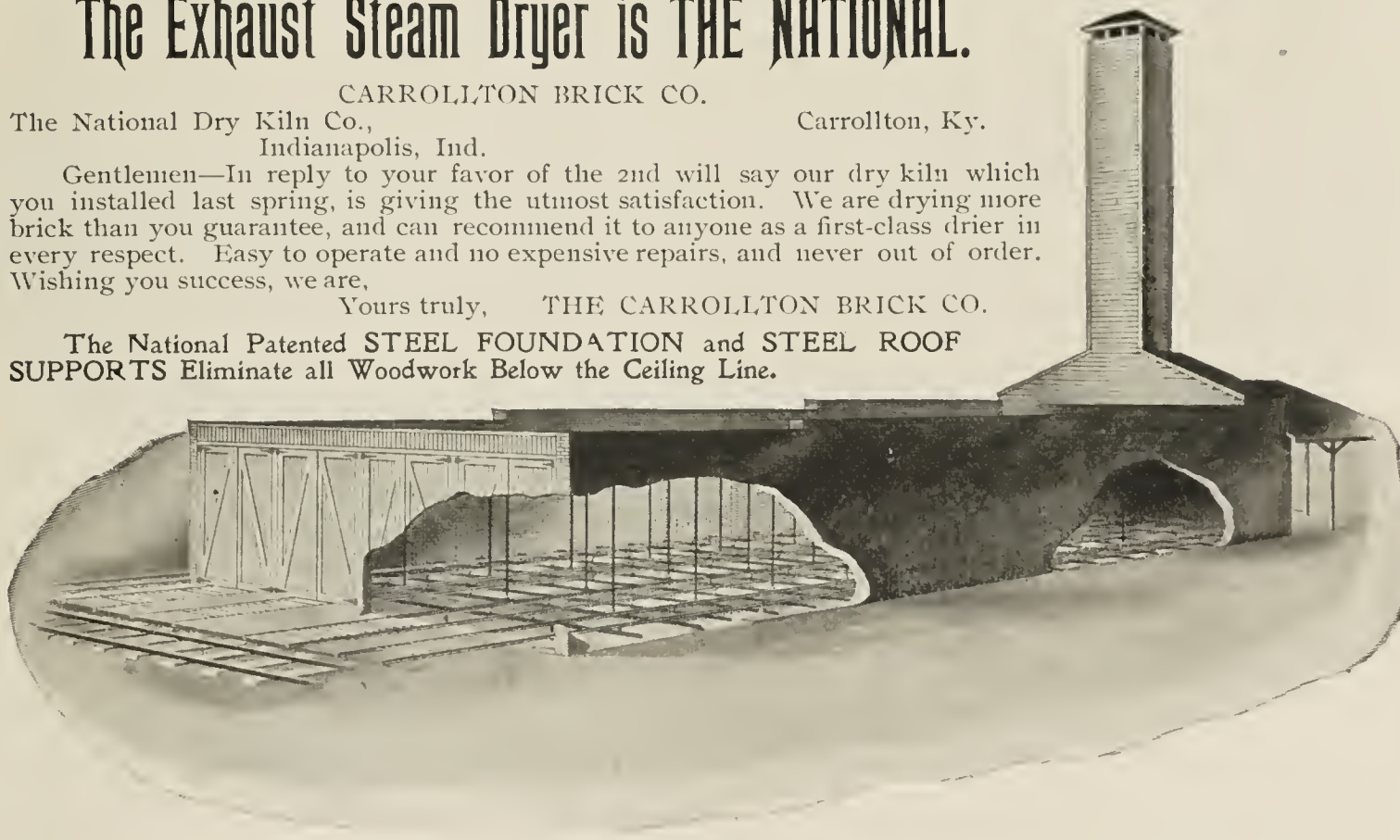
The National Dry Kiln Co.,
Indianapolis, Ind.

Carrollton, Ky.

Gentlemen—In reply to your favor of the 2nd will say our dry kiln which you installed last spring, is giving the utmost satisfaction. We are drying more brick than you guarantee, and can recommend it to anyone as a first-class drier in every respect. Easy to operate and no expensive repairs, and never out of order. Wishing you success, we are,

Yours truly, THE CARROLLTON BRICK CO.

The National Patented STEEL FOUNDATION and STEEL ROOF
SUPPORTS Eliminate all Woodwork Below the Ceiling Line.



We make all kinds of Cars for carrying Brick, Turntables, etc.

The National Dry Kiln Company,

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

INDIANAPOLIS, IND.

A Letter Which Will Interest Brickmakers.

GEO. C. PRUSSING, President,
A. J. WECKLER, Vice-President,
C. D. B. HOWELL, Treasurer.

WM. SCHLAKE, Purchaser,

C. B. VER NOOY, Auditor,
W. M. LEGNARD, Superintendent,
J. H. GRAY, Sales Department.

Illinois Brick Company,

Ninth Floor, Chamber of Commerce.
Phone Main 17.

Chicago, Jan. 4, 1907.

The Barron Dryer Co.,
84 La Salle St., Chicago.

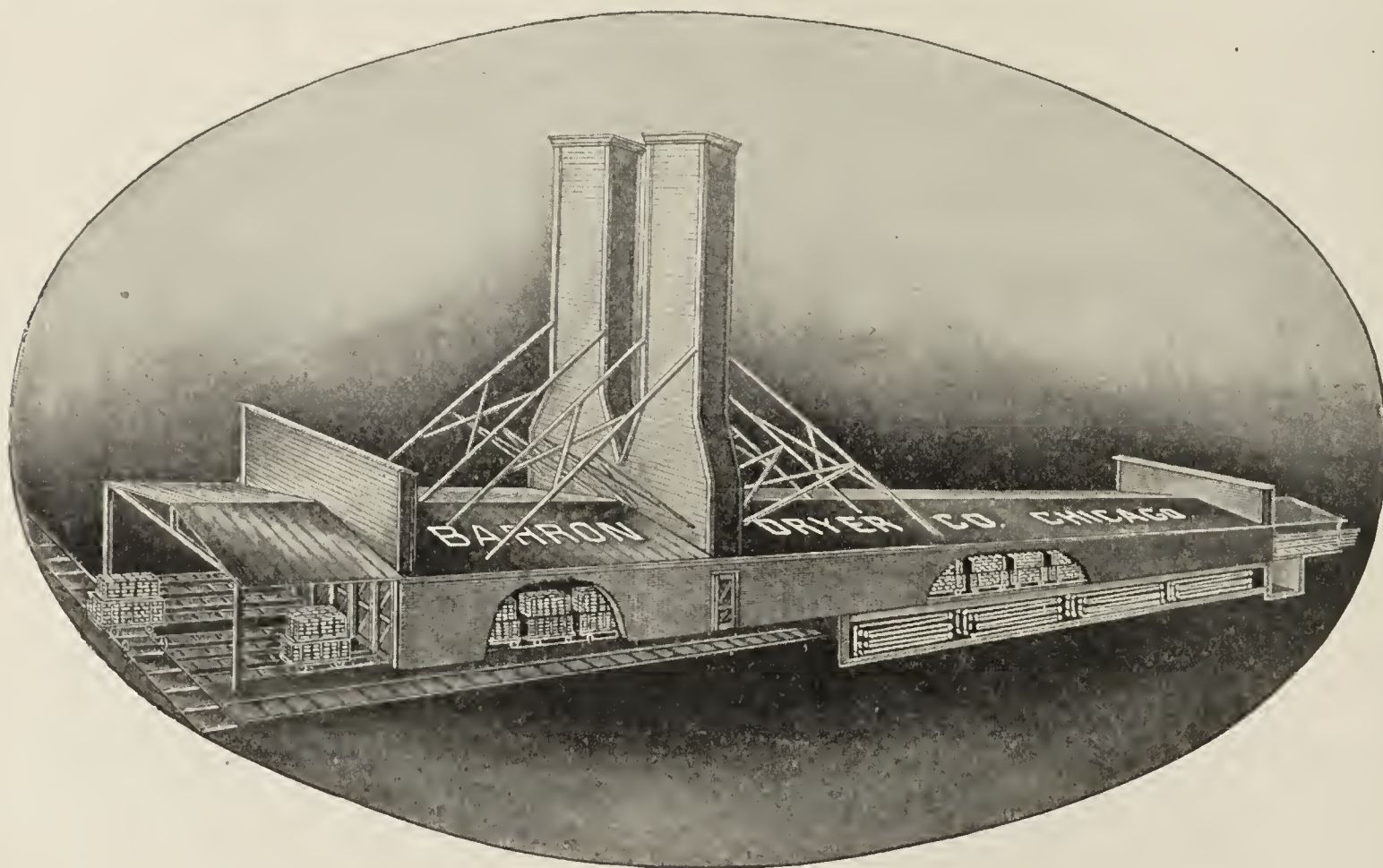
Gentlemen:

It may be of interest to you to know that we have made on our Yard 17, in 1906, 52,551,400 brick, in 2,083 1/2 working hours, and have dried them satisfactorily in your 18 track dryer.

Very truly yours,

ILLINOIS BRICK COMPANY.

(Signed) Geo. C. Prussing, President.



Barron Tender Clay Dryer, Which DOES THE WORK.

We construct and install Dryers adapted to drying all clay products with greatest perfection and economy in fuel and labor.

BARRON DRYER COMPANY,
84 La Salle St., CHICAGO, ILL.

The RICHARDSON-LOVEJOY ENGINEERING CO.,

Consulting Engineers and Factory Architects.

1534 North High St.,

COLUMBUS, OHIO.



ENGINEERING.

Geological Examination of Properties; Surveying and Mapping; Investigation of Manufacturing Propositions; Designing of Plants; Driers for Any Material; Kilns of All Types; Faults of Manufacture Corrected; Modernizing for More Economical Operation.

TESTING MATERIALS FOR CLAY, LIME AND CEMENT INDUSTRIES.

Preliminary Practical Tests Showing Value of Clay for Any Purpose; Chemical Analysis; Refractory Tests; Cement Testing.

TESTING AND CONTROLLING APPARATUS,

Thermometers, Pyrometers, Hygrometers, Anemometers, Draft Gages, Recording Apparatus, Power Plant Specialties, Fuel Testing and Gas Analysis Apparatus.

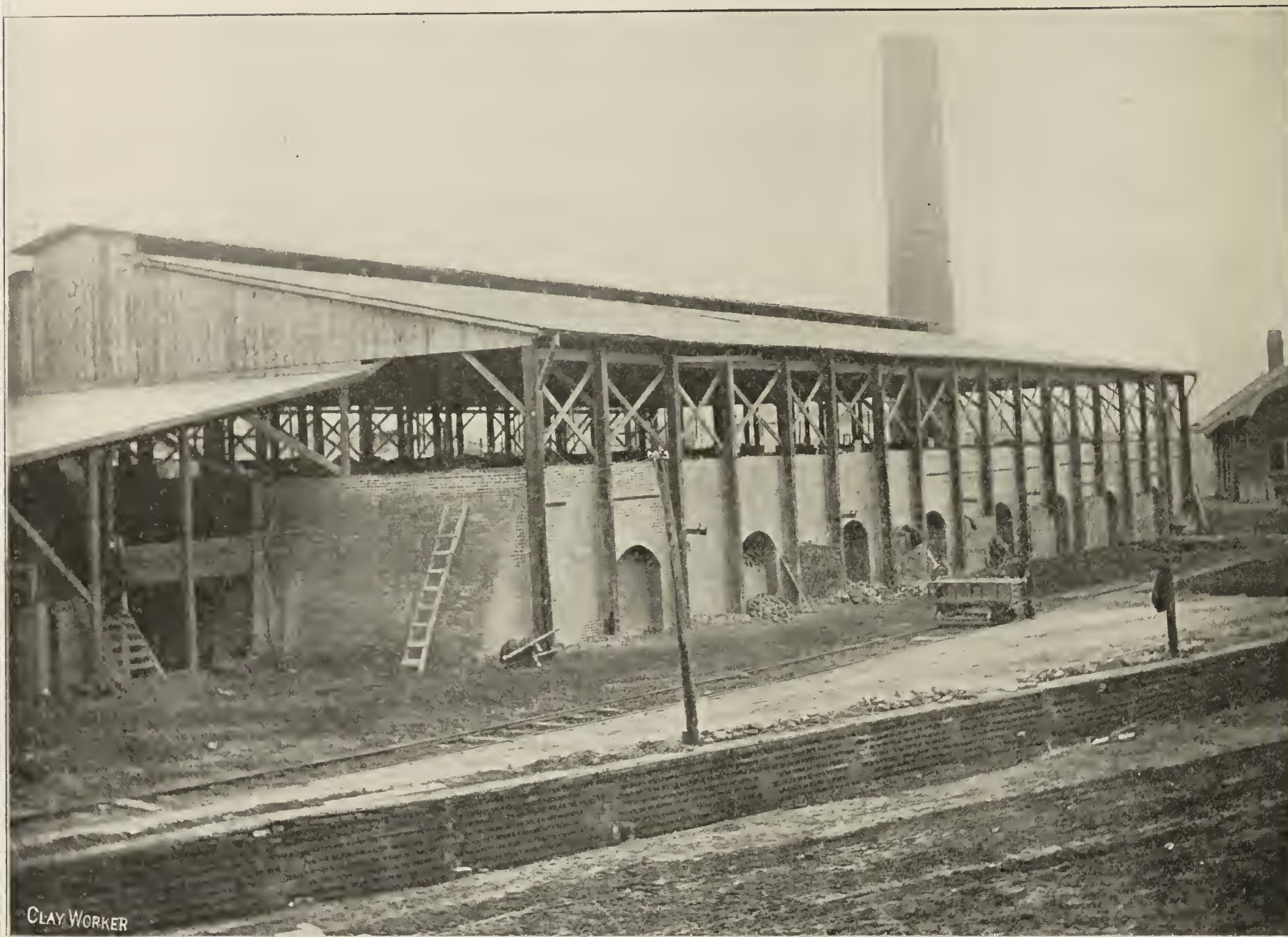
MECHANICAL DEVICES.

Special Labor Saving Devices; Moulds and Dies; Improved Clay Preparing Machinery.

The cost of our services is insignificant compared with the returns from an Economical Construction and Economical Operation.

Send for "Brick Works Engineering;" "Brick Kilns;" "Testing and Controlling Apparatus."

The Youngren Gas-Fired Continuous Kiln.



Nothing but universal favorable comment on this kiln was heard among the large number of delegates who visited it during the convention week.

Mr. Wm. Geddes, of Denver, said: "I have never seen a better burn in any kiln. I did not see an underburned nor an overburned brick in the kilns. Guess I will have to build another new plant in order to get one of these kilns."

Mr. James Knox said: "If we had found anything of this kind before building our plant we would not have had any other kind of kilns."

Mr. Yates, of Shawmut, Pa., himself an inventor of several patent kilns, but manly enough to be unprejudiced, expressed himself as being highly pleased to witness the verification of his prediction that paving brick can be burned successfully in a continuous kiln.

The Youngren Gas-Fired Continuous Kiln.

has passed the experimental stage, and is now in successful operation, burning all kinds of clay products, including COMMON BRICK, PAVING BRICK, PRESS BRICK, DRAIN TILE, ETC., with a fuel consumption not exceeding ONE-THIRD of the fuel used for similar purpose in individual kilns.

It is **ECONOMICAL,**
COMPACT,
CONVENIENT,
EASY TO OPERATE,
UNDER PERFECT CONTROL.

That this kiln is rapidly gaining in popularity is evidenced by the constantly increasing demand for it, especially by the manufacturers of the better classes of clay ware.

Among prominent manufacturers who have recently closed contracts for "**The Youngren Gas-Fired Kilns**" may be mentioned:

THE OHIO MINING AND MANUFACTURING CO.,
Shawnee, Ohio.

One 40 thousand daily capacity kiln for burning their famous "SHAWNEE BRAND" of high grade face brick, which are burnt at a temperature of 2200° F.

THE COLUMBUS AND HOCKING CLAY CONSTRUCTION CO.,
Columbus, Ohio.

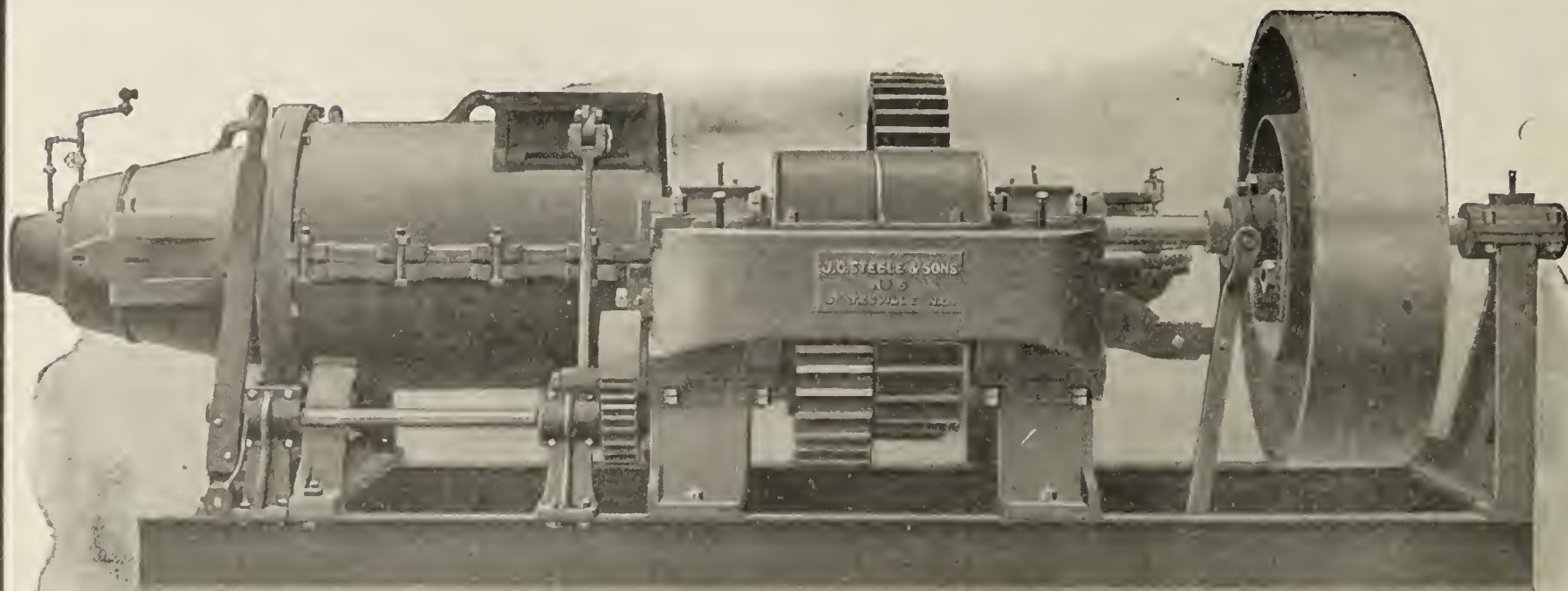
One 50 thousand daily capacity kiln for burning a high grade face brick, to be erected at the new mammoth works at Greendale, Ohio. This will be the first of a series of continuous kilns at this plant, which will have an ultimate capacity of 500 thousand brick per day.

For particulars address

P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.



No. 5. CAPACITY 50,000 to 100,000 PER DAY.

Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.

Wetumpka, Ala., Dec. 19, 1905.

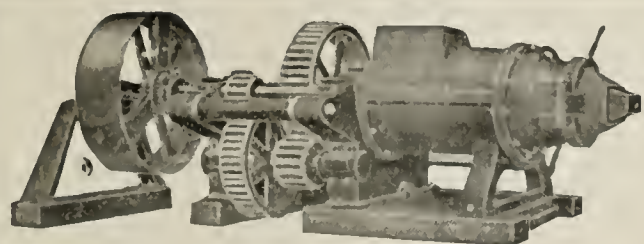
Gentlemen:—After using your machinery for some years, which included the Nos. 3. and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

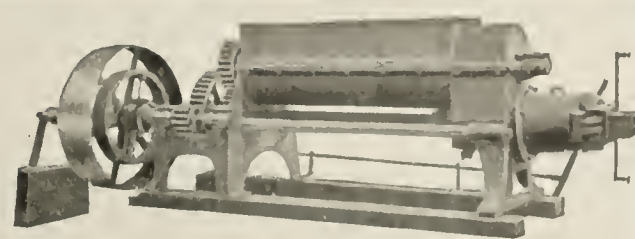
J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.



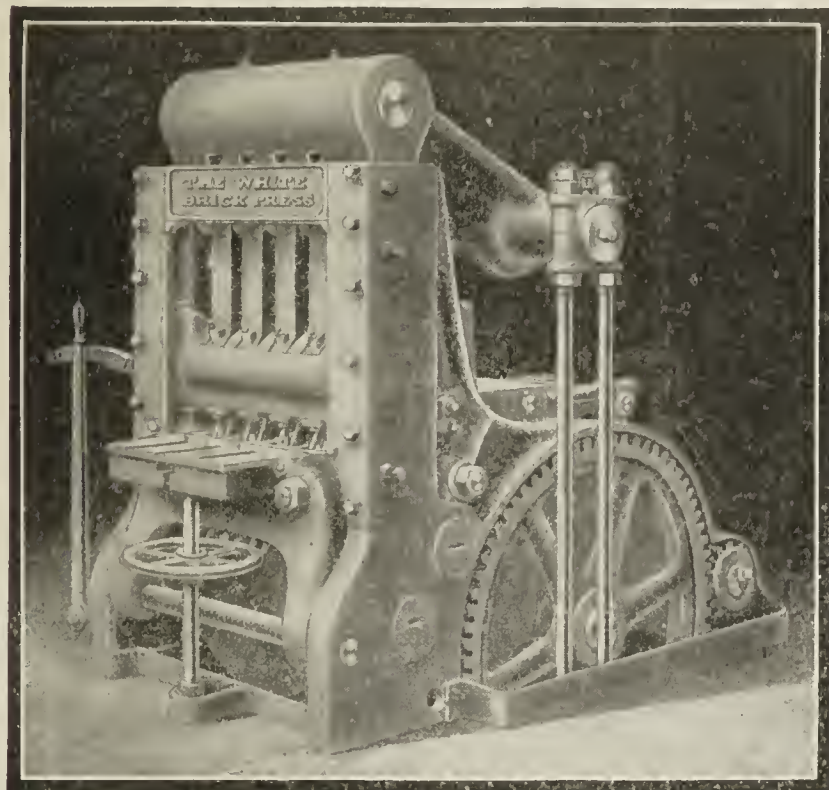
Auger Machine.



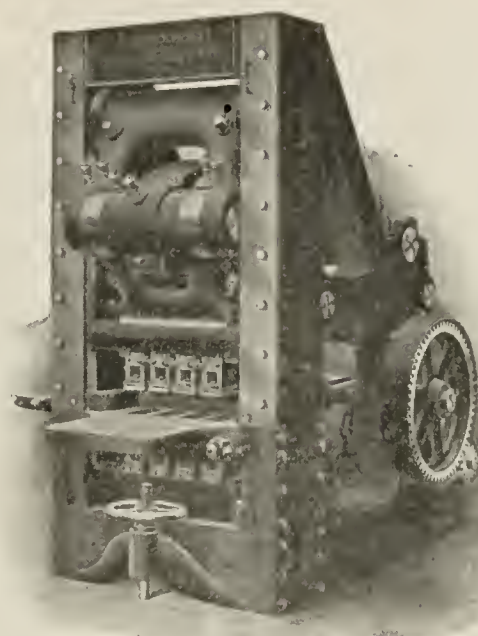
Combination Machine.

UP-TO-DATE MACHINERY

For Making all Kinds of Brick, Dry Pressed, Wire Cut, Sand Molded



New White Press.

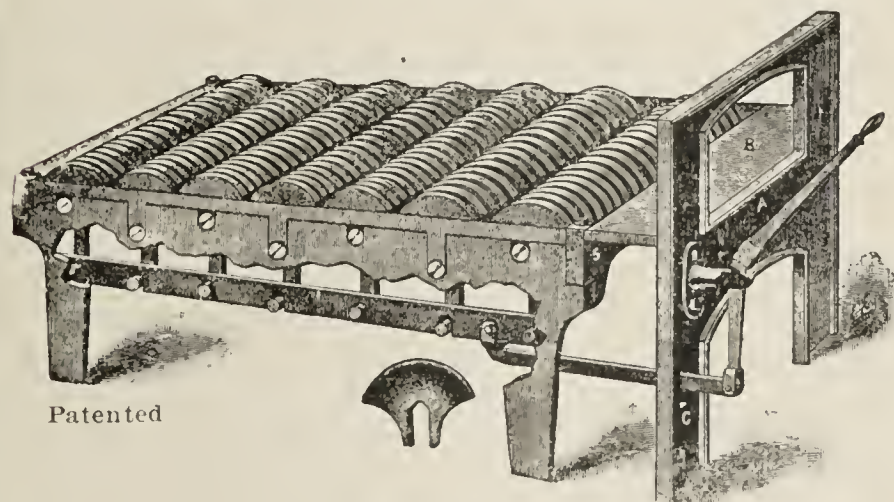


New Model Berg Press.

Full Line
of
BRICKYARD
SPECIALTIES
and
SUPPLIES.

In addition to our well known **Berg Press**, we are now bringing out our new **White Press** for Clay Brick Work. It is especially recommended for difficult and refractory clays, and for Fire Brick making. By far the most powerful Press built. Molds changed in **Seven Minutes**.

Special Catalogue sent on application.



Patented

U. S. SELF-CLEANING GRATE

In position ready for use. Part of frame cut away to show connection below.

SOMETHING NEW FOR 1907.

Rocking and Dumping Grates for Kilns.

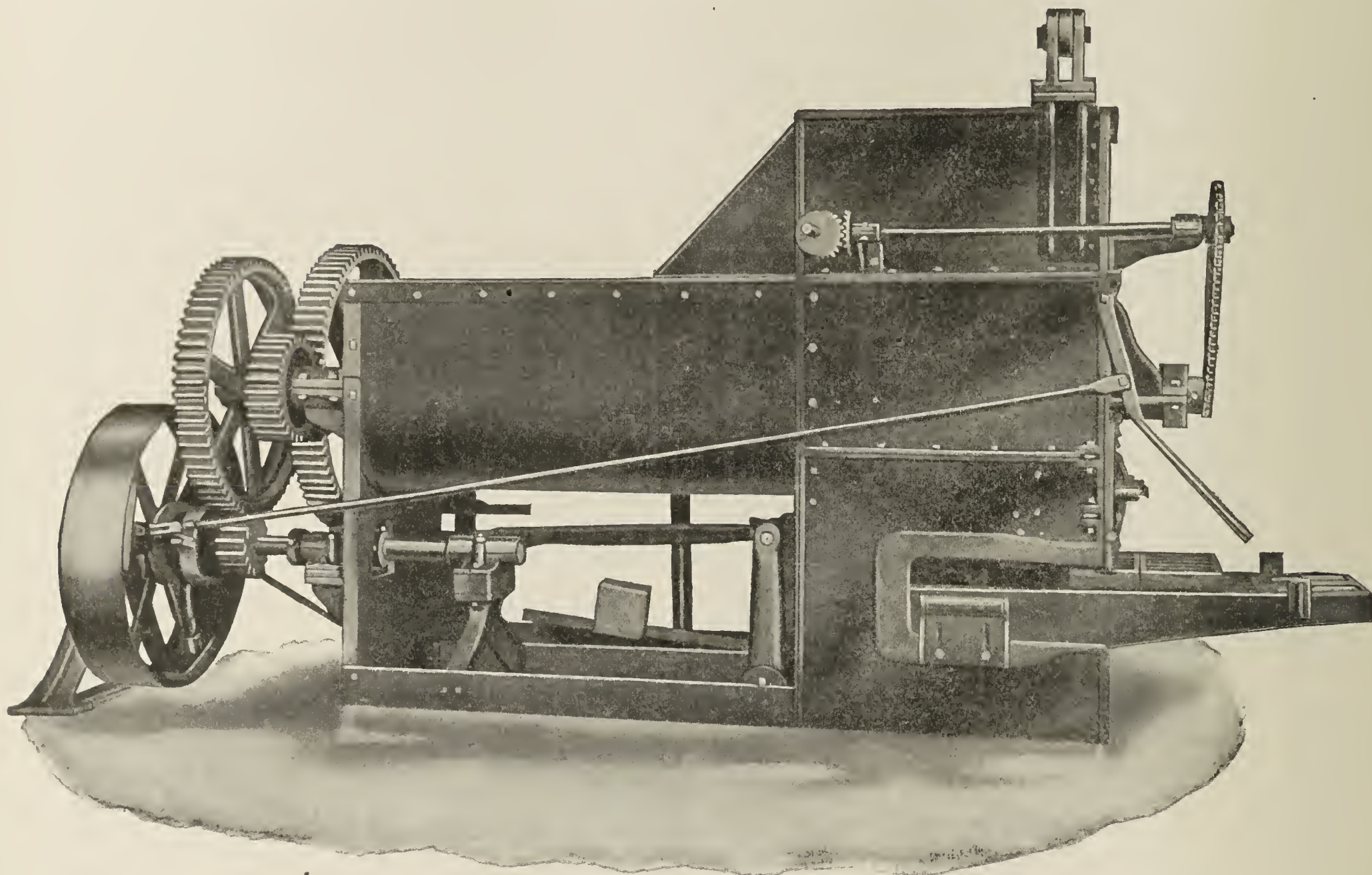
Save Coal, Save Labor, and do away with Checked Brick.

Send for "LECTURE ON COMBUSTION" by HIS SATANIC MAJESTY.

CHICAGO BRICK MACHINERY CO., 77 Jackson Blvd.

A SURE WINNER.

The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine of large capacity, strong and heavy, with vertical press. To meet this demand, we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

The frame of the machine proper consists of six heavy iron plates. The front or press-box end is made as rigid as is possible by the use of iron and steel.

The Working Parts consists of a large horizontal pug mill, made of heavy boiler steel, 10 feet long, and two $3\frac{1}{2}$ -inch square steel shafts, one of which passes through the pug mill, with fifteen grinders and wipers attached. This shaft works independently from the one that operates the mud press and makes three revolutions to one mold of brick, which insures the greatest pugging capacity of any machine built.

The second shaft works entirely on the outside of the machine, and is only used to operate the mud press and mold push out.

The estimated weight is 16,500 pounds, length of machine over all 18 feet and 3-inches, width of machine over all 8 feet and 9-inches, height of front part of pug mill 7 feet and 6-inches, height of rear part of pug mill 5 feet and 6-inches. Friction clutch pulley is 48-inches in diameter, 12-inch face. Capacity 40,000 to 50,000 brick in ten hours. Power required, from 20 to 25 H. P.

For small capacity yards there is nothing that is quite as good as the "Quaker" Machine, which is made for horse power as well as steam.

Let me give you full particulars.

JAMES W. HENSLEY,

Indianapolis, Ind., U. S. A.

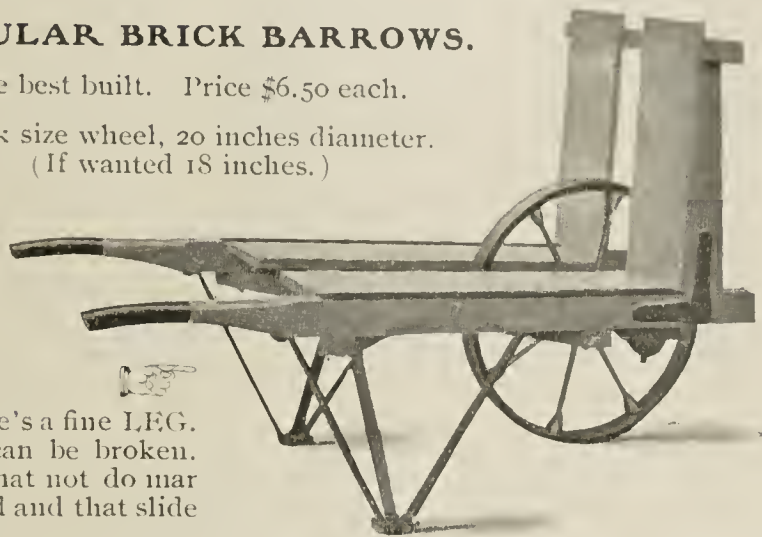
List of users furnished on application. My 1907 catalog, which will describe this machinery fully, mailed free on application.

We manufacture a complete line of BRICK MACHINERY and make a specialty of equipping yards.

REGULAR BRICK BARROWS.

The best built. Price \$6.50 each.

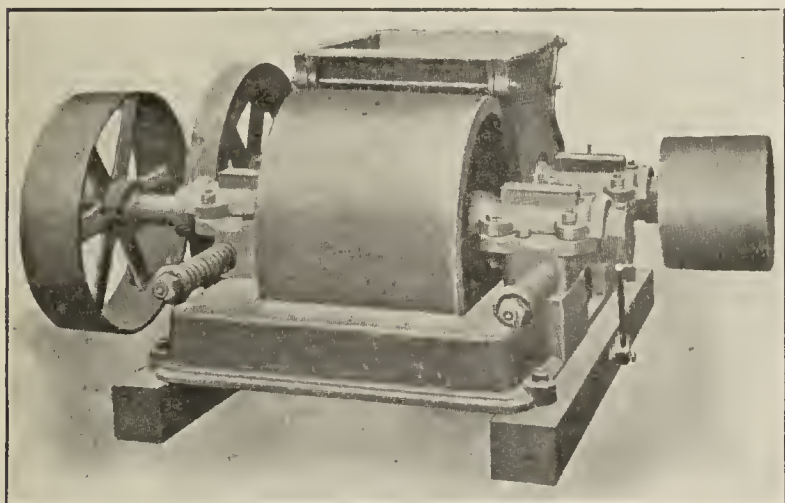
Stock size wheel, 20 inches diameter.
(If wanted 18 inches.)



There's a fine LEG.
Never can be broken.
Shoes that not do mar
the yard and that slide
easily.

Our Heavy Clay Disintegrator.

Note the springs and what is said about them below.



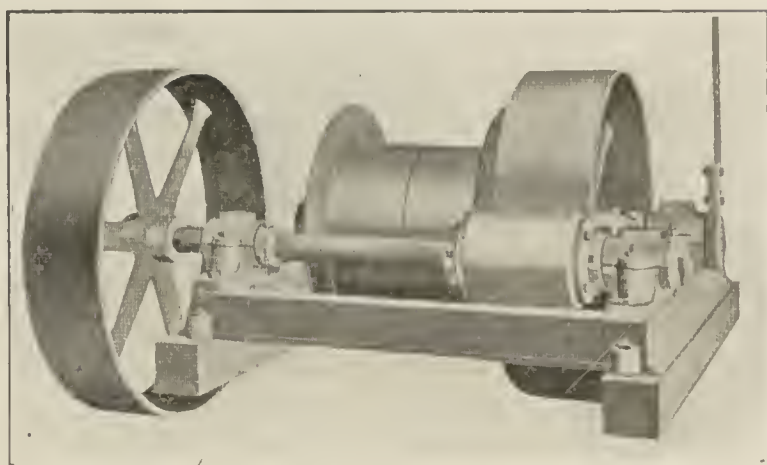
This particular disintegrator we believe to be much the best one that is built, as we intend it for large capacity, and to stand up to severe work for years. Both rolls are chilled. The journals are 10 inches in length. The small roll has a heavy balance wheel. Note its massive construction. There is a weighted scraper so hung that it automatically cleans the large roll.

RELIEF SPRINGS: After considerable experimenting we have learned just how to put relief springs on the large roll, and do it successfully. Occasionally a bolt or something else gets into a disintegrator that cannot be crushed, and it always means a smash-up. We have experimented long before adopting these, but can now guarantee them a success.

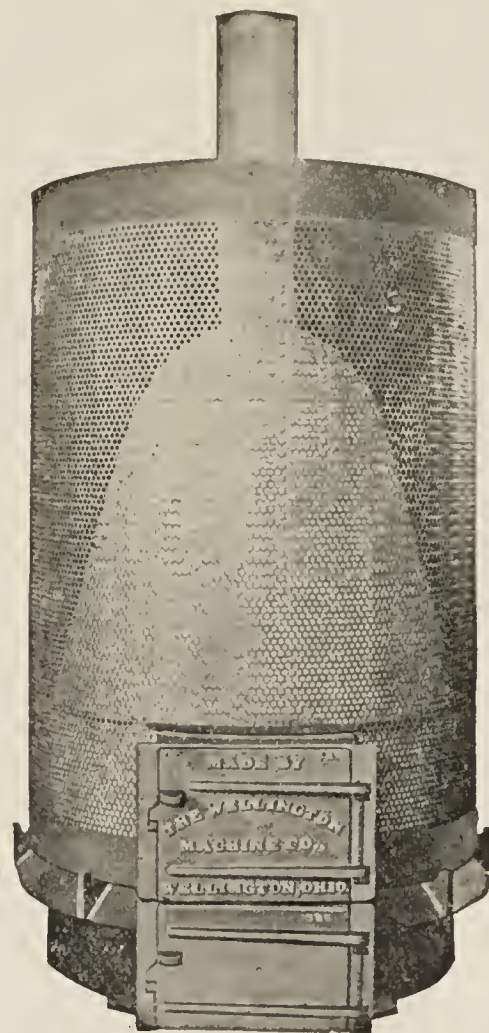
CAPACITY, 25,000 to 50,000 per day according to speed at which it is run. Pulleys fast roll 14 dia. x 10-in. speed, 700 to 800. Slow roll, 24 dia. x 6-in.; speed, 50 to 75.

1907 CATALOGUE MAILED FREE
ON APPLICATION.

Winding Drum.



Our Direct Driven Self-Contained Winding Drum is a Labor-Saver.



Sand Dryer.

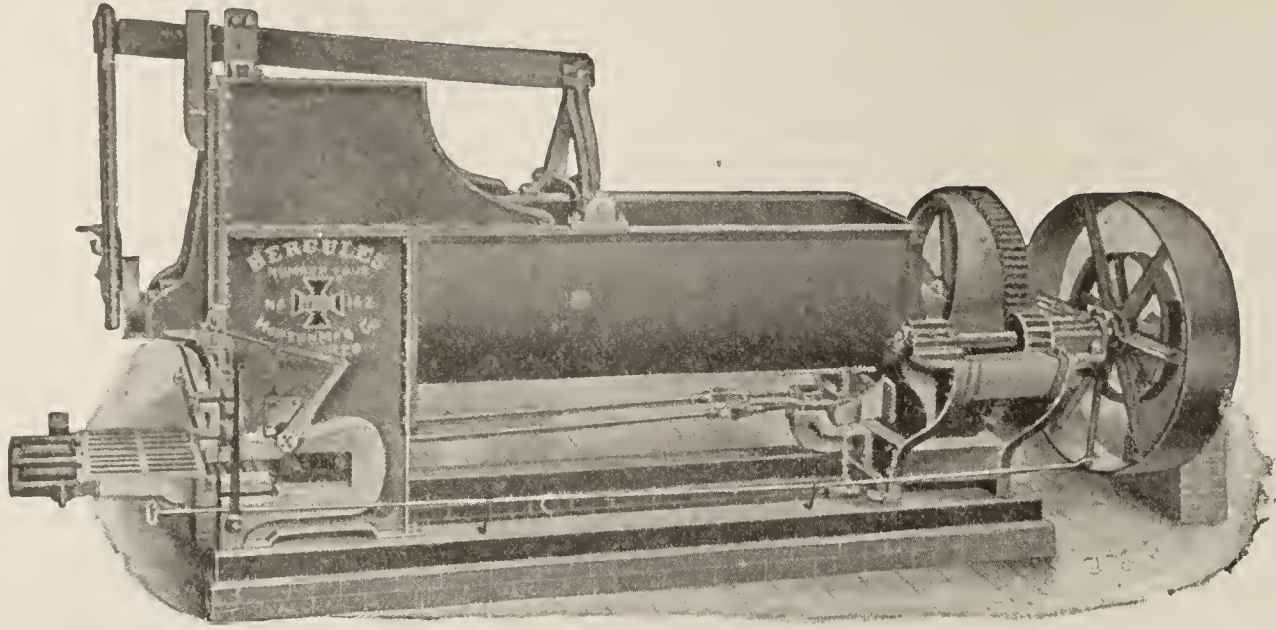
Weight, 1,100 lbs. Every brick works needs one. Diameter over all, 3 ft. 1 in. Height, 4 ft. 9 in. We will be glad to send one to any responsible party subject to ten days' trial and approval. We sell them that way and not one ever came back.

JAMES W. HENSLEY,

Successor to S. K. Fletcher.

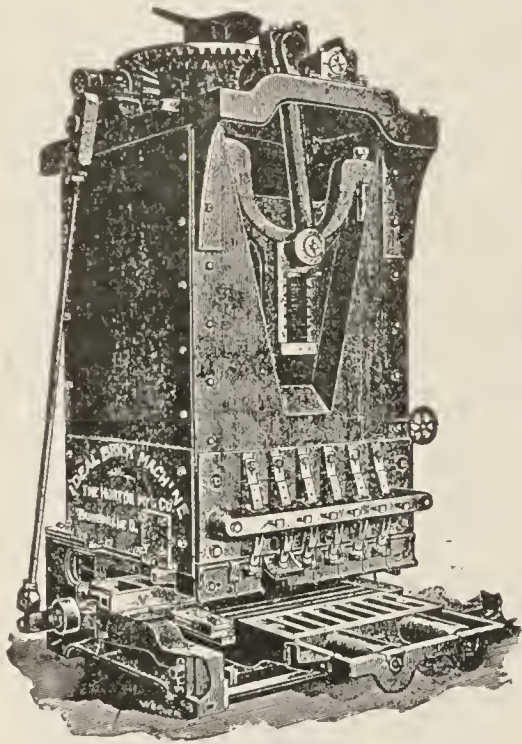
Indianapolis, Ind.

Do Not Miss This Opportunity.

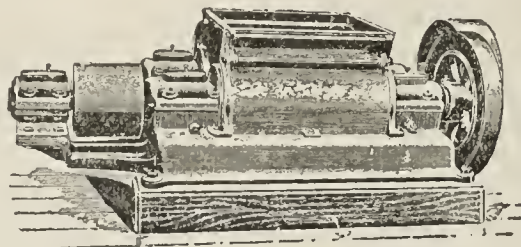


Hercules No. 4 Brick Machine.

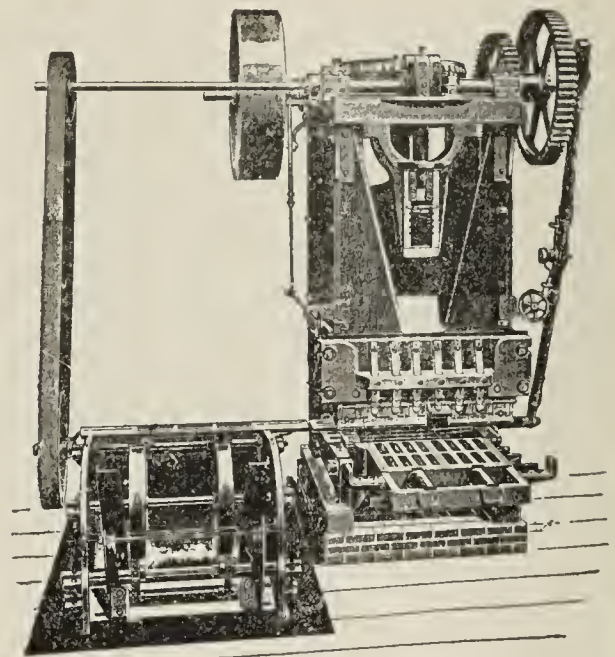
Let Us Have Your Inquiries Today.



Ideal Horse Power.

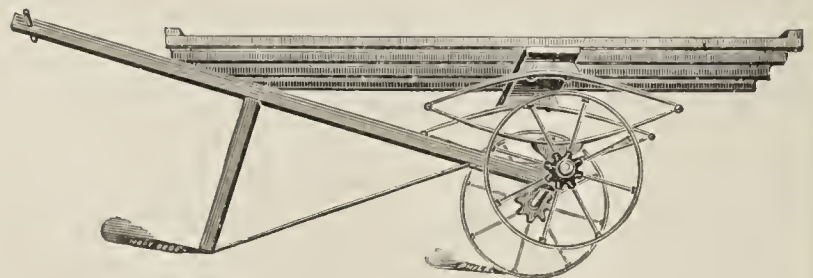
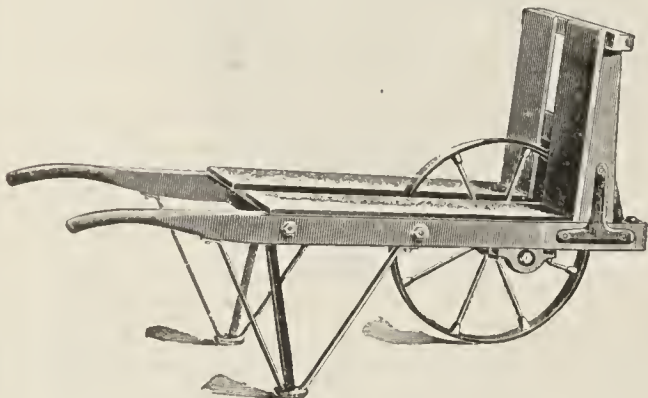


Disintegrator.



Ideal Steam Power and Sander.

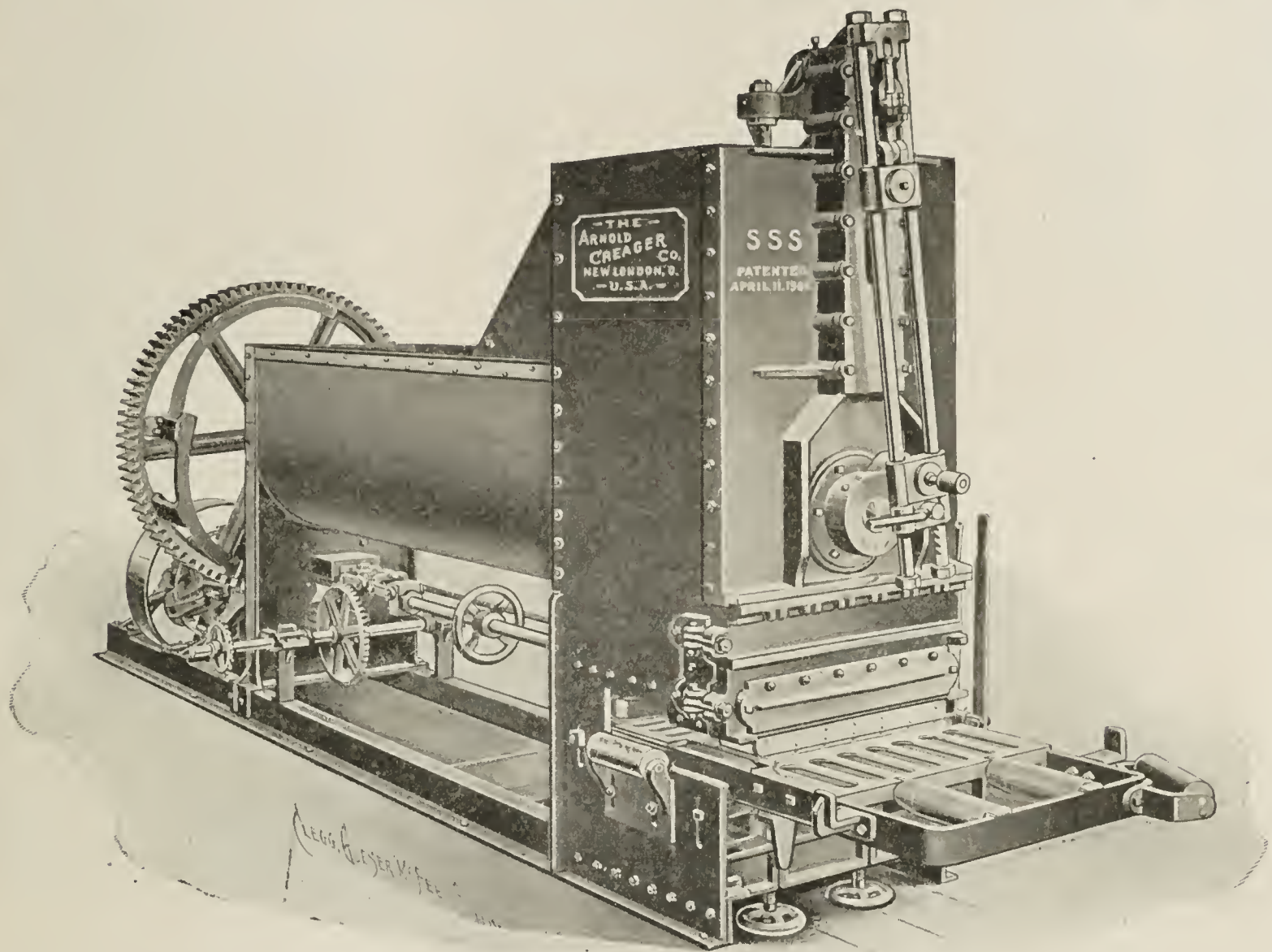
OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

CINCINNATI, OHIO.

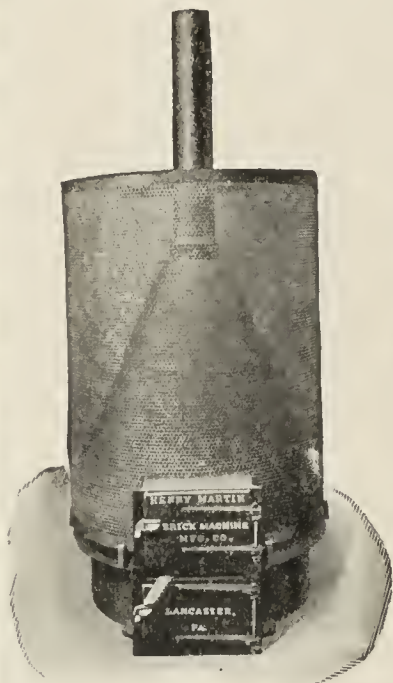
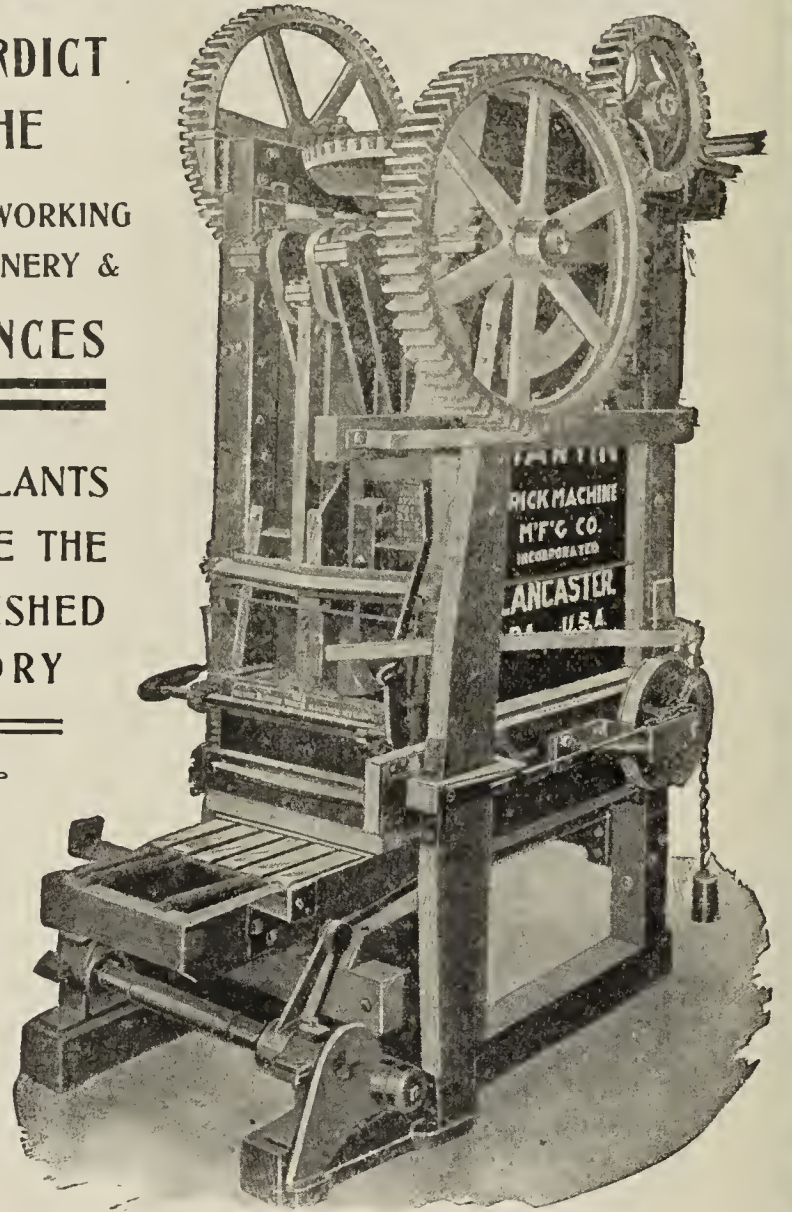
CABLE "AUTOMATIC".



THE MACHINERY OF THE HOUR

SEEMS TO BE THE VERDICT
BESTOWED UPON THE
"MARTIN" CLAY WORKING
MACHINERY &
BRICK YARD APPLIANCES

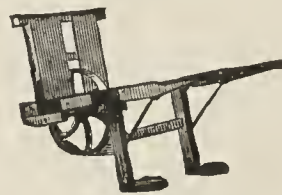
AS THEY EQUIP BRICK PLANTS
COMPLETE == AND HANDLE THE
CLAY DIRECT FROM THE BANK TO THE FINISHED
PRODUCT == WITH THE MOST SATISFACTORY
"SYSTEM" YET DEvised



SAND DRYERS



TRUCKS &
BARROWS



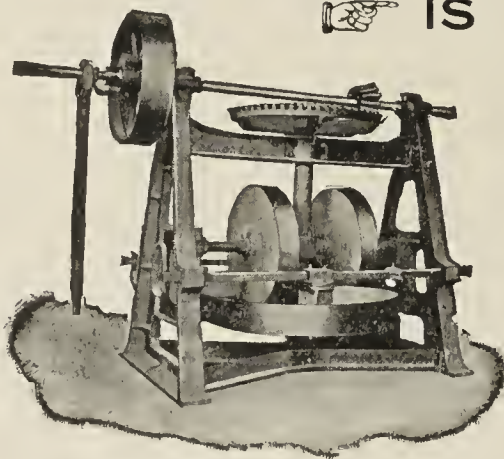
ALL STYLES

THE 
MARTIN
STYLE
"A"
STOCK
BRICK
MACHINE

 IS

THE MOST SUCCESSFUL
CLAY WORKER

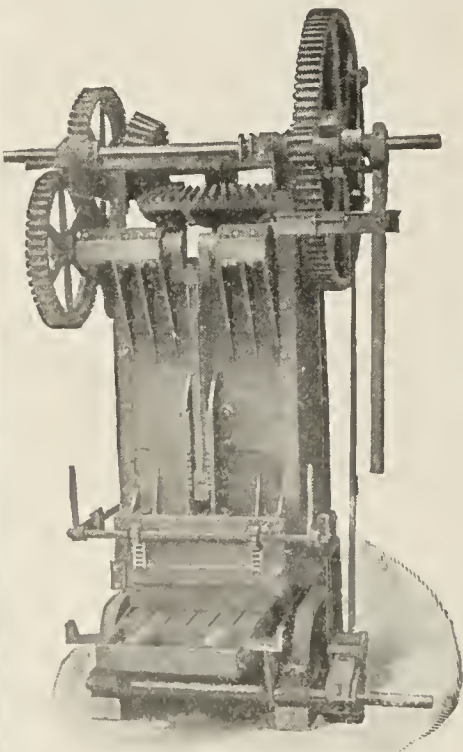
LET US SHOW YOU
FIGURES THAT WILL
INTEREST YOU



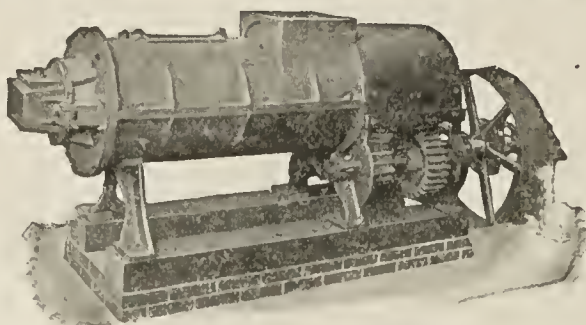
WRITE US.

=

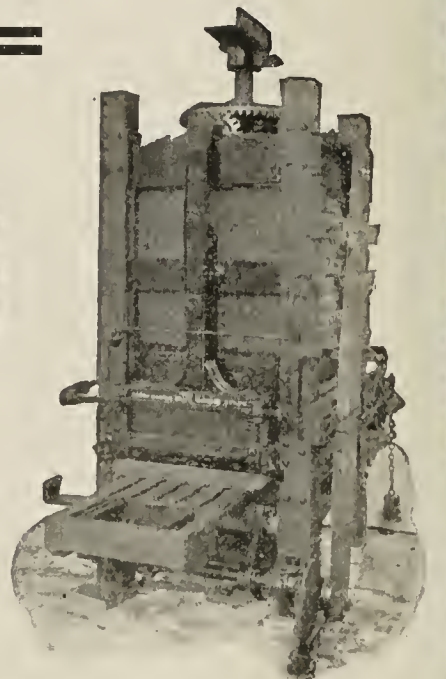
MARTIN CLAY WORKING ENGINEERS
MACHINERY EXPERTS
LANCASTER



STYLE "P" BRICK MACHINE



No. 1 AUGER BRICK & TILE MACHINE



HORSE POWER MACHINE

THE "MARTIN" RACK PIPE STEAM BRICK "DRYER SYSTEM"



PATENTED

February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.



This Drier and the design in arranging it are under the protection of the United States Government by virtue of patents granted. Patents also have been taken out in the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS.

Brick
Dried
In From
Six to
Twelve
Hours.

Building
Practically
Fire-
Proof.

Labor
Saving
Through-
out.
Good
Results.



No Fans
No Blowers
No Tunnels
No Cars

All Iron
And Steel
Construc-
tion
Excepting
Roof.

Can We
Dry Your
Brick—
Write Us
Today.

ADAPTED FOR SOFT MUD OR STIFF MUD BRICK.

Superior in Every Respect to Any Other System—Labor-Saving Through-
out—Dispenses With Truckers and Car Pushers—Pallets Auto-
matically Returned to Brick Machine—Quick to Install and
Low in Price and Takes Up Very Little Yard Room.

The Sale and the Construction of the "MARTIN" Rack Pipe Steam Brick
Dryer is Under the Direct Supervision of the Factory Office at Lancaster, Pa.

For further information address

The Henry Martin Brick Machine Mfg. Co., Inc.
LANCASTER, PA., U. S. A.

The first word from
The Jenkins Brick Co. about their
Scott Kiln=Drying System.



SOUVENIR POST CARD CO. N.Y.

16805—Nothing Better than the
Scott System for handling brick.
Jenkins Brick Co,
Montgomery Ala—12-20-06.

Manufactured and Installed by

American Blower Company

DETROIT.

New York
141 Broadway

Chicago
Marquette Bldg.

Atlanta
Empire Bldg.

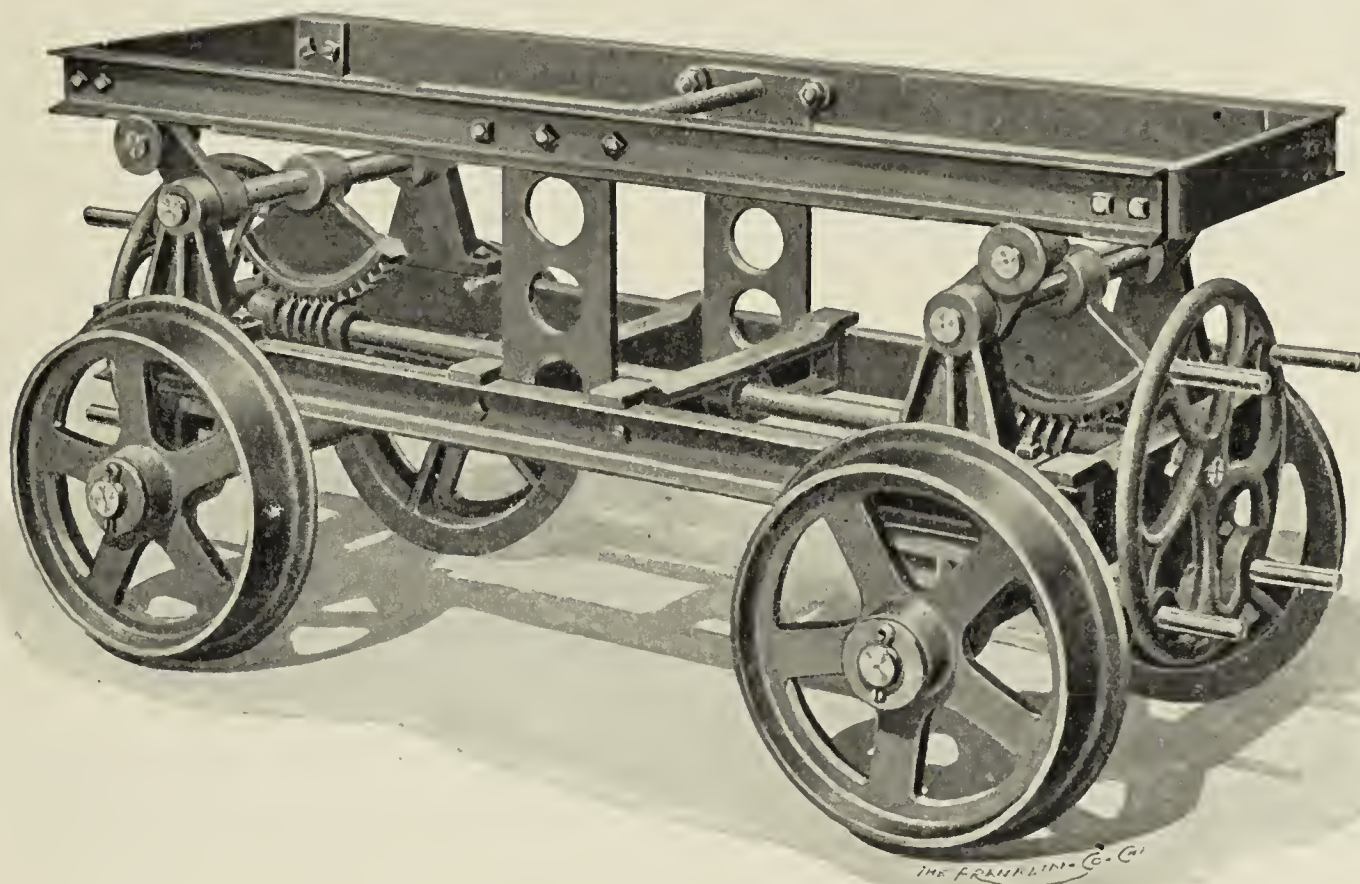
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.



THE "GUILDER."



**Elevating and Lowering Brick Car For Open Air
System of Drying.**

Strong and Serviceable. Easy to Handle. Operated from either end. All Iron and Steel. Raised and lowered by worm gear and segment. The most perfect car of its kind made. Write us in regard to this car and our open air system, and let us tell you what we can do for you.



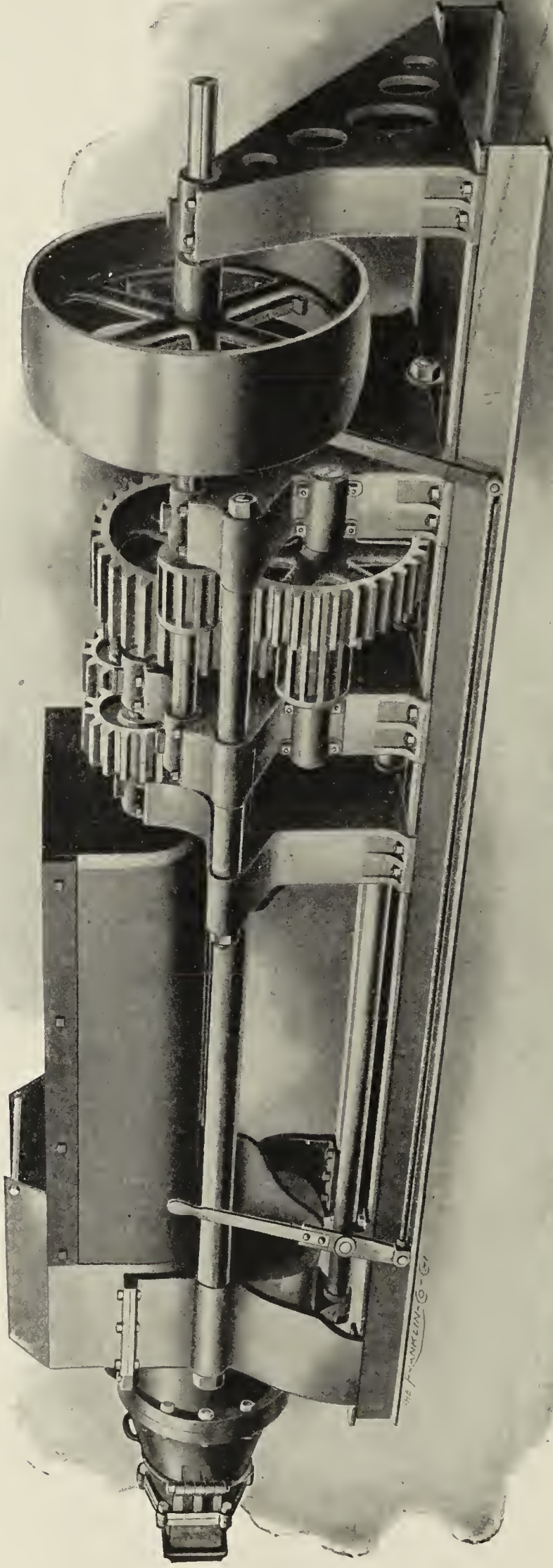
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.



The Largest and Heaviest Combined Brick Machine in the World.



FATE'S "SPECIAL" COMBINED.

Length over all 25 feet. Height 6 feet 6 inches. Width 6 feet 4 inches. Pug shell 42 inches by 10 feet. Main auger shaft 6 inch diameter. Intermediate shaft 4½ inches. Counter shaft 3½ inches. Main gear 12 inch face. Intermediate and pug gear 8½ inch face. Weight 30,000 lbs. Capacity 100,000 to 150,000 brick per day. Write for particulars.

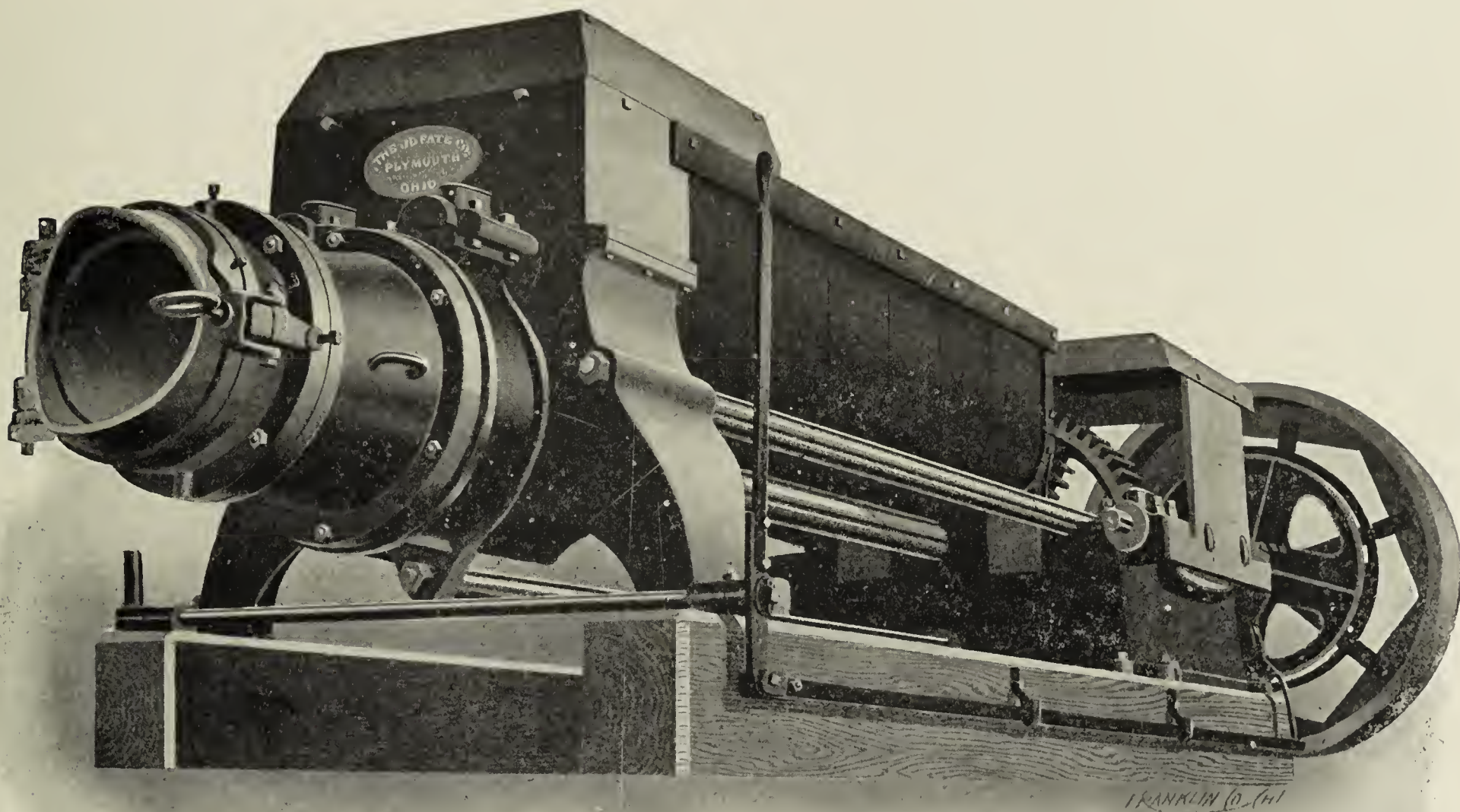


The J. D. Fate Co.

Richland County,

Plymouth, Ohio.

The Premier Combined Brick Machine.



Although now second in size in our line of Combined Machines the Premier is by no means second to any machine in the world of the same size in strength or capacity, and it still holds the high position it has won among the clayworkers by its ability to work all day, and every day, and never fail to turn out its full quota of good first class brick.

If you want a machine that will make from 60,000 to 100,000 good brick per day, and one that you can always depend upon the "Premier" is the one to buy.

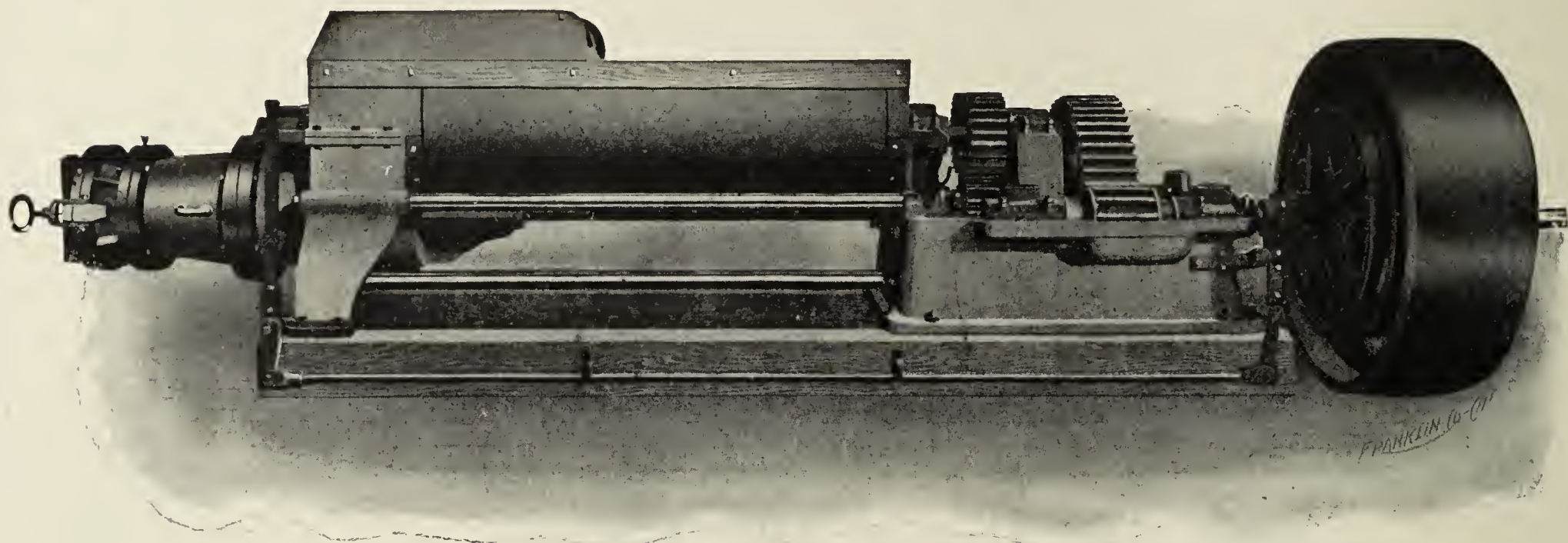


The J. D. Fate Co.

Richland County,

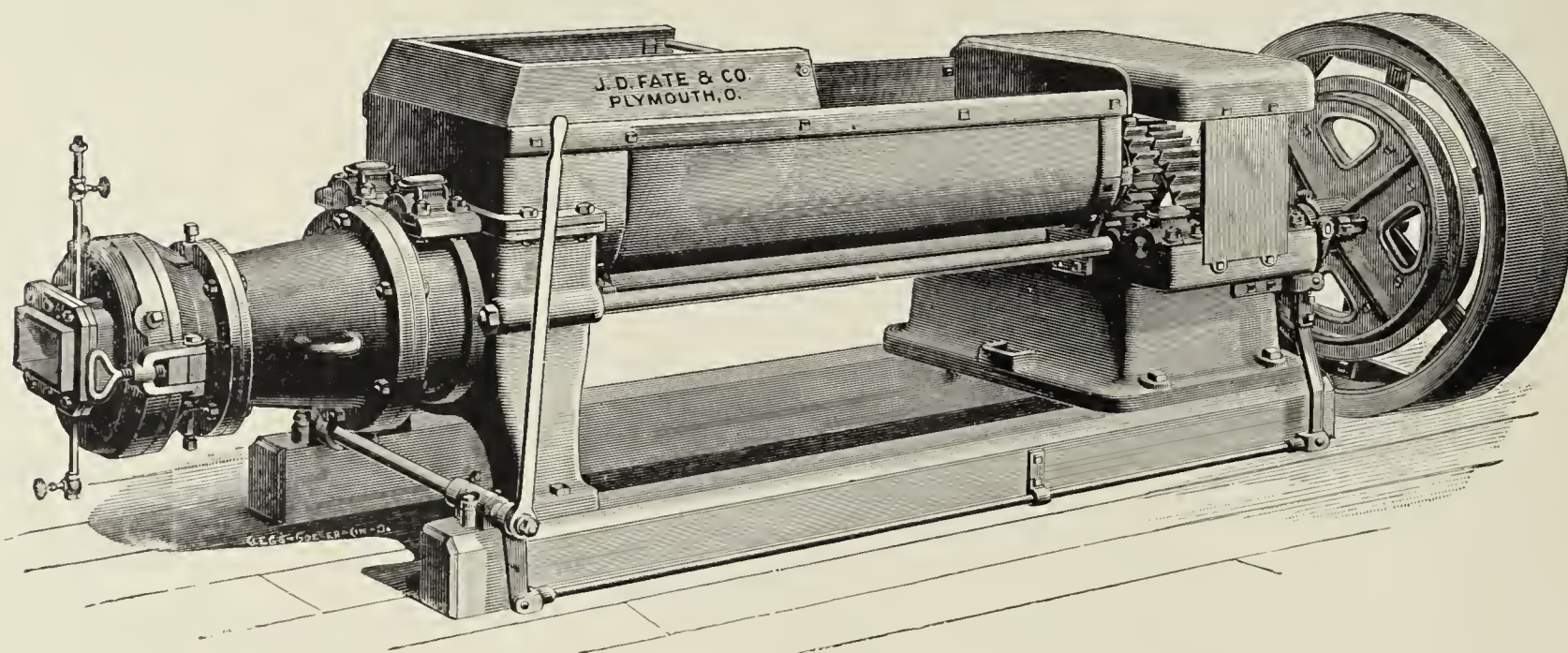
Plymouth, Ohio.

Imperial Combined Machine.



This is our middle size Combined Machine and is a favorite with the brick maker who wants to make from 30,000 to 40,000 brick per day, and more so with the tile maker who wants very large capacity in drain tile, combined with the very finest quality. Look at the cut of this machine with vertical attachment.

Hummer Combined Machine.



This was the first of our Combined Machines, and one of the best for the clayworker with a medium capacity plant, either of Brick or Tile, or both.

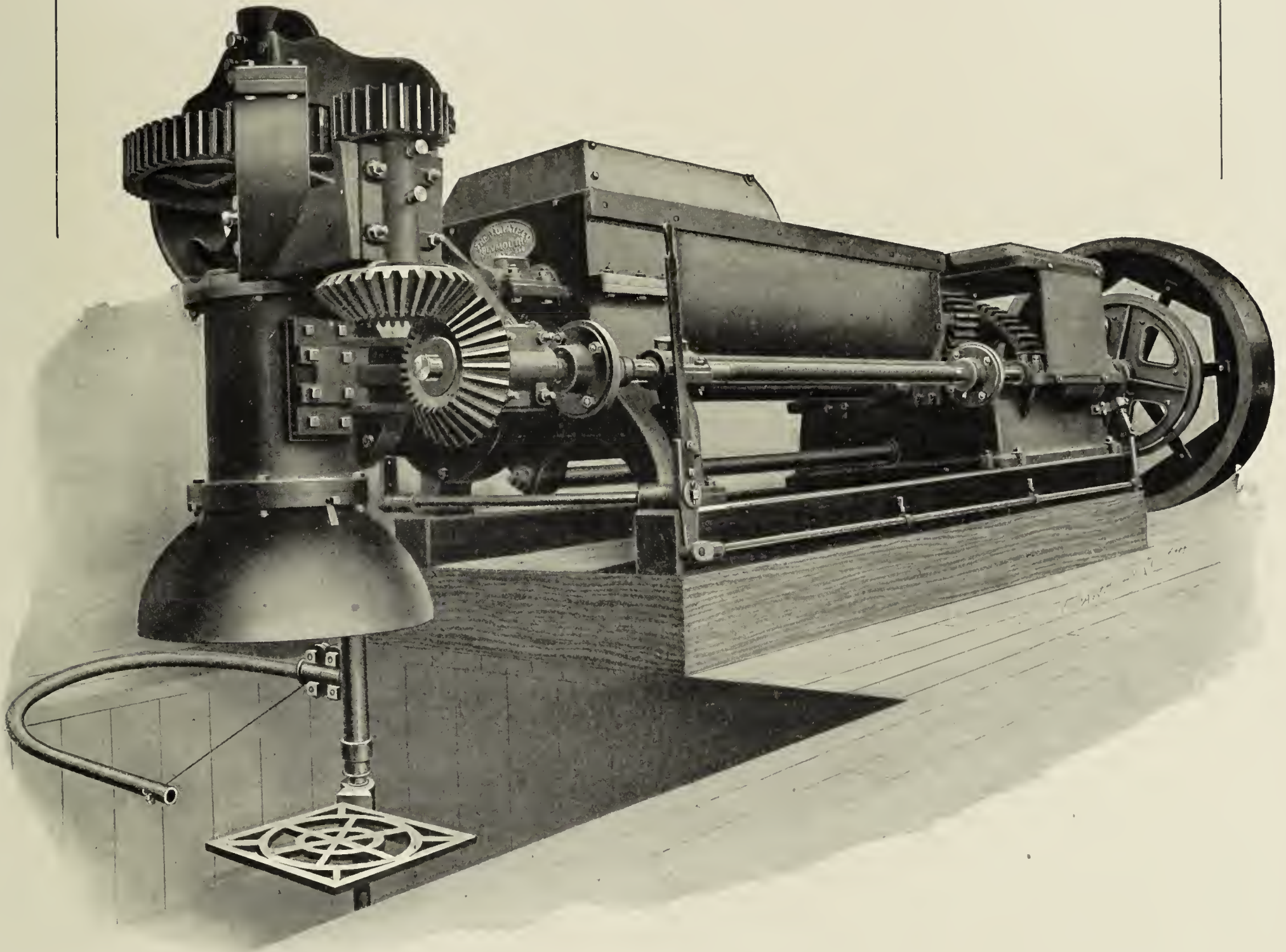
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.



Imperial Machine With Vertical for Large Tile.



If you are going to make large tile or are now making them, it will pay you to investigate this machine, for it is the best one made. It is properly proportioned and geared, is simple in its construction and operation, and is amply strong enough to stand any strain. It has all the capacity that you will want, and the tile made on it are perfect and true. This same attachment can be used in connection with our Hummer, Hummer Jr. and "D" size machines.



The J. D. Fate Co.

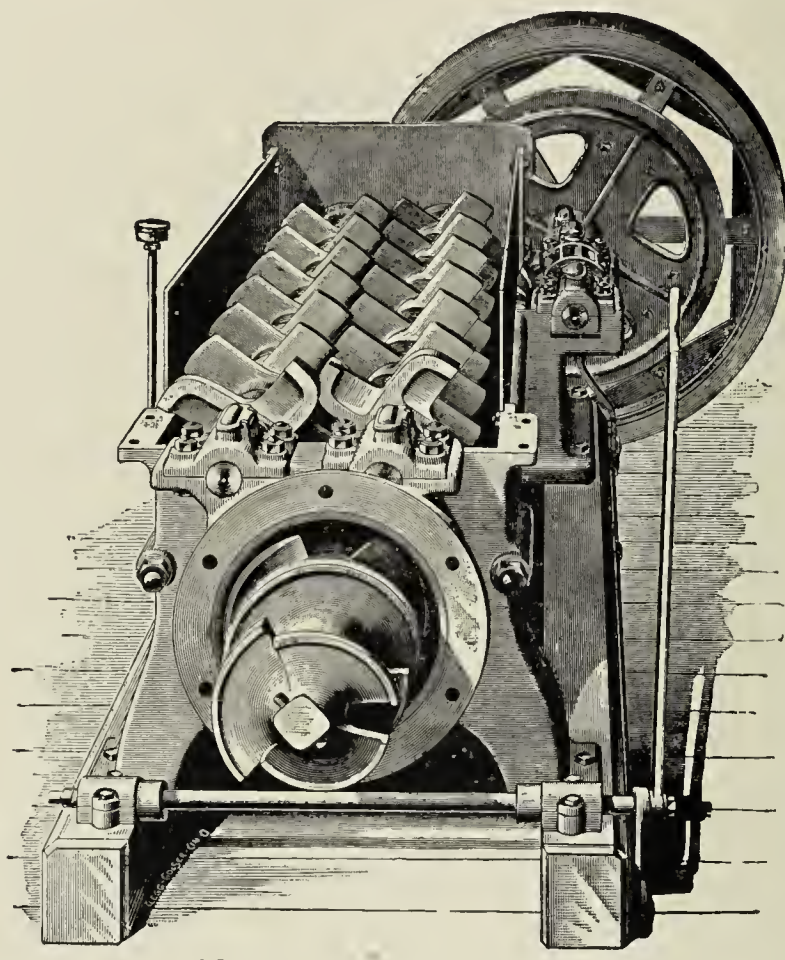
Richland County,

Plymouth, Ohio.

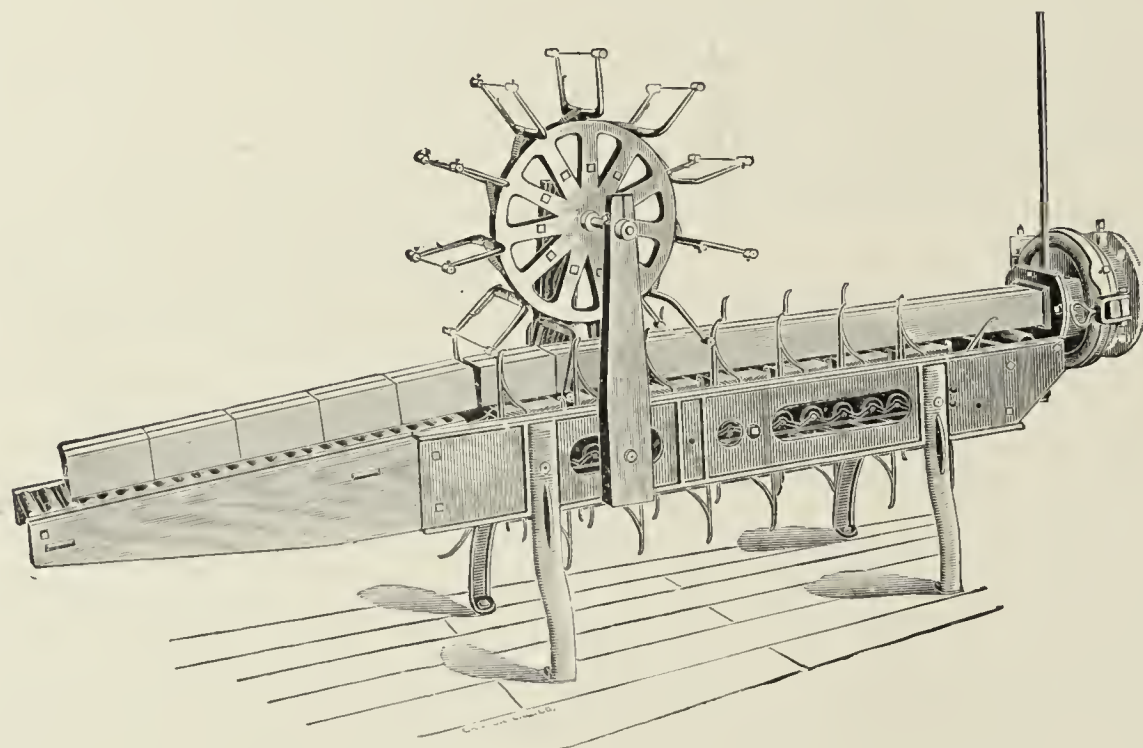
Interior View of All the Combined Machines.

Please notice the double shaft arrangement which is a feature of all our Combined Machines, and which has proven again and again that more and better pugging capacity can be obtained with six feet of a double shaft pug mill than any twelve foot single shaft pug mill ever built will give you.

If your clay requires much pugging these are the machines that will do the work.



End Cut Brick Table With Roller Delivery.



The Bensing Automatic End Cut Brick Cutter is entirely automatic, is simple, strong and easy of adjustment, and requires no attention. It is adapted for cutting all kinds of end cut brick. Its capacity is unlimited, and the machine is yet to be designed that will make brick faster than this table will cut them, and cut them perfectly.

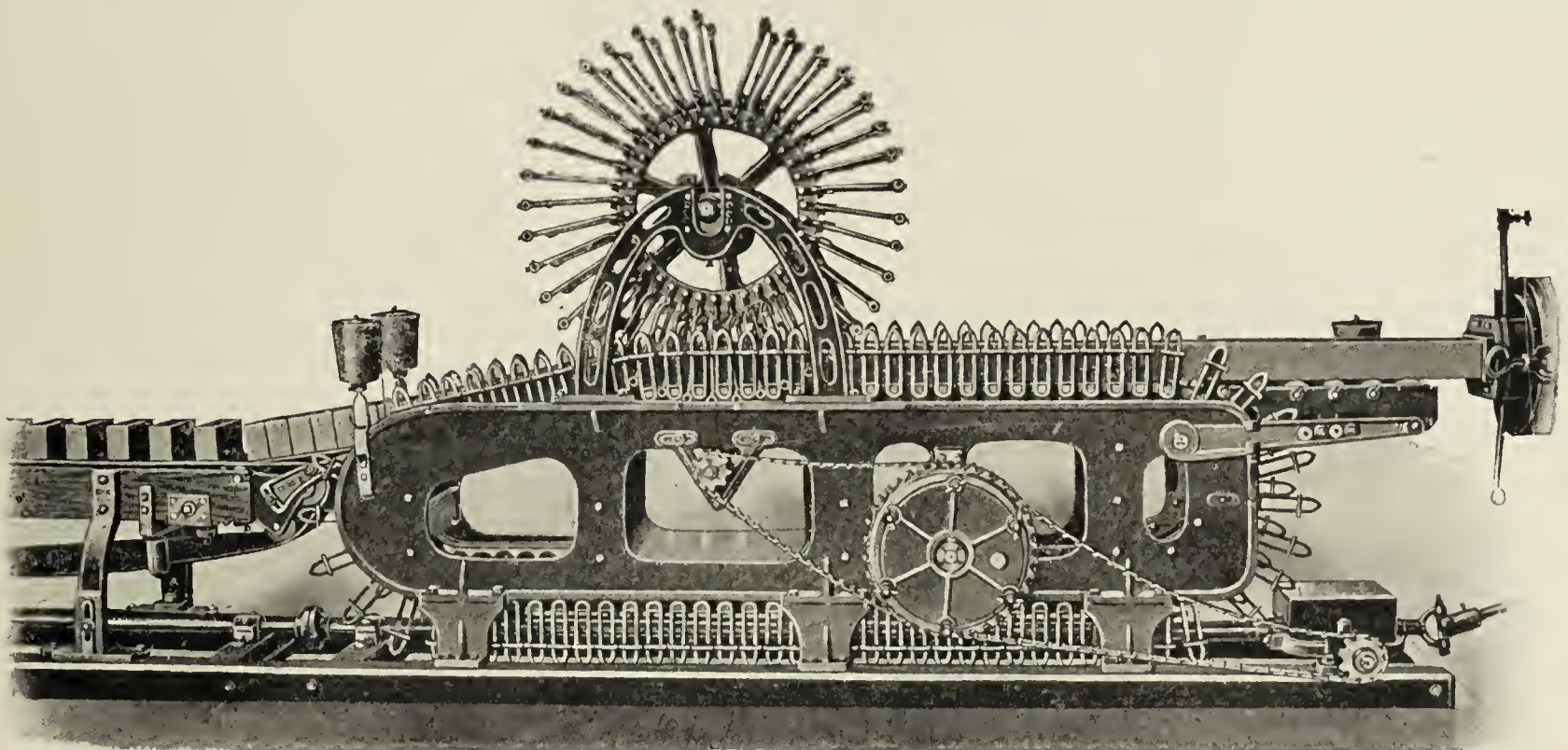
The J. D. Fate Co.

Richland County,

Plymouth, Ohio.



Bensing's Automatic Side Cut Brick Cutter.



The only absolute down cut machine on the market. Never cuts a waste brick or stub end, and every brick square and true with the face like repressed brick.

Bensing's End Cut Brick Cutter With Belt Delivery.



The Best End Cut Brick Cutter in the world, and especially adapted for cutting Hollow End Cut Brick.

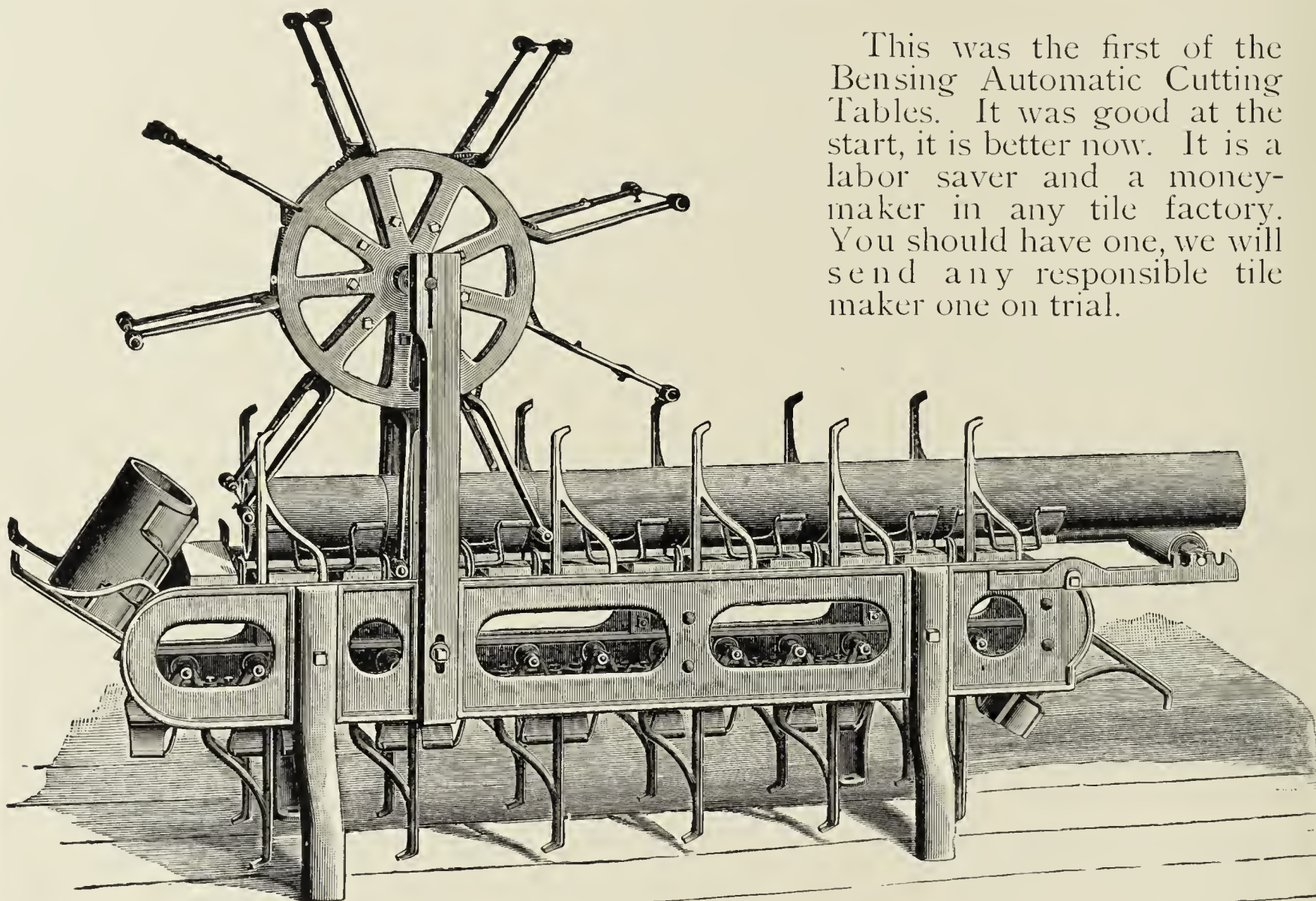


The J. D. Fate Co.

Richland County,

Plymouth, Ohio.

Bensing's Automatic Drain Tile Cutter.



This was the first of the Bensing Automatic Cutting Tables. It was good at the start, it is better now. It is a labor saver and a money-maker in any tile factory. You should have one, we will send any responsible tile maker one on trial.

We want you to consider carefully the Combined Machine and Automatic Tables shown on the preceding pages if you are thinking of buying anything of this kind, for they will surely fill all your requirements. There are many good, logical reasons why you should buy one of these machines or tables when you need a new one as there are a great number of "points" in which these machines excel all others. Every one of these "points" are important to the user, and every one of them helps to make the "Premier" line of Clay Machines and Bensing's Cutters the most satisfactory and longest lived machines of their kind yet designed. We make nothing but clayworking machinery, and our whole time, thought and energy goes in this one line, and there are no other machines to divide or distract our attention—it all goes to this one thing—Clayworking Machinery.

We don't ask you to buy any of our Machines or Tables just because we say they are better than others, but we do ask that you give us an opportunity to prove up the claims we make for our line of machinery.

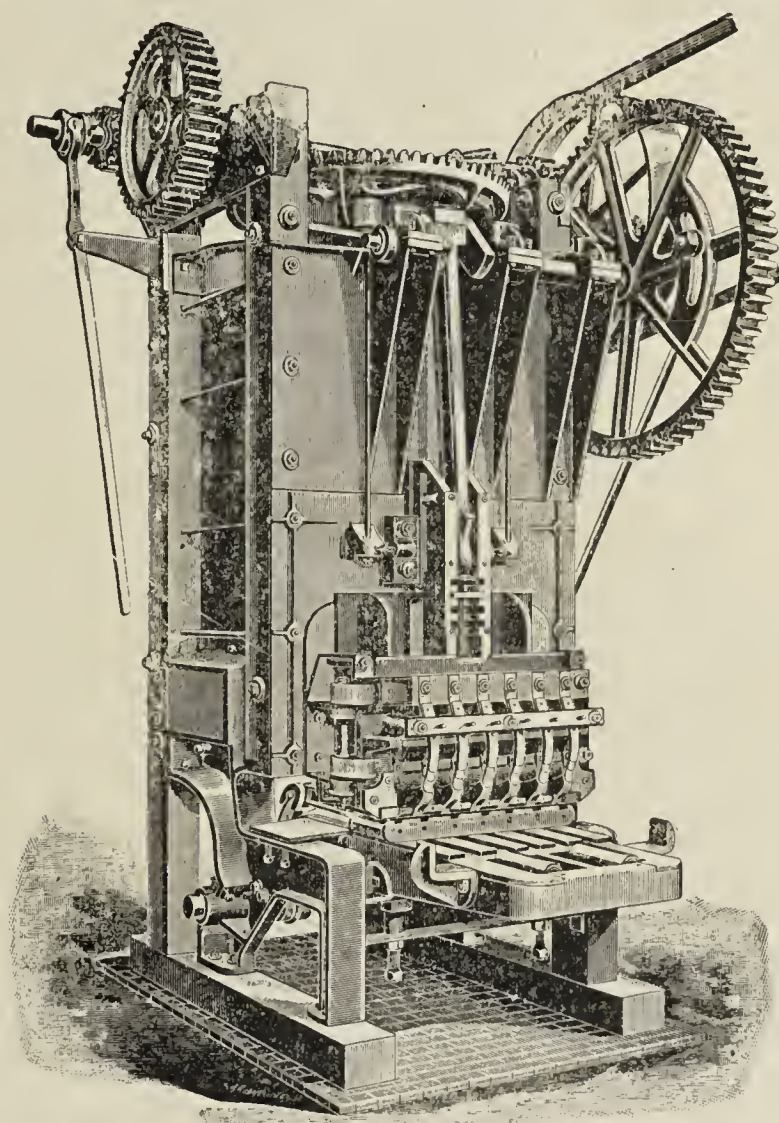
If you are going to be in the market for anything in the way of a machine or table, write us for particulars, prices and "points."

Every Buyer of New Haven Machines A Satisfied User.

The "New Vertical" Brick Machine is the most substantial Upright Soft Clay Brick Machine in the world.

We manufacture a full line of supplies including

Pug Mills,
Coal Crushers,
Clay Elevators,
Winding Drums,
Tempered Steel
Brick Strikes,
Clay Cars,
Brick Trucks,



Stamp Mills,
Freight
Elevators,
Friction
Clutches,
Clutch Pulleys,
Revolving
Dump Tables.

"New Haven" Vertical Machine.

In fact we can furnish machinery of the most improved modern construction for brick manufactories of any capacity. Competent workmen are employed in every department, hence we can guarantee our machinery to be well made and capable of performing the work for which it was designed.

The EASTERN MACHINERY CO.,

 NEW HAVEN, CONN.

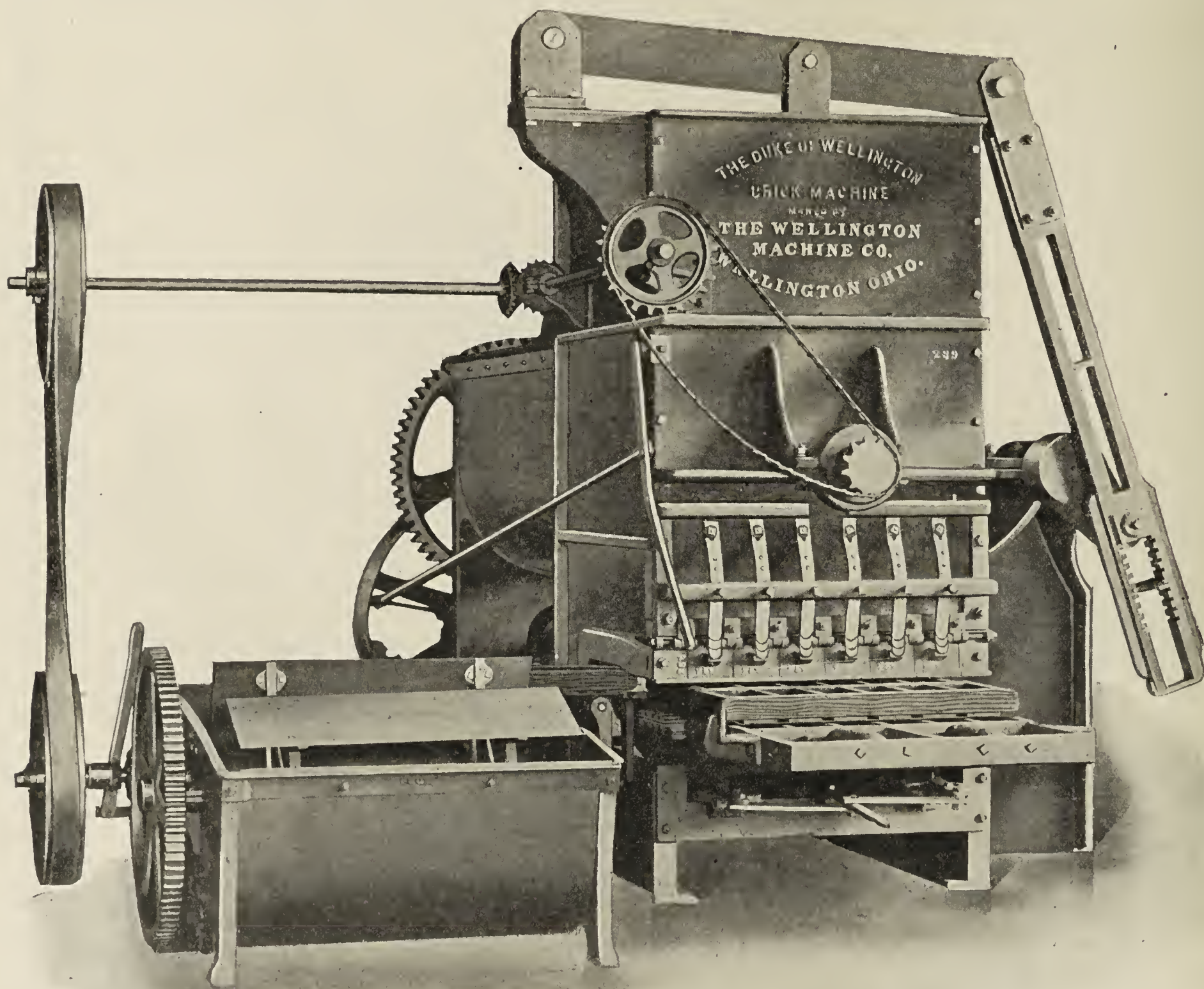
After the Battle of Waterloo

The Duke of Wellington stood at the head of all mankind.

NOW

THE "DUKE OF WELLINGTON"

Stands ahead of all Sand Mold Brick Machines.

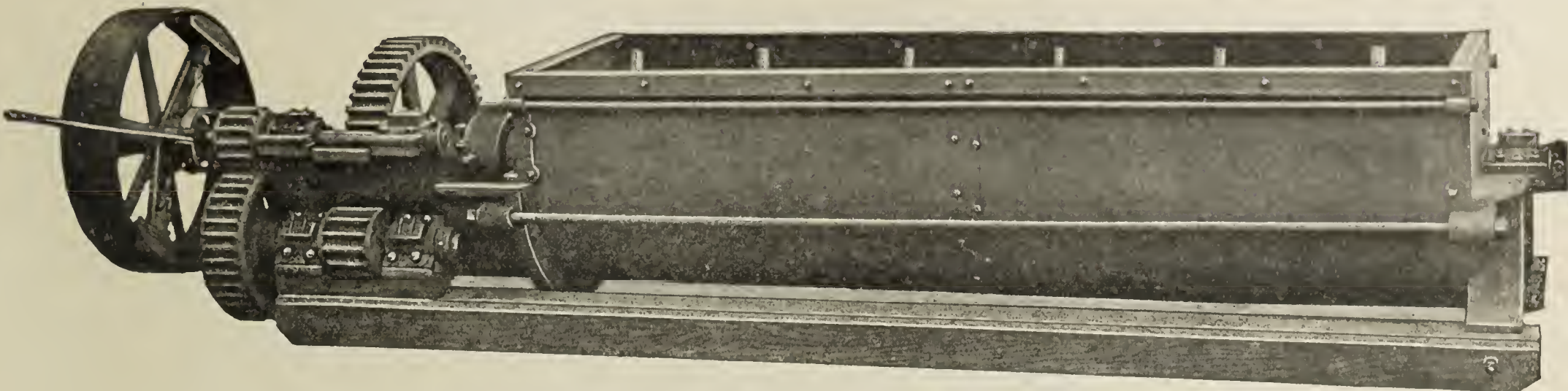


Write for 1907 catalogue, just issued, showing our latest designs of brick machinery and brickyard supplies. Pocket knife will be sent free to brickmakers for the asking.

The Wellington Machine Co.

Wellington, Ohio.

Compound-Geared Horizontal Pug Mill or Granulator.

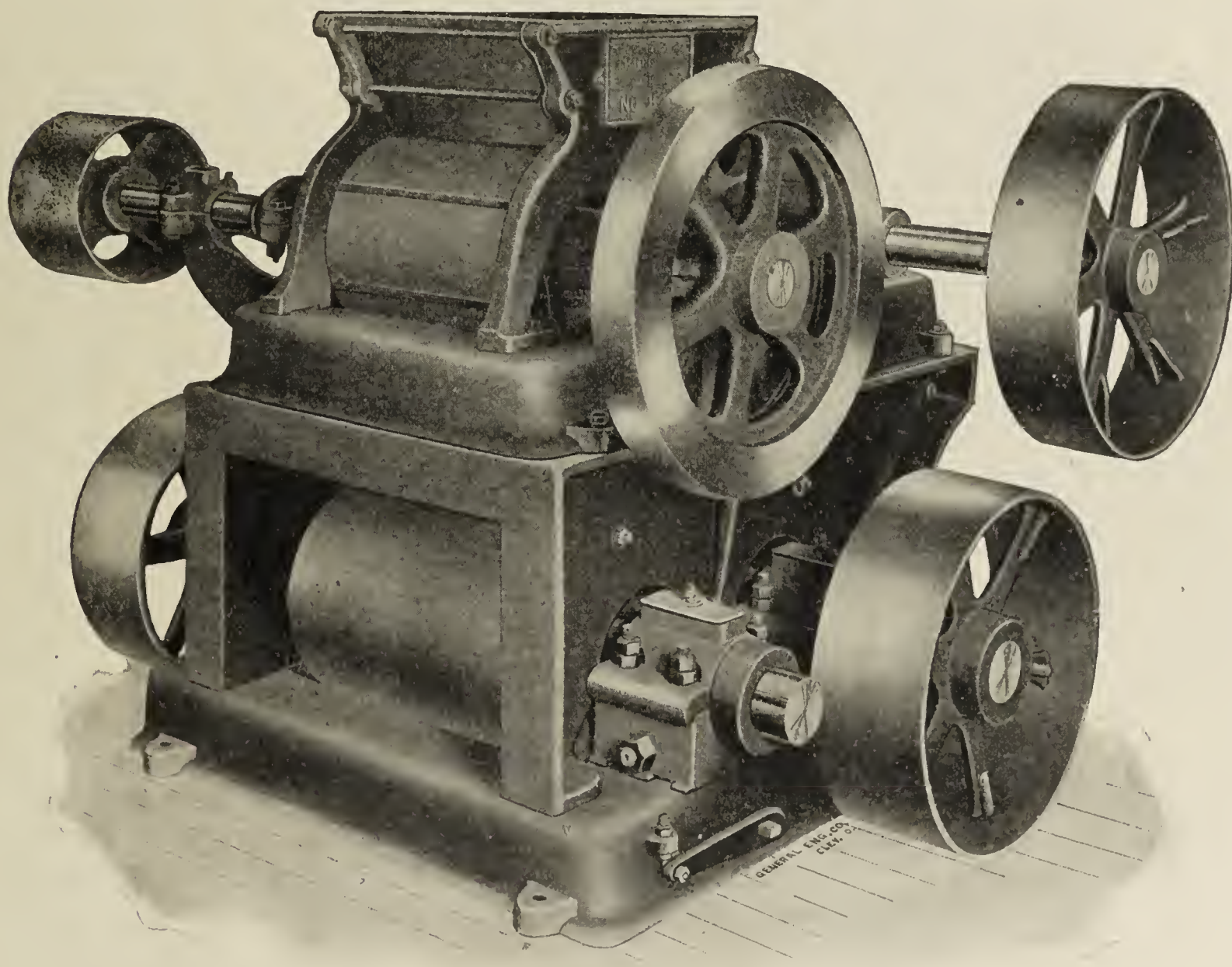


A Massive Pug Mill for Heavy Duty.

Large shafts and wide face gears.

COMPOUND DISINTEGRATOR AND CRUSHER.

Is there
limestone
in your
clay?
Other
yards
thus
troubled
we
have
saved
with this
machine.
Write
us for
further
informa-
tion
and
refer-
ences.



No
gears.

Long
bear-
ings.

Best
chilled
rolls.

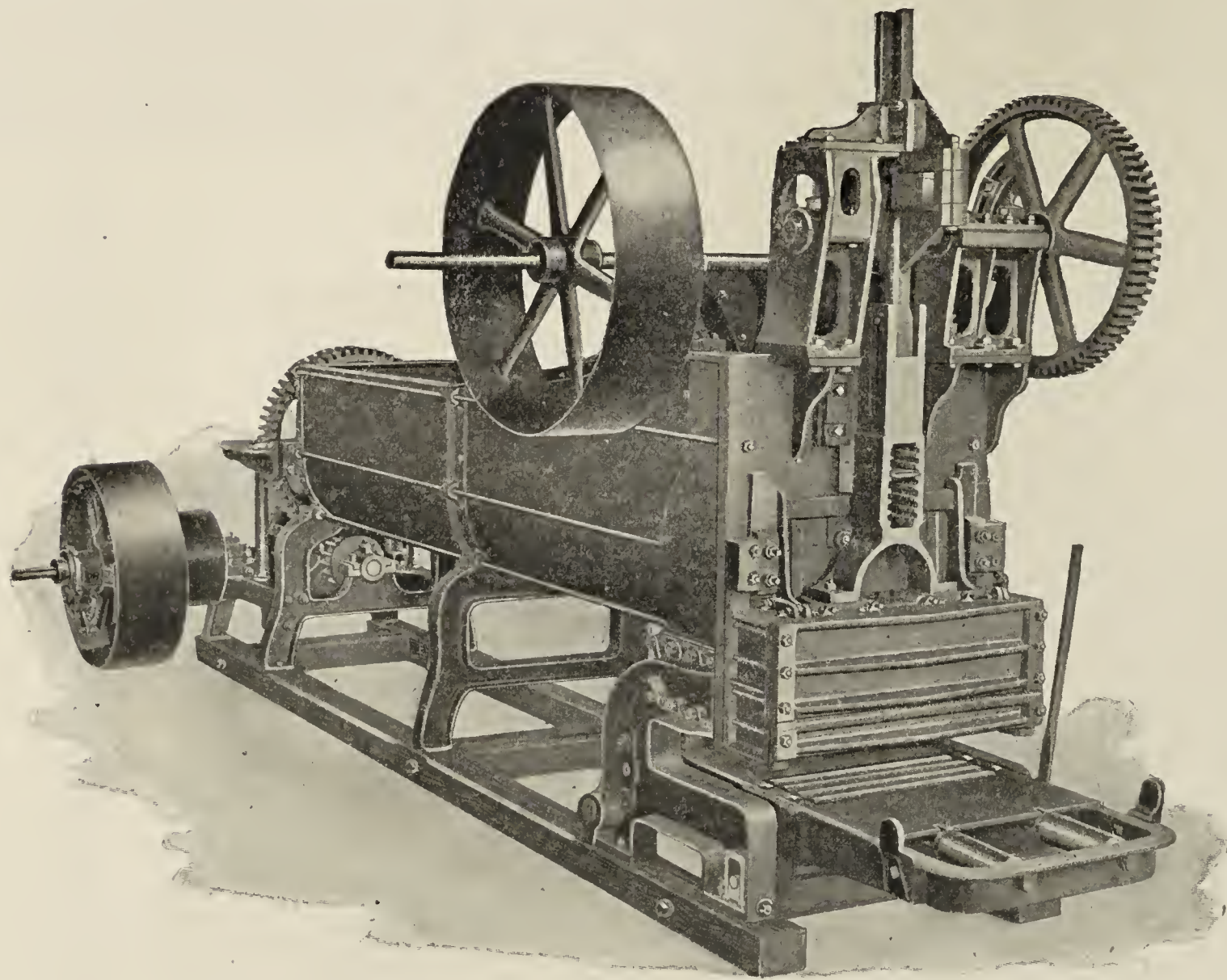
NOTE
DESIGN,
STRENGTH,
SIMPLICITY.

The Wellington Machine Co.

Wellington, Ohio.

The Potts Horizontal Brick Machine.

The equipment of Sand Mould Brick Plants is our specialty. We manufacture the complete plant—Brick Machine, Disintegrators, Mould Sanders, Granulators, Winding Drums, Clay Cars and Steam Dryer. This makes a one-man proposition, and we are responsible for the satisfactory working of the entire plant from The Clay Bank to the Kiln.



The only
Sand Mould
Brick Machine
made
in which
Cast Steel
Gears
are used
exclusively.
They can not
be broken.
Steel shaft
large
in
diameter.

ALL IRON AND STEEL.

Heavy, Strong and Durable. Large tempering capacity, insuring brick that will have clean, sharp corners and smooth surfaces.

Great strength enables working the clay stiff and filling a six brick mould perfectly. Every claim made fully guaranteed.

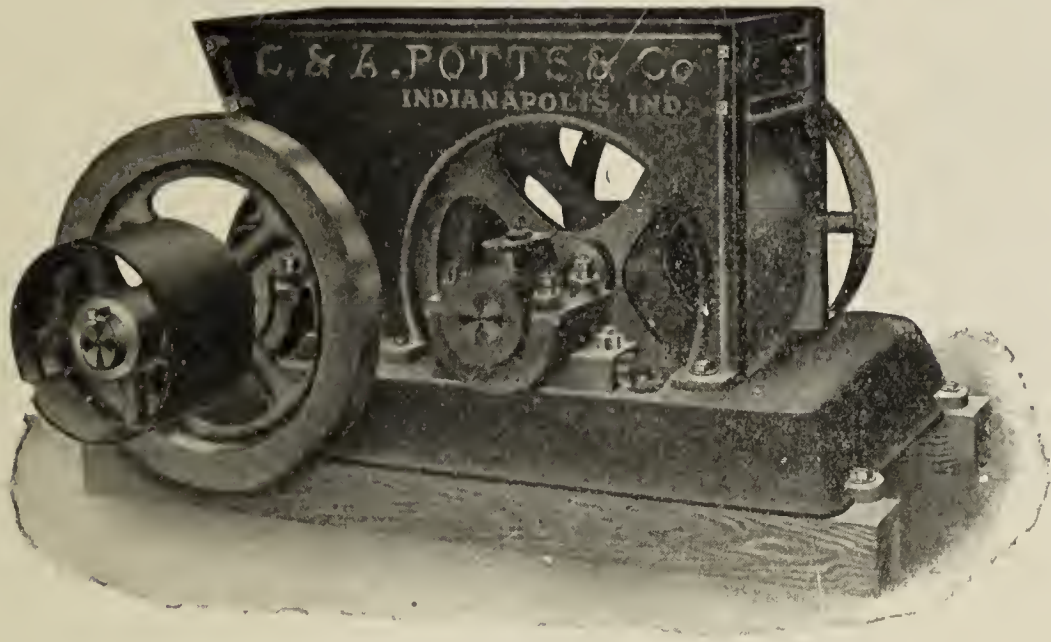
C. & A. POTTS & CO.,

Mention the Clay-Worker.

Indianapolis, Ind.

CLAY DISINTEGRATORS

Either Single or Compound.



Having chilled rolls made from a special grade of iron.

Steel shafts. Ring oiling bearing, long and large in diameter. Adjustable steel bars.

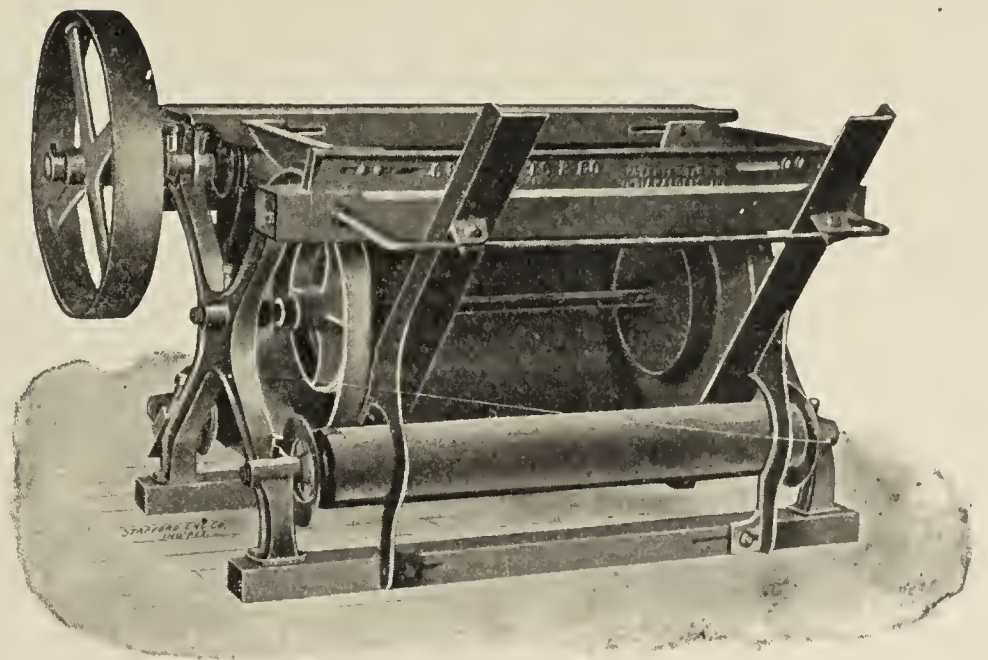
The Potts Disintegrator is the standard machine. All others are imitations. Grinds the clay and separates the stone. No choking or clogging from wet, sticky or hard dry lumps.

MOULD SANDERS

which have no place for the moulds to catch. No unusual wear on the moulds. No chains, sprockets or gears to wear and break.

Does not waste or spill the sand.
Sands the moulds perfectly.

Every machine guaranteed and shipped subject to trial.



We manufacture a complete line of Clayworking Machinery, Granulators or Feeders Winding Drums, Clay Cars, Trucks and Barrows, a Dryer which is no experiment, and which will dry the most tender clay in from eight to ten hours.

We furnish everything from Clay Bank to Kiln, and GUARANTEE RESULTS.

C. & A. POTTS & CO.,

Mention the CLAY-WORKER

Indianapolis, Ind.



THOUGH the Robinson Clay Product Co., of Akron, Ohio (home of our competitors), old and experienced sewer pipe men as they be, had been testing the Stevenson Co.'s grinding pans, and as they said, had found them **superior to any other they had ever used**, they were still skeptical of the superior merits ascribed to The Stevenson Co.'s sewer pipe machinery by the owners and operators of later built works; but like Queen of Sheba of old they resolved to go and see for themselves; and, like her, when they had seen the machinery in operation, the rapidity of output, etc., they felt—

“The half had not been told”

Hence the

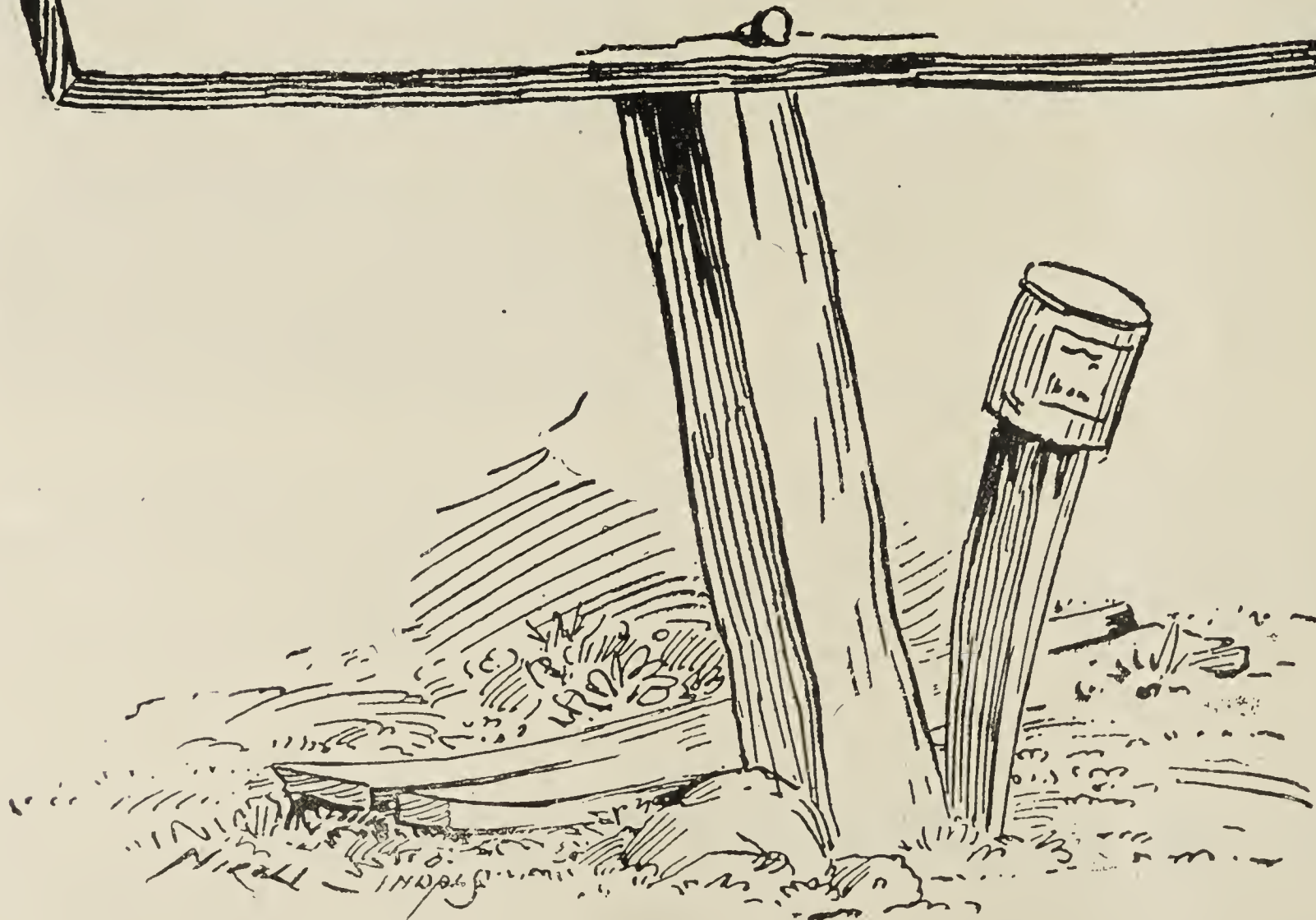
LARGEST SINGLE ORDER EVER PLACED

went to The Stevenson Company, at Wellsville, Ohio.

[By the way, our competitors are saying all manner of untruthful things in explanation of their failure to land the order. Ask Robinson Company.]

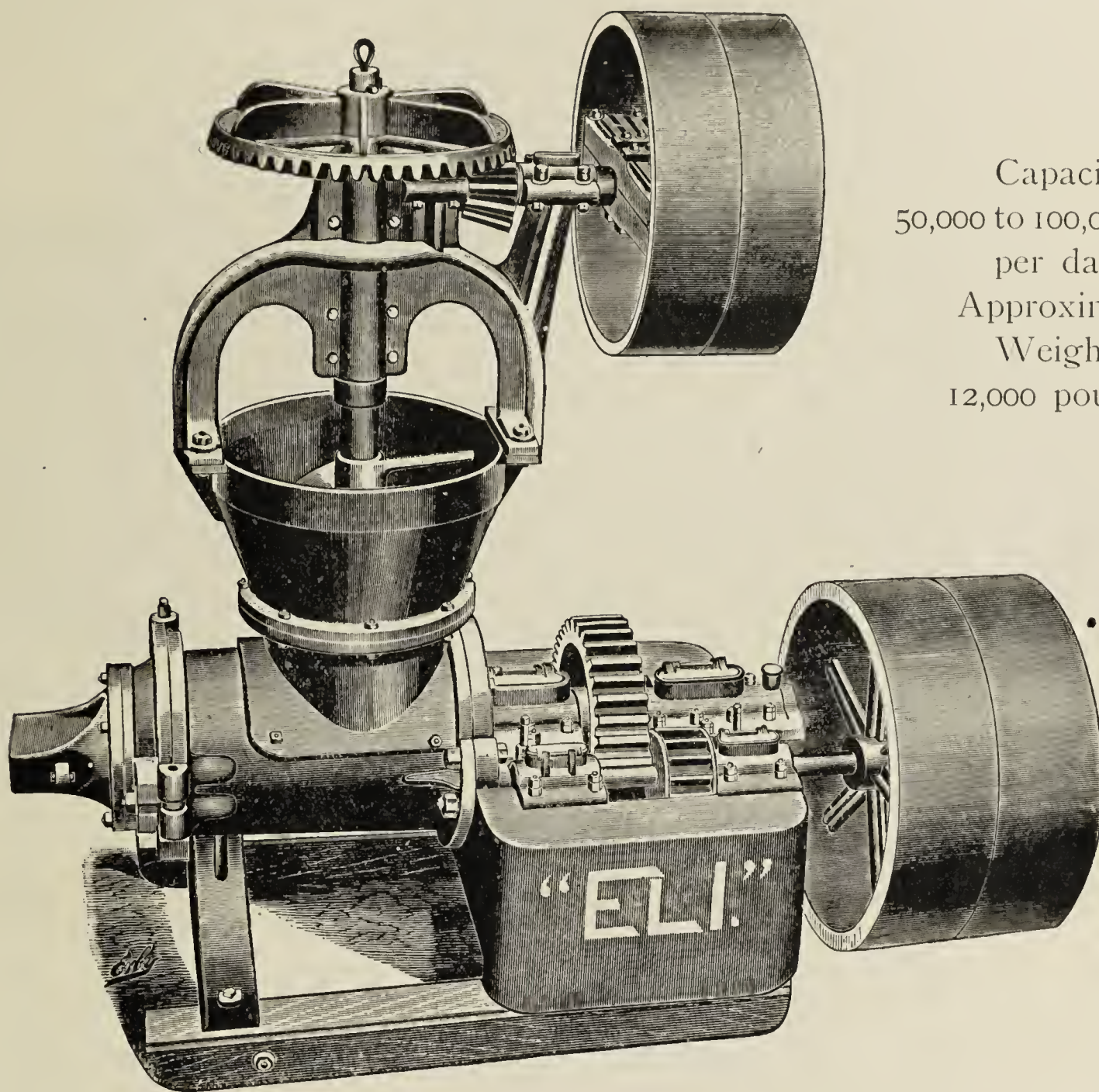
NOW The Stevenson Co. doesn't ask anybody to take the Robinson people's word for it, the most expert of experts though they be, but say to doubters or inquirers—“Come, and we'll show and convince YOU too, if you are competent to judge.”

ANOTHER significant thing is—you never see any of Stevenson's machinery offered for sale unless the owner is going out of business.



MICHIGAN BRICK AND TILE MACHINE CO.

Morenci, Michigan.



Capacity
50,000 to 100,000 brick
per day.
Approximate
Weight:
12,000 pounds.

SPECIAL "ELI" MACHINE.

These machines are guaranteed to make brick and tile without Lamination.

Seattle, Wash., Nov. 20, 1905.

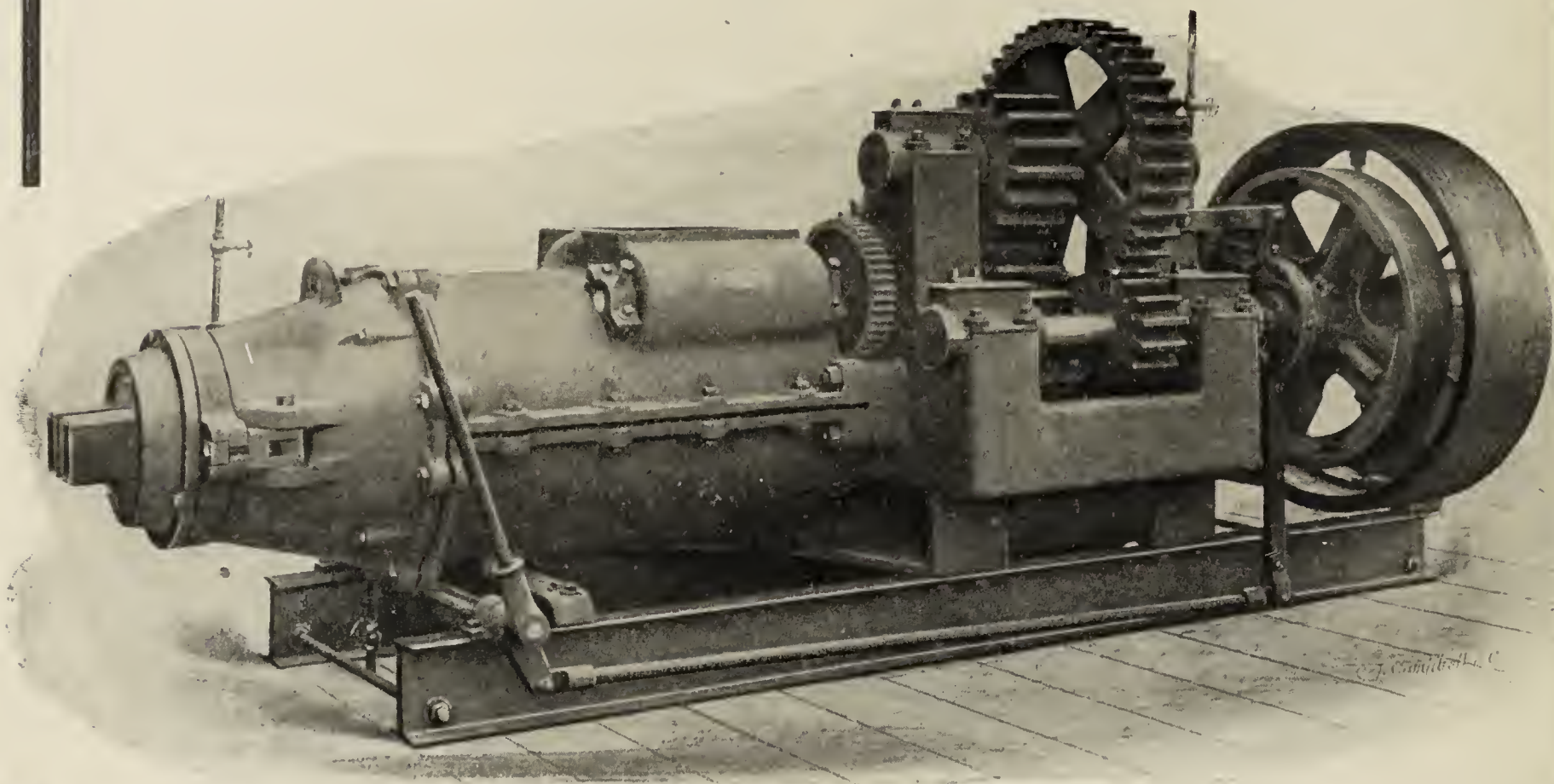
Michigan Brick & Tile Machine Co.,
Morenci, Mich.

Gentlemen—About fourteen years ago we bought from your firm an "Eli" brick machine. We put Eli to work upon his arrival here, and he has made for us many millions of paving and fire brick. The clays used on this machine have been of exceptionally refractory character, testing the machine to its utmost in all particulars, but during these years the machine has been equal to any occasion, and is today as good as the day we installed it.

Yours very truly,
DENNY-RENTON CLAY & COAL CO.,
Geo. W. Kummer, Mgr.

HORIZONTAL BRICK MACHINES

A well built machine is a good investment if it does cost a little more at the start. You don't find machines built any better than these, and the price is not beyond you.



Superior Points of Design and Construction are

Gear-frame, cast in one piece, cannot break or spring. Adjustable back-thrust bearing by means of which screw can be moved ahead into casing as it wears. Forged steel knives, independently adjustable for pitch, and capable of being set out as they wear. White-iron screw and casing, hardest and strongest material suitable for the purpose. Feed-roll keeps hopper clear and prevents bridging. Journals, self-oiling. Liberal weight. Great strength.

Three Sizes, 20 to 50 Thousand per day Capacity.

ASK FOR BULLETIN No. 3.

H. BREWER & COMPANY,

Designers and Builders of Clayworking Machines,
TECUMSEH, MICHIGAN.

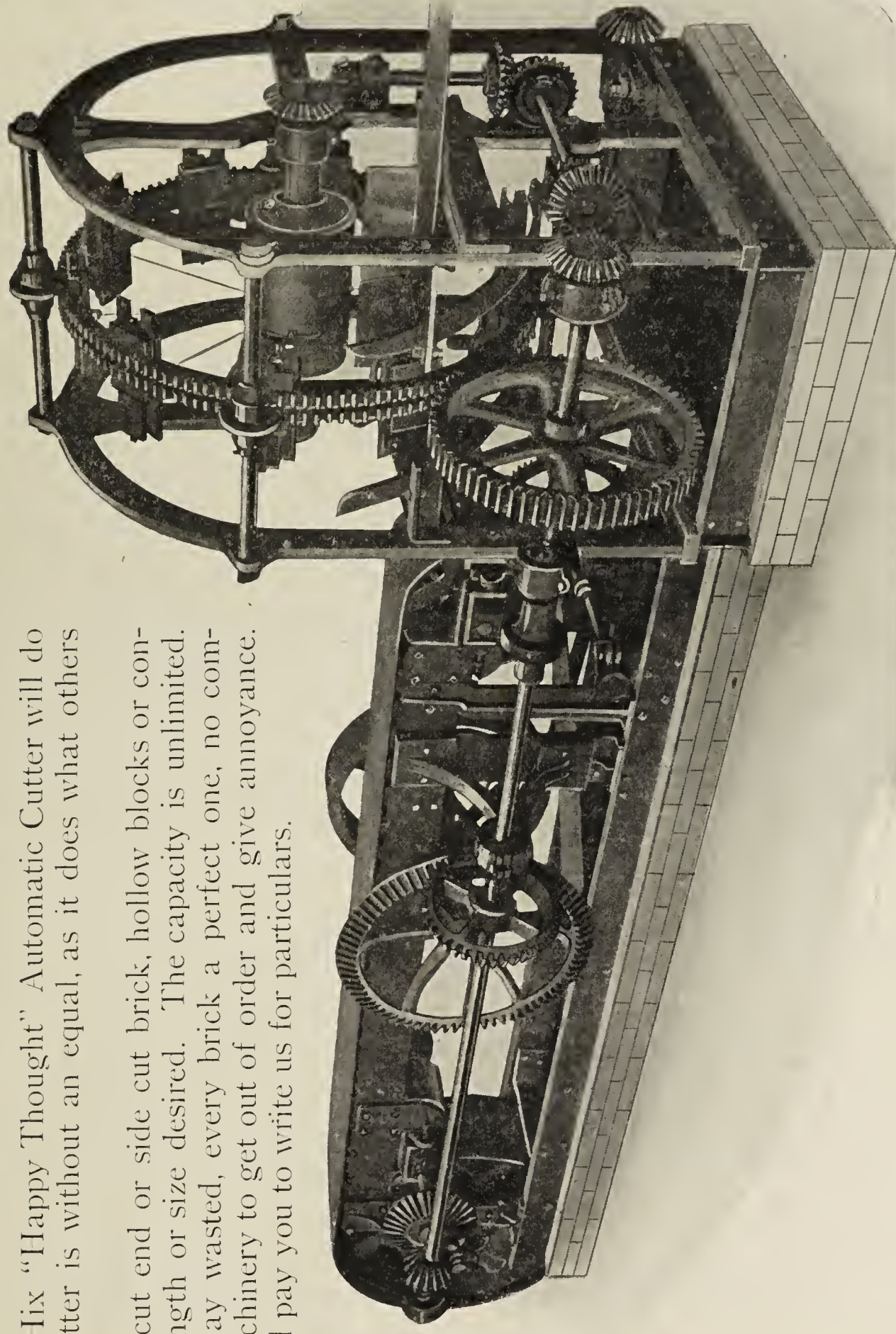
Are You Interested in a Cutter That Will Double Your Profits For 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal, as it does what others can not do.

Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited.

No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

It will pay you to write us for particulars.



THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

THE WALLACE MFG. CO., Frankfort, Ind., U.S.A.

HOME OF HOOSIER CLAY MACHINERY.

ESTABLISHED 1878.

INCORPORATED 1906.



New Factory of Madden & Co., Manufacturers of Hoosier Brick and Tile Machinery.

Hoosier Upright Tile Machines are in a Class by Themselves. Machines for all Sizes of Tile—3 inches to 30 inches.

Hoosier Cutting Tables for Brick and Tile are unsurpassed for accuracy and service.

WATCH FOR OUR NEW CATALOGUE.

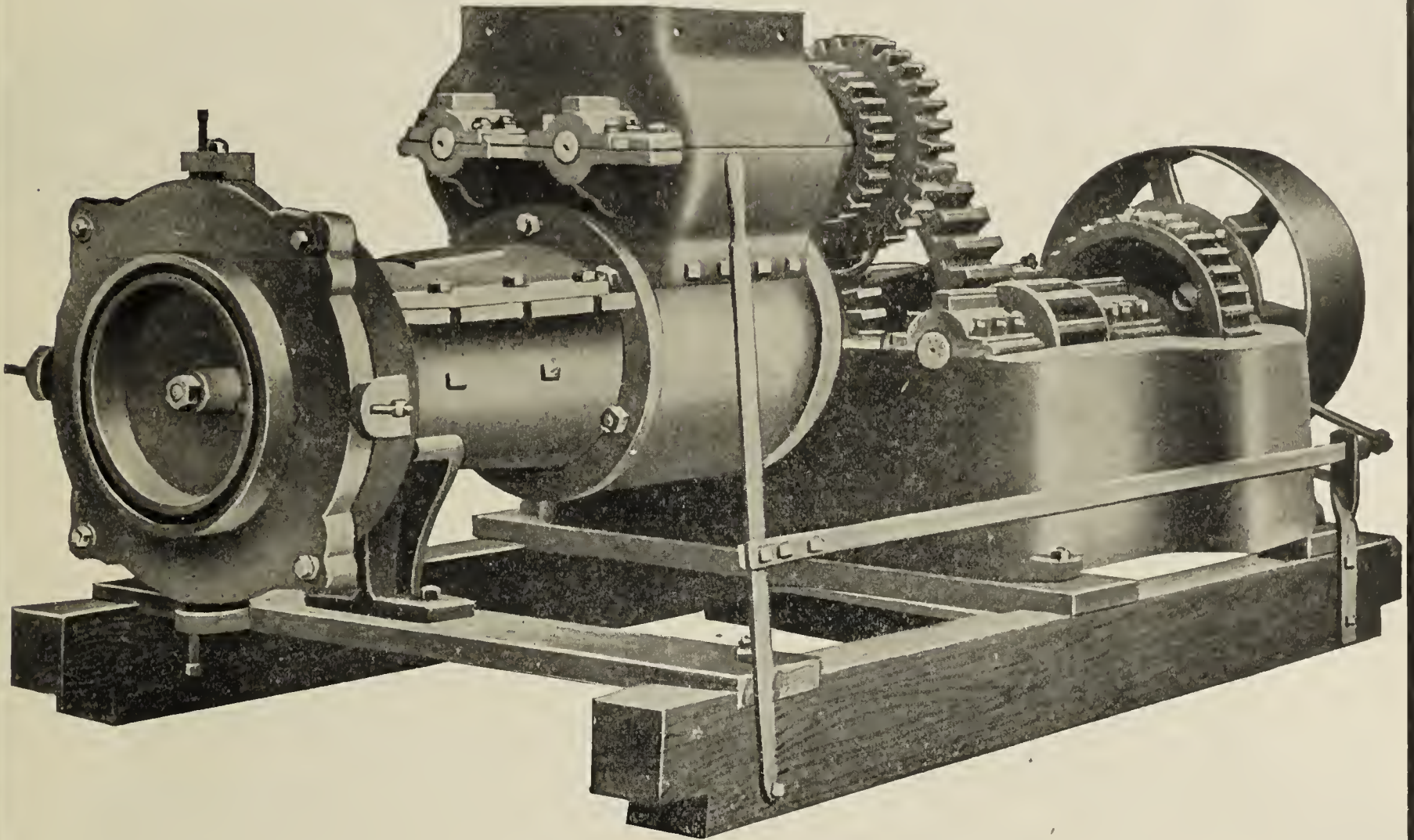
Write us for information.

MADDEN & COMPANY, Rushville, Ind.

Hoosier Clayworking Machinery

1878—Twenty-nine Years' Experience—1907

Brick, Tile and Hollow Block Machines



Note **DESIGN, STRENGTH** and **SIMPLICITY** of this machine.
THIS IS OUR NEW MODEL Stiff Mud Machine with extra pugging
 and feeding attachment, the use of which practically eliminates lamination.
 Made in two sizes for capacity up to 100,000 per day.

AUSTIN BRICK AND TILE WORKS.

ED. BARR, Proprietor.

Manufacturer of PAVING AND COMMON BRICK AND DRAIN TILE.

Dealer in St. Louis Fire Brick and Fire Clay.

Austin, Minn., December 29, 1906.

MADDEN & Co., Rushville, Ind.

Gentlemen—It affords me pleasure to give my testimonial of the efficiency of Madden machinery. Fifteen years ago I put in an outfit of your machinery in Mason City, consisting of a 5 B Brick and Tile Machine, Pug Mill and Granulator, which has been in continuous operation ever since, and has worked enough clay to make a string of tile to encircle the globe. The machine is rated at 25,000 brick per day, and the last time I saw it, it was making tile at the rate of 35,000 4-in. tile a day, which was about a month ago. There has been three other outfits of Madden machinery installed there. Eleven years ago I installed an outfit of your machinery in Austin, consisting of 5 B Brick and Tile Machine, Pug Mill and Granulator in which I have worked a great variety of clay from the fattest to the leanest, and the machinery does its part well.

I consider the Pug Mill the best mixer I ever saw. It operates with mill level full of clay from one end to the other and with little power.

I don't think my repair bill has exceeded \$300.00 in 10 years on the brick machinery.

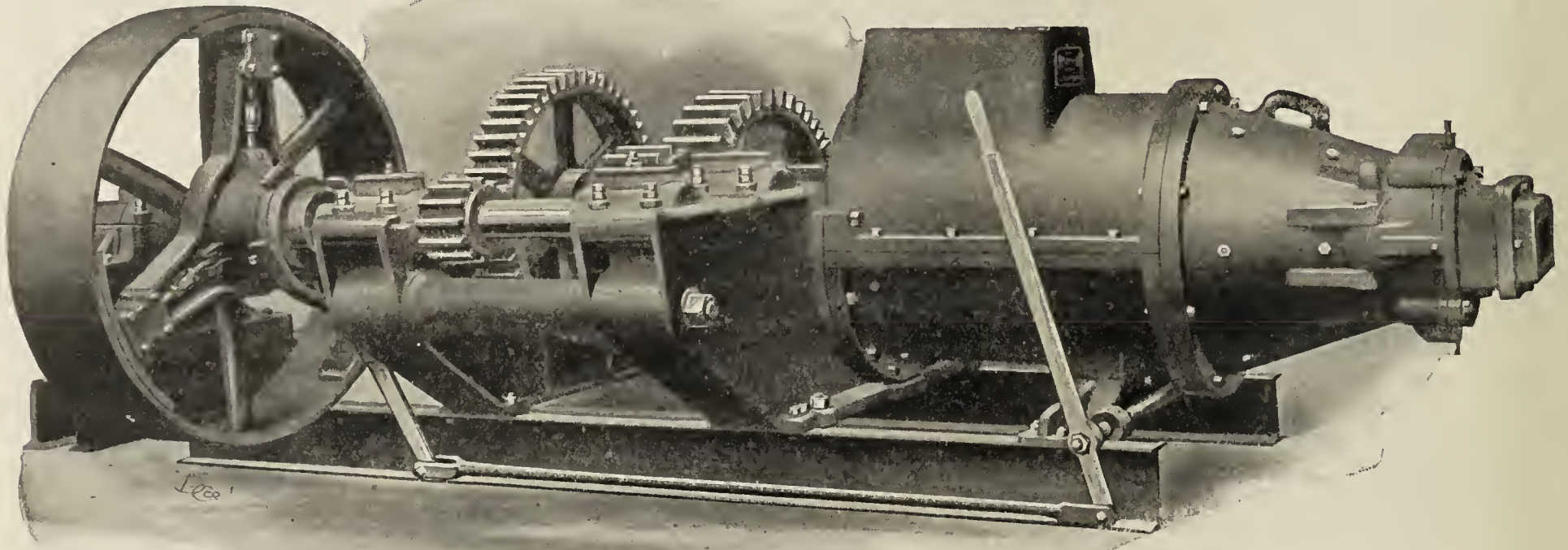
Yours respectfully,

ED. BARR.

For further information address

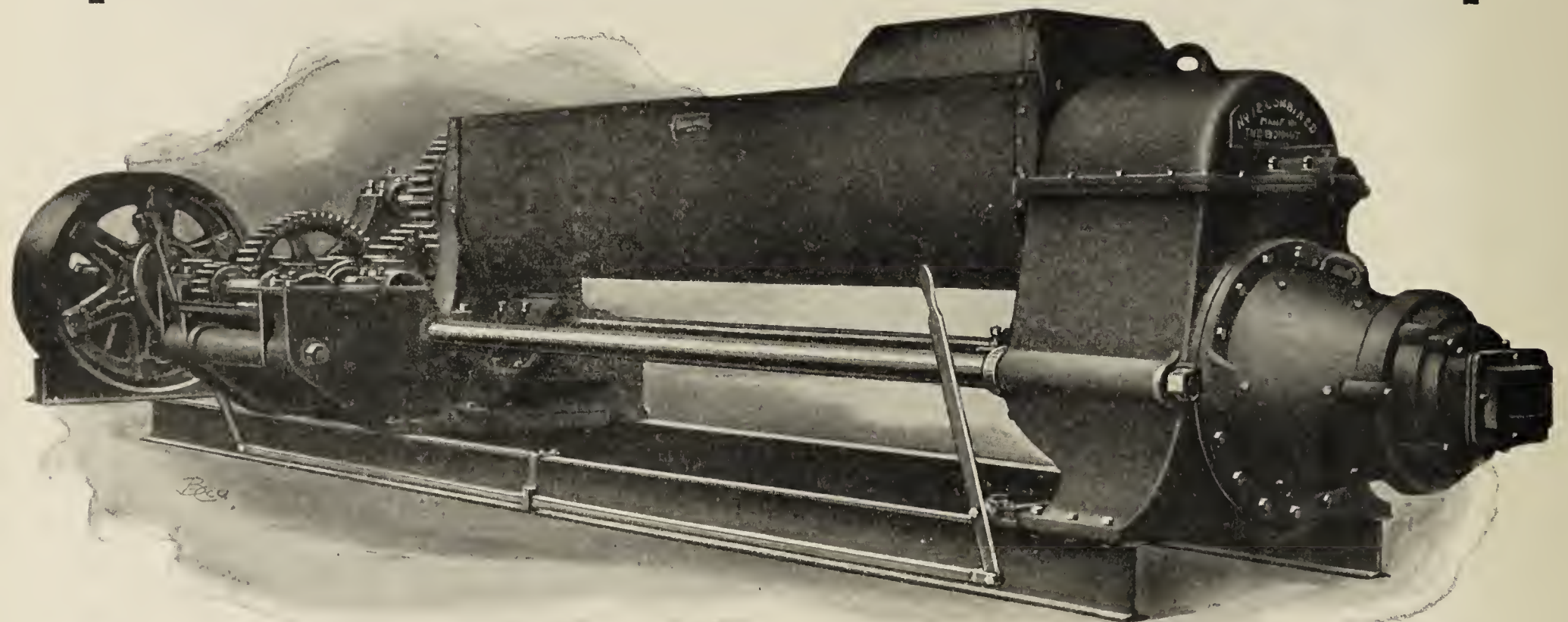
MADDEN & COMPANY, Rushville, Ind.

Modern Brick Machinery



No. 10 Auger Brick Machine.

50,000 to 75,000 capacity per day. Steel gears and pinions and all wearing parts get-at-able.



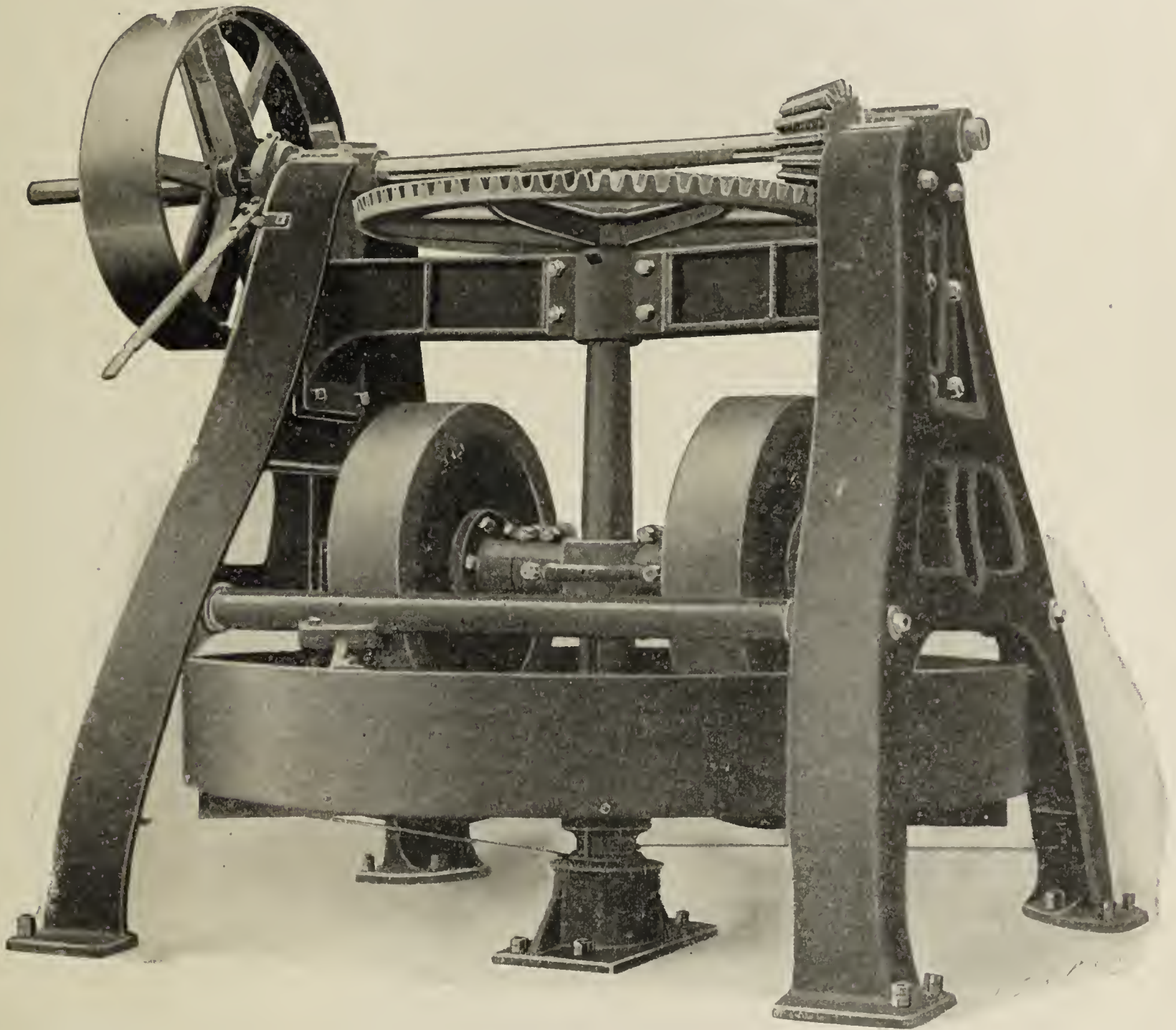
No. 12 Combined Brick Machine and Pug Mill.

All steel gearing, and very heavy construction throughout. Main thrust bearing is outside of frame and can be rebabbited without dismantling Capacity 100,000 to 125,000 per day.

THE BONNOT COMPANY, Canton, Ohio, U.S.A.

To Lessen Your TROUBLES Use Our PIANO WIRE SCREEN.

BUILT FOR SERVICE



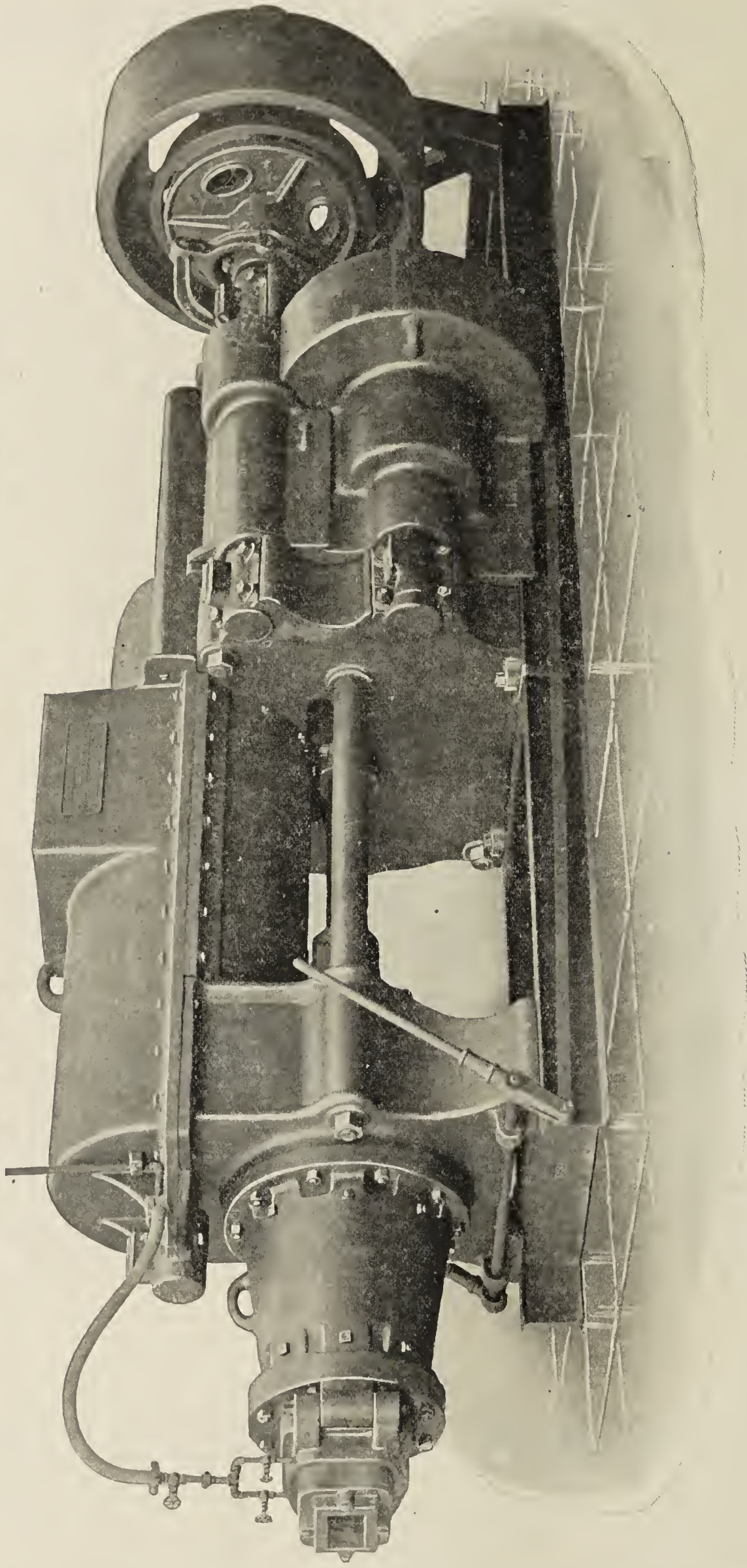
9 FT. IRON FRAME DRY PAN.

Write for Circular No. 12, just issued, showing our latest designs of brick machinery.

Leather bound memorandum book for 1907 is now ready, and free to brickmakers for the asking.

THE BONNOT COMPANY,
Canton, Ohio, U. S. A.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel 'I' beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

Size of hopper, 26-in. x 26-in.

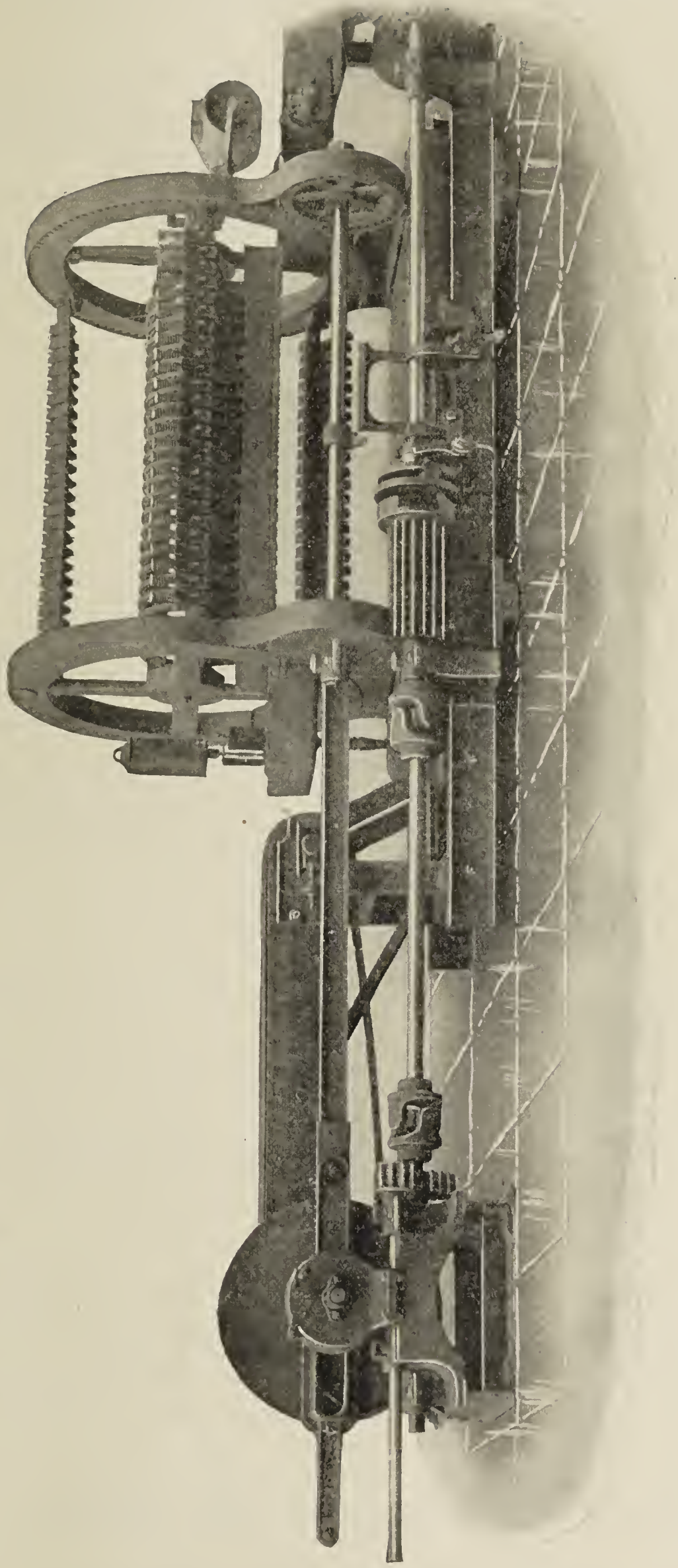
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

BOOKS FOR CLAYWORKERS.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Clay Glazes and Enamels, by Henry R. Griffen. Price \$5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terracotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application

Tables of Analyses of Clays, by Alfred Crossley. Price \$1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

Clays; Their Occurrence, Properties and Uses, by Heinrich Ries. Price \$5.00.

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Burning Brick in Down Draft Kilns, by W. D. Richardson. Price \$1.00.

A manual on the "Burning of Brick," covering all the essentials of good burning, including chapters on kiln repairs, stages of burning, oxidation period, vitrification period, cooling, with valuable tables and illustrations of various testing apparatus.

Engineering for Land Drainage, by C. G. Elliott. Price \$1.50.

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Kiln Records, by W. D. Richardson. Price \$1.00.

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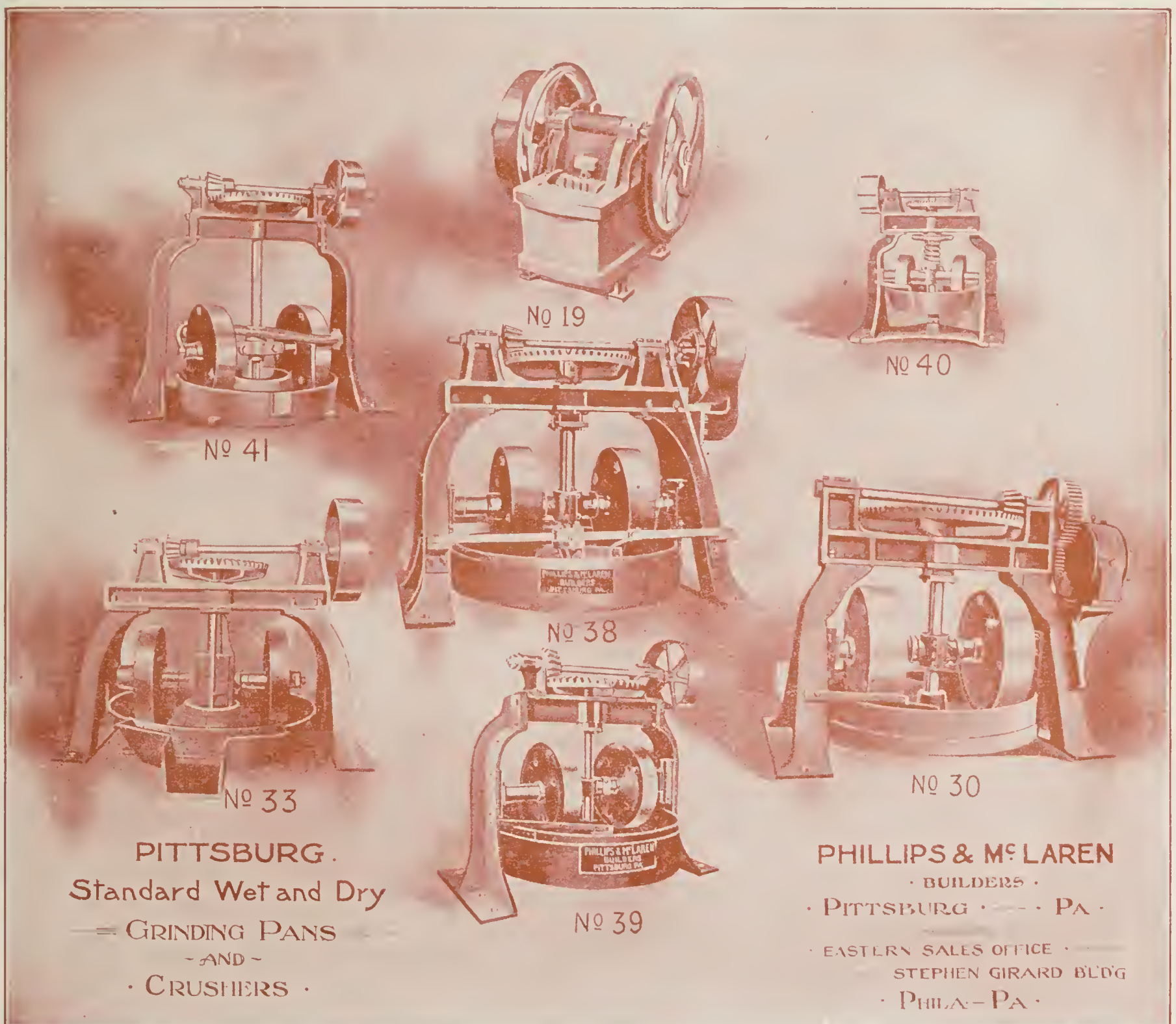
PHILLIPS & McLAREN,

Pittsburg, Pa.

Standard Wet and Dry Grinding Pans

FOR BRICKYARDS, STEEL WORKS, POTTERIES, CHEMICAL WORKS, SAND PLANTS,
GLASS WORKS, STEEL FOUNDRIES, ETC.

This illustration is designed to show a few of our Pans, built Wet and Dry, Revolving and Stationary, from 3½ ft. up to 10 ft. diameter. Also made for unusual conditions, such as grinding in water, grinding carborundum, foundry ashes, refuse, etc. They are built for hard service, are extremely simple in design, heavy and powerful.



The illustration displays seven different models of industrial grinding pans and crushers, each with a unique design and labeled with a number. The machines are shown in various orientations, highlighting their heavy-duty construction and mechanical components. The background is a light, textured grey, making the dark-colored machinery stand out.

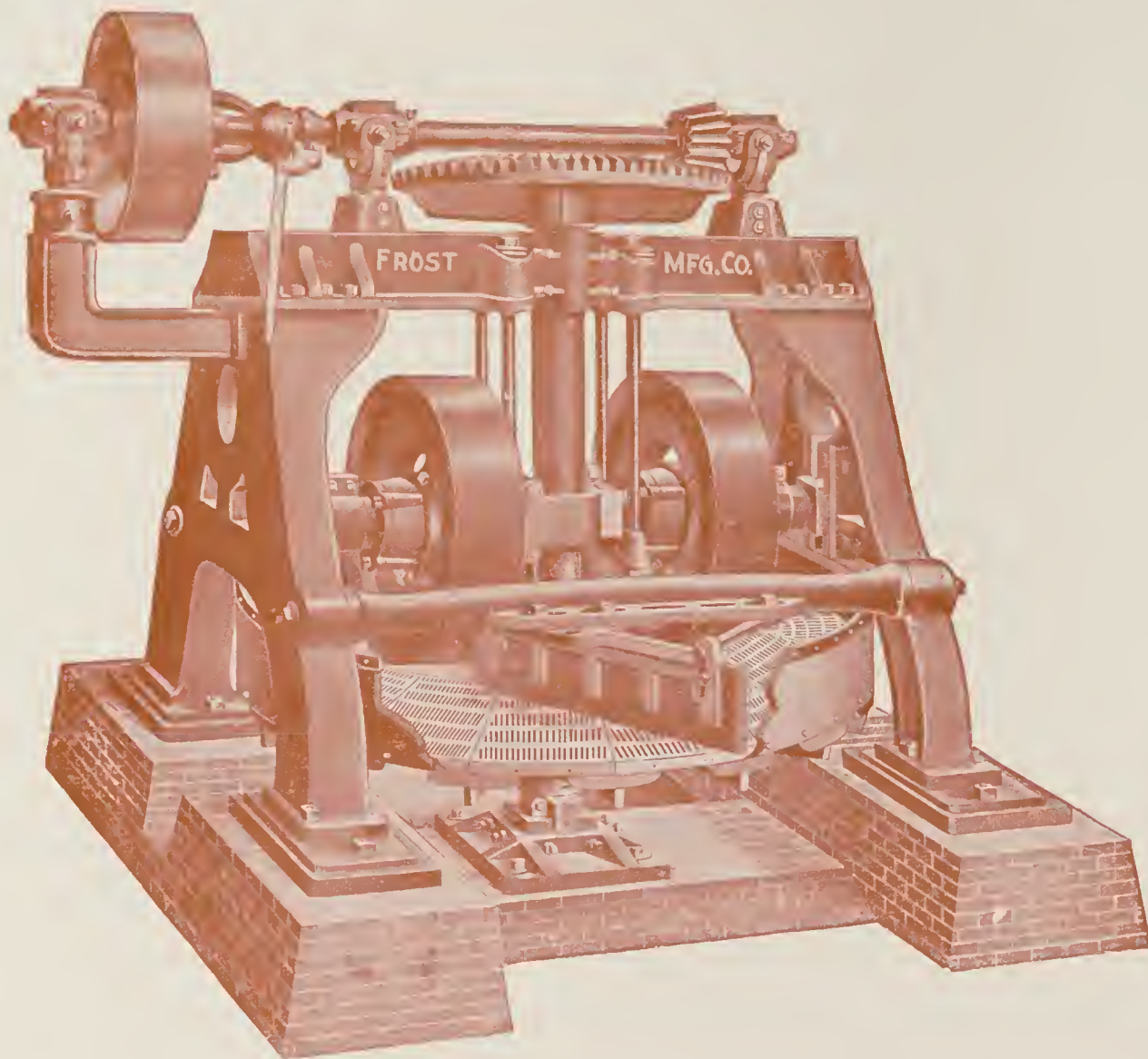
PITTSBURG.
Standard Wet and Dry
— GRINDING PANS —
— AND —
• CRUSHERS •

PHILLIPS & McLAREN
• BUILDERS •
• PITTSBURG • — • PA •
• EASTERN SALES OFFICE •
STEPHEN GIRARD BLD'G
• PHILA — PA •

If interested tell us what your material is and capacity desired,
and we will quote you accordingly.

We make **Crushers** also.

FROST DRY PAN



The FROST Pan is the BEST Pan. All Others Imitate but Never Equal.
A Few of Our Customers.

Purington Paving Brick Co., Galesburg, Ill.	16	Frost Pans
Streator Paving Brick Co., Streator, Ill.	4	Frost Pans
National Brick Co., Chicago, Ill.	3	Frost Pans
Western Brick Co., Danville, Ill.	6	Frost Pans
Amer. Steel Foundries Co., East St. Louis, Ill.	3	Frost Pans
Buffalo Brick Co., Buffalo, Kan.	3	Frost Pans
Cherryvale Pressed Brick Co., Cherryvale, Kan.	2	Frost Pans
La Prairie Brick Co., La Prairie, Quebec	6	Frost Pans
Twin City Brick Co., St. Paul, Minn.	2	Frost Pans
Hydraulic-Press Brick Co., St. Louis, Mo.	8	Frost Pans
Evens & Howard Fire Brick Co., St. Louis, Mo.	6	Frost Pans
Jardin Brick Co., Philadelphia, Pa.	2	Frost Pans
Michael Myers Brick Co., Dallas, Texas	2	Frost Pans
Palmer Pressed Brick Co., Palmer, Texas	2	Frost Pans
Thomas Pressed Brick Co., Peruque, Mo.	2	Frost Pans
Globe Pressed Brick Co., Paris, Texas	2	Frost Pans
Johnsonburg Vitriified Brick Co., Johnsonburg, Pa.	2	Frost Pans
Simons Brick Co., Los Angeles, Cal.	2	Frost Pans
Enid Vitriified Brick & Tile Co., Enid, Okla.	2	Frost Pans
Phoenix Brick & Construction Co., St. Joseph, Mo.	2	Frost Pans
Chickasha Shale Brick Co., Chickasha, I. T.	1	Frost Pan
Dallas Pressed Brick Co., Mesquite, Texas	1	Frost Pan
South California Brick Co., Los Angeles, Cal.	1	Frost Pan
Danville Brick and Tile Co., Danville, Ill.	1	Frost Pan
Gainesville Brick & Tile Co., Gainesville, Texas	1	Frost Pan
N. Y. Hydraulic Pressed Brick Co., Rochester, N. Y.	1	Frost Pan
DeSota Brick and Tile Co., DeSota, Iowa	1	Frost Pan
Dixon Wood Company, Pittsburg, Pa.	1	Frost Pan

Choctaw Pressed Brick Co., Mansfield, Ark.	1	Frost Pan
Ardmore Coal and Power Co., Ardmore, I. T.	1	Frost Pan
Atlas Brick Co., Allegheny, Pa.	1	Frost Pan
Elk City Brick Co., Elk City, Kan.	1	Frost Pan
Standard Brick Co., Milwaukee, Wis.	1	Frost Pan
Standard Brick Co., Crawfordsville, Ind.	1	Frost Pan
Bradley Brick Co., Mooresville, Ind.	1	Frost Pan
Lincoln Brick and Tile Co., Lincoln, Neb.	1	Frost Pan
Kansas City Vitriified Brick Co., Kansas City, Mo.	1	Frost Pan
Swoyer Bros. Brick Co., Allentown, Pa.	1	Frost Pan
Kingsland Brick Co., Kingsland, N. J.	1	Frost Pan
Dallas County Brick and Tile Works, Adel, Iowa	1	Frost Pan
Whitehall Fire Clay Co., Whitehall, Ill.	1	Frost Pan
Denver Dry Pressed Brick Co., Denver, Colo.	1	Frost Pan
Pioneer Fire Proofing Co., Ottawa, Ill.	1	Frost Pan
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Ludowici Roofing Tile Co., Ludowici, Ga.	1	Frost Pan
The Alberta Portland Cement Co., Calgary, Can.	1	Frost Pan
Tulsa Brick Co., Tulsa, I. T.	1	Frost Pan
Stonington Brick Co., Stonington, Miss.	1	Frost Pan
Jackson Bros. & Squib, Carrollton, Texas	1	Frost Pan
Toronto Pressed Brick and Terra Cotta Works, Milton, Canada	1	Frost Pan
Globe Pressed Brick Co., Ferris, Texas	1	Frost Pan
Winterset Brick, Tile & Material Co., Winterset, Pa.	1	Frost Pan
Galvin Brick and Tile Co., Iowa Falls, Iowa	1	Frost Pan
Terra Cotta Brick Co., Terra Cotta, Canada	1	Frost Pan
Sphar Pressed Brick Co., Maysville, Ky.	1	Frost Pan
Southern Tile and Brick Works, Gilmore, Tenn.	1	Frost Pan
E. C. Allen, Albuquerque, N. M.	1	Frost Pan
Glenview Brick Co., Glenview, Ill.	1	Frost Pan
Edmonton Brick Co., Edmonton, Canada	1	Frost Pan

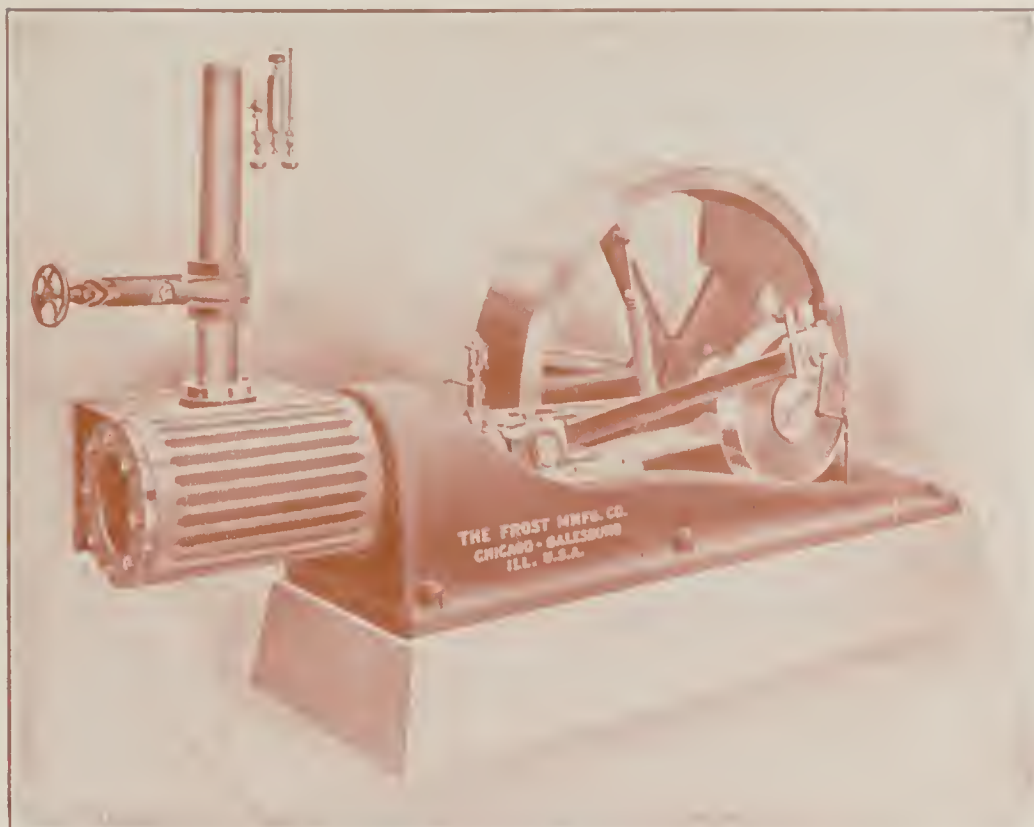
The Frost Manufacturing Co.

Works: GALESBURG, ILL.

SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago.



GREELEY, COLO., December 14, 1906.

FROST MANUFACTURING CO.,

Gentlemen:—Replying to your favor of the 11th inst., would state that in 1900 I installed a 55 Horse Power Frost Side Crank Engine at our factory at Wautoma, and also one at our factory at Iola, Wis., and in 1901 installed one in our factory at Rice Lake, and take great pleasure in stating that they have all given the best of satisfaction, and up to the present time they have not cost one cent for repairs.

Very truly yours,

WILLIAM D. BOTHWELL.



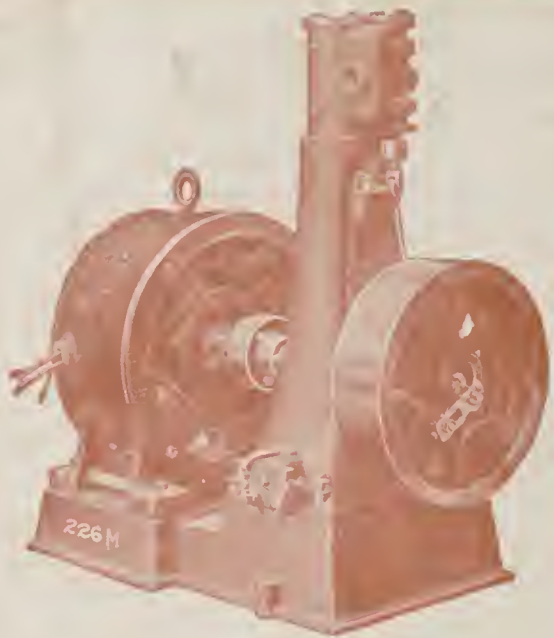
The Frost Manufacturing Co.

Works: GALESBURG, ILL.

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135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago,



(Engine Patented.)

**THE
"ABC" Enclosed Self-Oiling Steam Engine**

Runs from 3 to 6 months without oiling or adjusting. Invaluable for driving Blowers, Generators, Pumps, etc.

Shall we send you descriptive matter?

**AMERICAN BLOWER CO.,
DETROIT.**

New York. Chicago. Atlanta. London.

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FULL PAGE
AD
APPEARS ON
PAGE 440
THIS ISSUE**

DUNLAP MFG. CO.

BLOOMINGTON, ILL.



Special Car With or Without Top Deck.

**DRYER CARS,
DUMP CARS,
REPRESSES,
WIRE SCREENS,
DRYERS.**

**THE OHIO CERAMIC ENGINEERING COMPANY,
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Builders of the best, cheapest and easiest running cars on the market. Try us for the proof.

THE CLAYWORKER

PUBLISHED MONTHLY BY
T A RADDALL & CO
INDIANAPOLIS.



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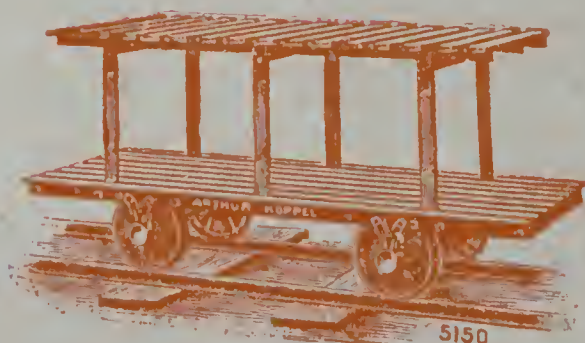
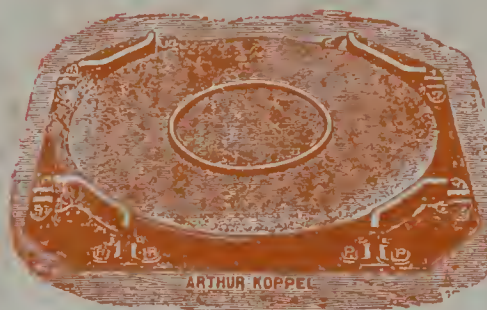
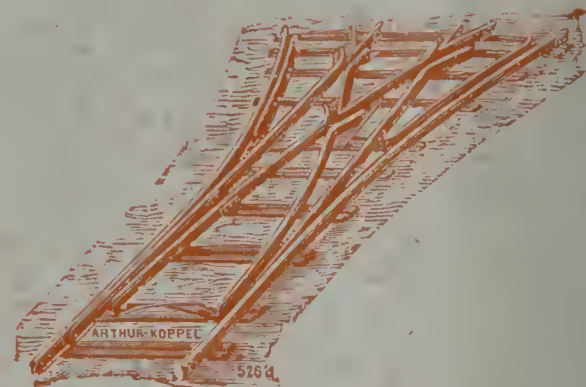
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FOR MINES, QUARRIES AND BRICKYARDS, INCLUDING RAILS, STEEL TIES, PORTABLE TRACK, SWITCHES, FROGS, TURNTABLES, CROSSINGS, WHEELS, AXLES, SPARE PARTS, PLATFORM CARS, STEEL DUMP CARS, DRYER CARS, LOCOMOTIVES, ETC.

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ALWAYS ON HAND AT OUR WAREHOUSES READY FOR PROMPT DELIVERY. CATALOGUE "C" WILL INTEREST YOU. IT DESCRIBES EVERYTHING WE MANUFACTURE.

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THE CHAMBERS BRICK MACHINERY.

Weight about 11000
pounds
Capacity 2000 bricks
per hour.



Single Crank move-
ment. Working
Machinery all above
the Mold Box.

Philadelphia Repress, No. 2.

Automatic End-Cut and Side-Cut Auger Machines.



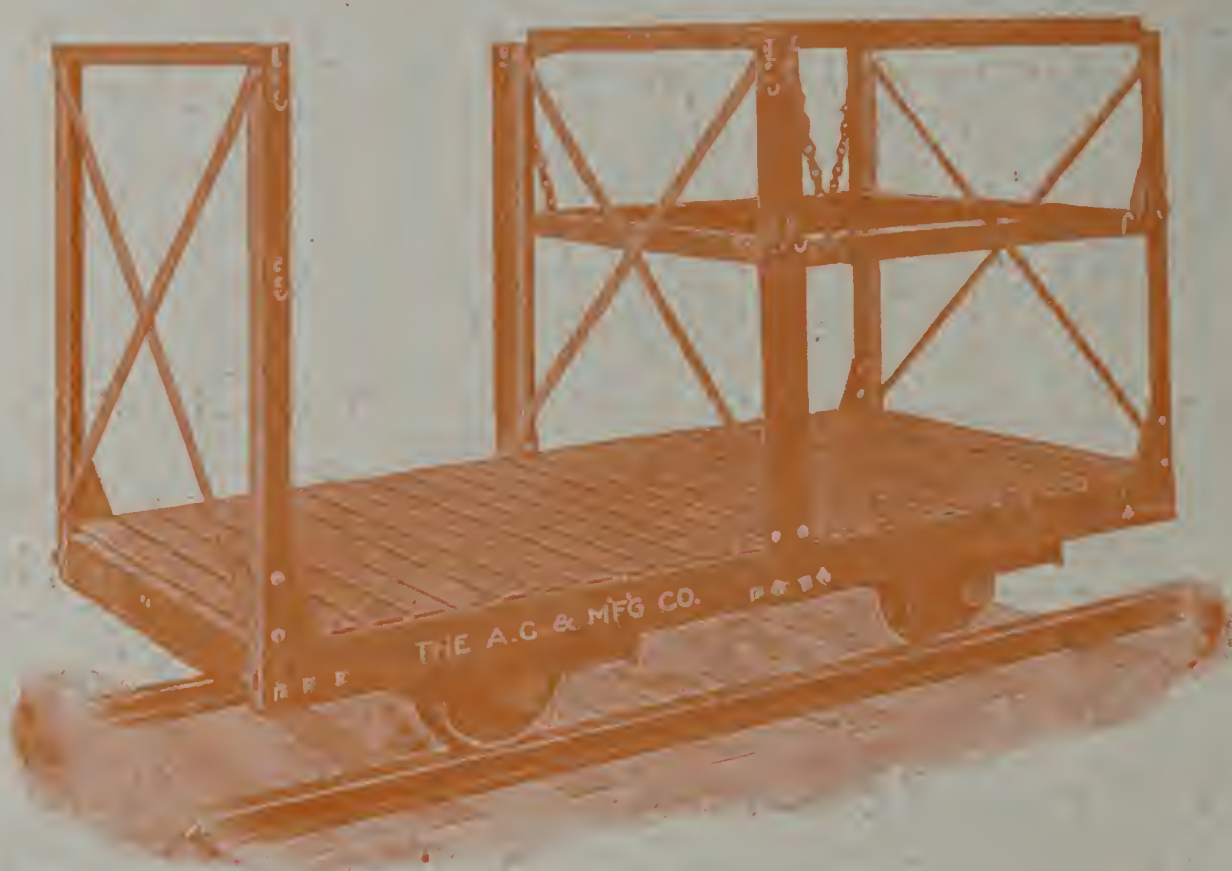
Capacity—Strength—Materials—Workmanship—Design, all of the best
and all are factors in the satisfaction given users of our machinery.

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DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

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CLEVELAND, OHIO.

(See Ad on Page 563)

G. E. LUCE ENGINEERING CO.,

601 Plymouth Building,
CHICAGO, ILL.

Practical Designing and Supervision of Brick Plant Construction.

From our long experience in various clayworking fields we are able to offer suggestions which will bring your old plant to its highest efficiency or start your new one a little better than the best.

A careful study of the drawings we exhibited at the St. Louis Convention would convince you OUR PLANTS MAKE BRICK. If you were not there send for copy of one of the most complete Brick Plant drawings ever exhibited.

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PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

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CHICAGO, ILL., U. S. A.



Want to Know

a "short cut" to WEALTH over the BRICK route? It's via the

RODGERS WASTE HEAT SYSTEM.

No use to take the long way around when you can reach your destination in less time, at less expense and in greater comfort by means of a "short cut."

L. E. RODGERS ENGINEERING CO.

Waste Heat Dryer Specialists.
Brick Works Engineers.

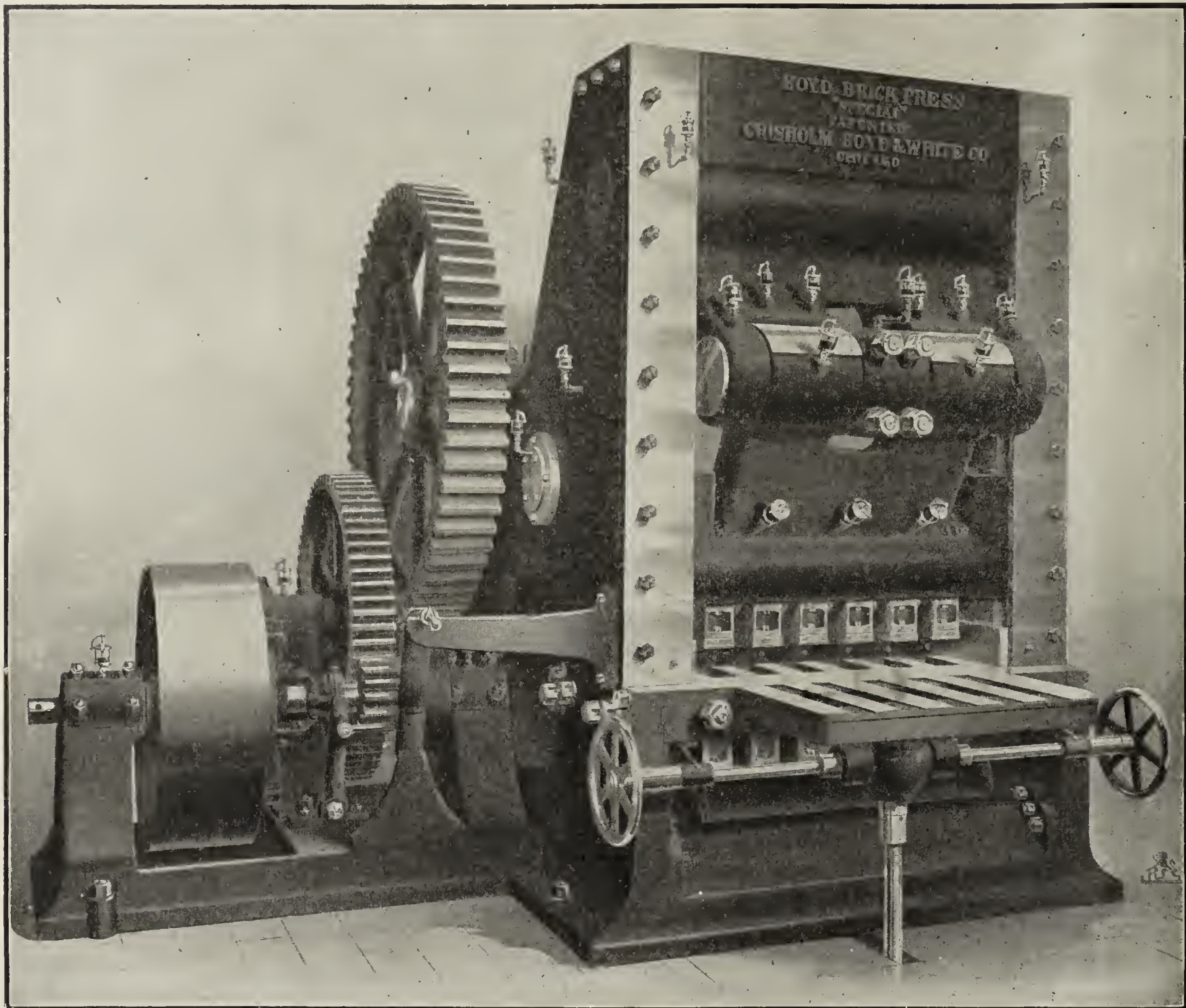
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CHICAGO.



The Boyd Brick Press

Six-Mold "Special."



The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles to the art of brickmaking. Correspondence solicited.

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SAND=LIME BRICK MACHINERY.

BOYD QUALITY.

MODERN METHODS.

NO EXPERIMENTING.

More Boyd Presses making sand=lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand=Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

Correspondence solicited.

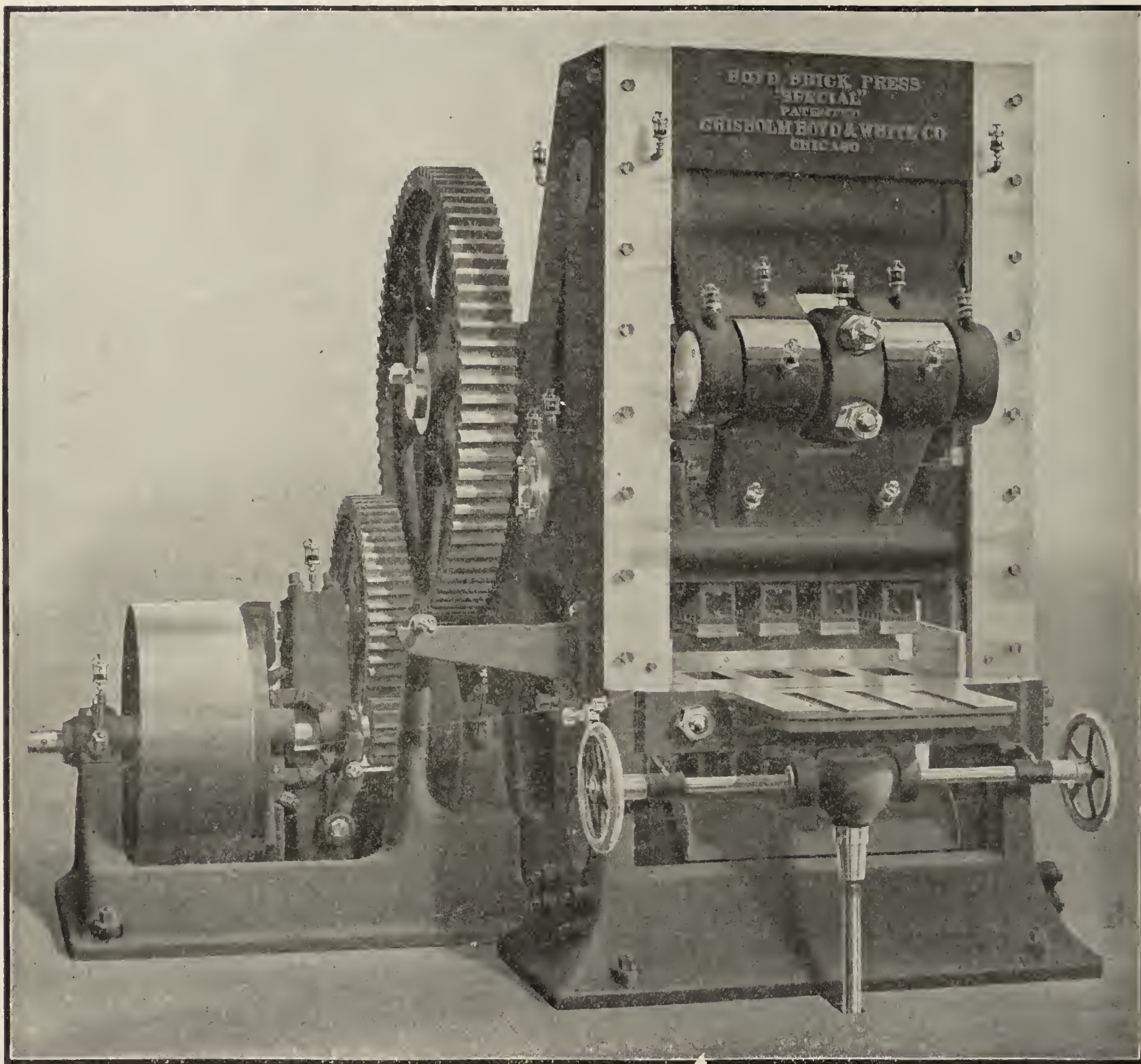
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The Boyd Brick Press

Four-Mold "Special."



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for General Catalogue No. 15.

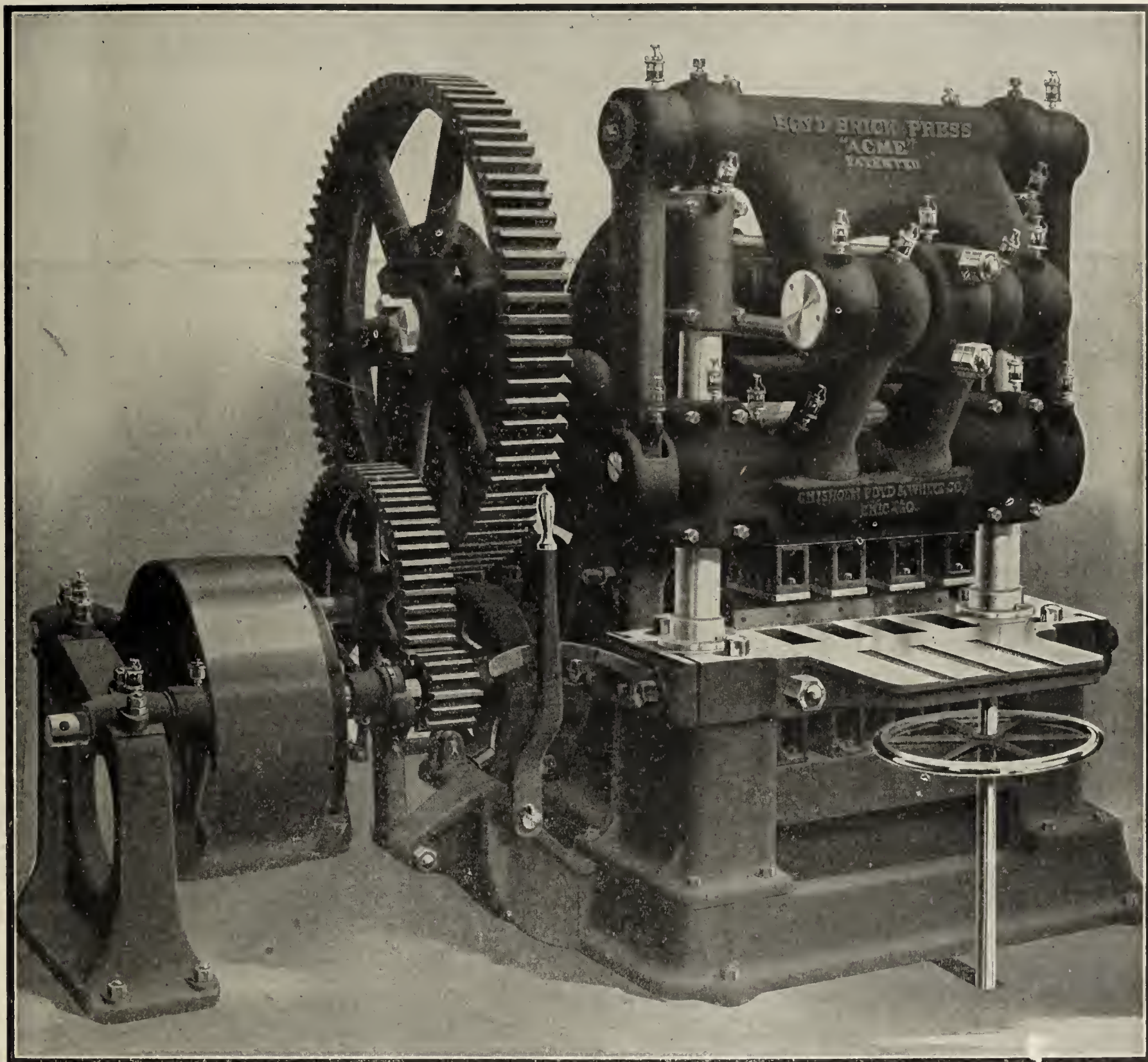
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The Boyd Brick Press

Four-Mold "Acme."



ITS NAME A GUARANTEE.

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THE BOYD BRICK PRESS was the standard at the start, and is the standard now. Steady progress, merit and improvements have kept it at the front.

We will send to any responsible party a BOYD BRICK PRESS ON TRIAL, under the broadest and safest guarantee. We take the machine back if not satisfactory.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

THE ONLY PERFECT BRICK PRESS

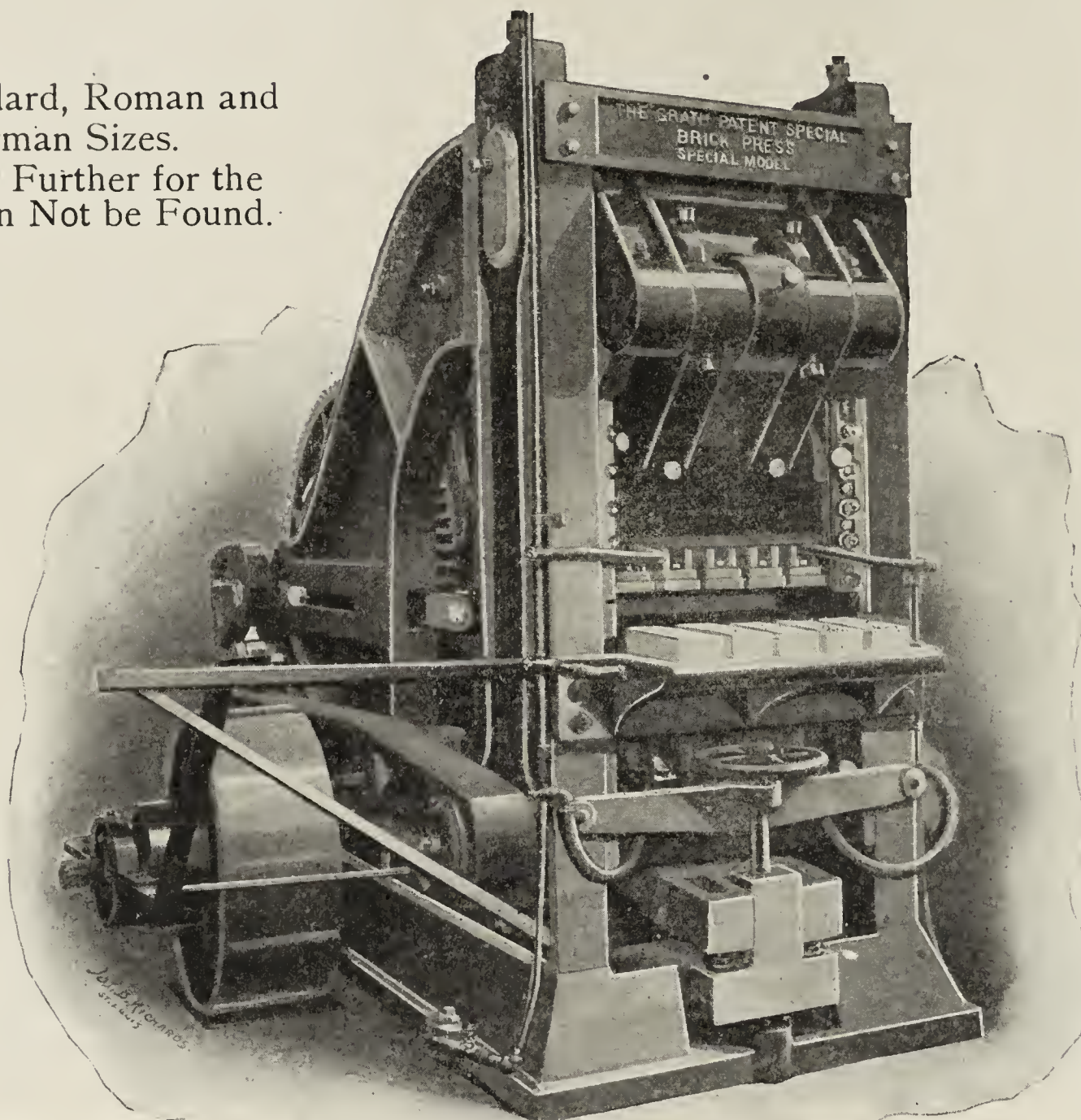
For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

Special Large Model Making Five Standard Size Brick.

For Standard, Roman and Norman Sizes.

Seek No Further for the Equal Can Not be Found.

The Best is the Cheapest for the Manufacturer. Do Not Buy an Out of Date Press, Same as Built Twenty Years Ago. Buy a Modern Press And Keep up With the Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not too heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

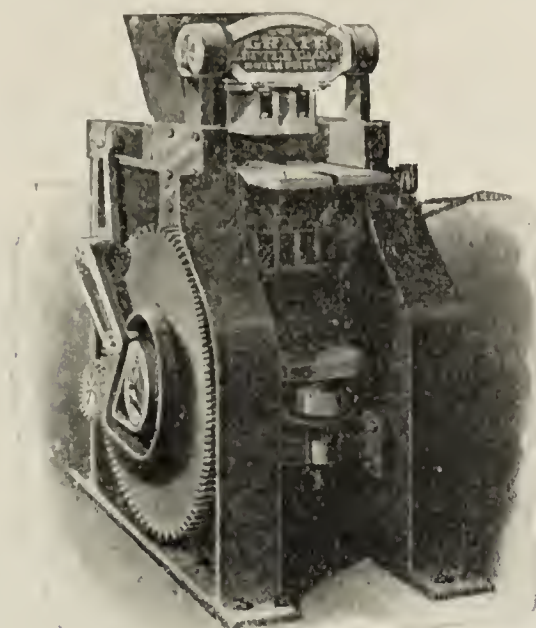
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Suite 512 and 513 Holland Bldg.

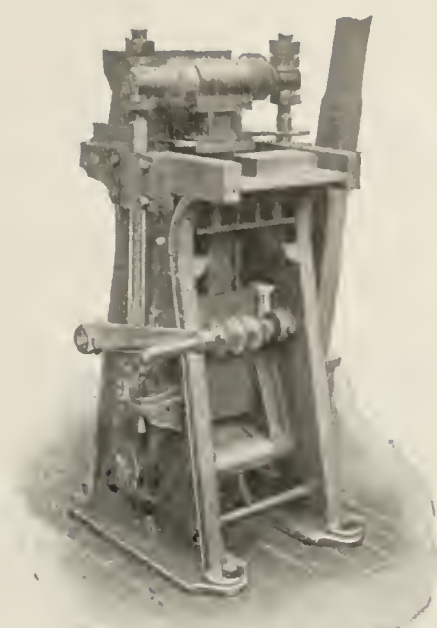
St. Louis, Mo., U. S. A.



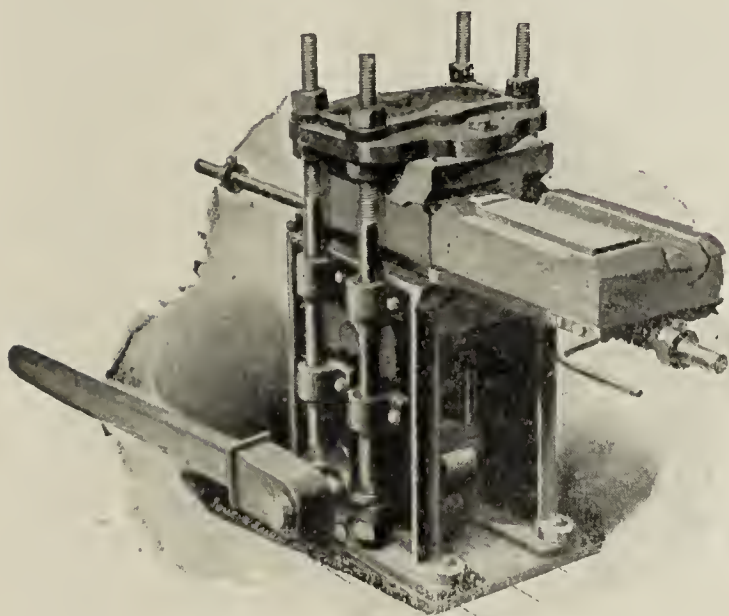
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Sand Lime Brick Press
Capacity-5000 per day



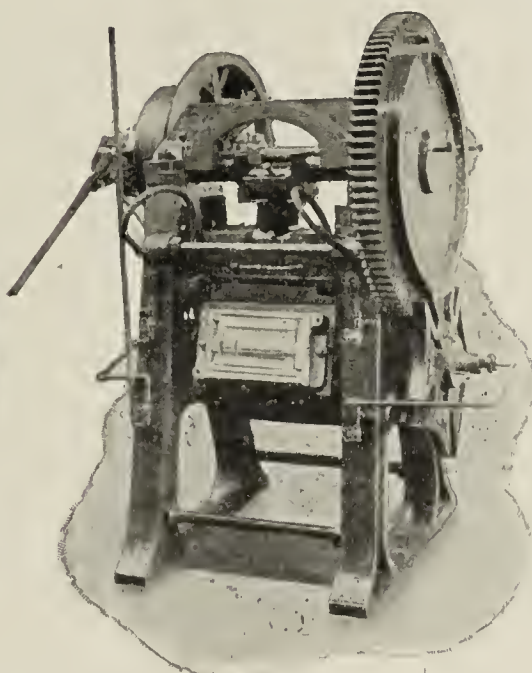
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



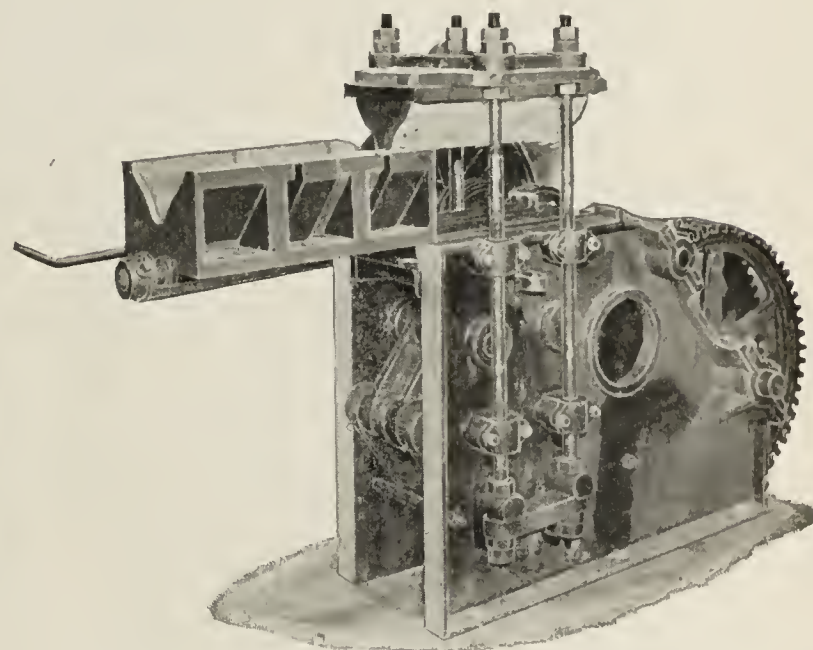
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Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
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The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

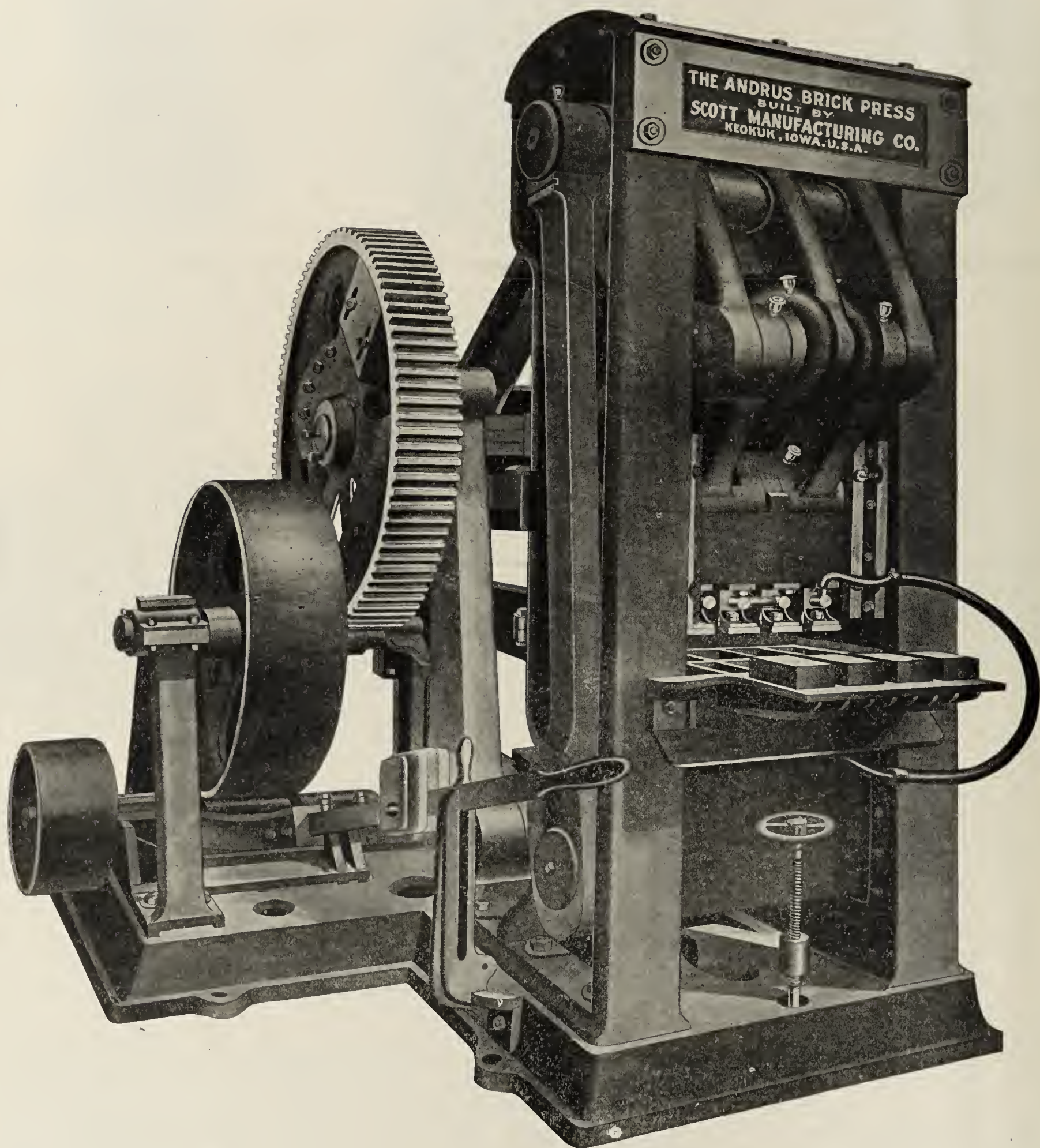
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Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the *ordinary single* down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get *advantage* of all *waste* heat from your burning chamber, which you *lose* and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in *same* manner as the direct, through the furnaces up the bag and down through the ware. *Simple* and *sure* in operation. GUARANTEED.

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Cable Address
GRATH, St. Louis.

Illinois Supply & Construction Co.,
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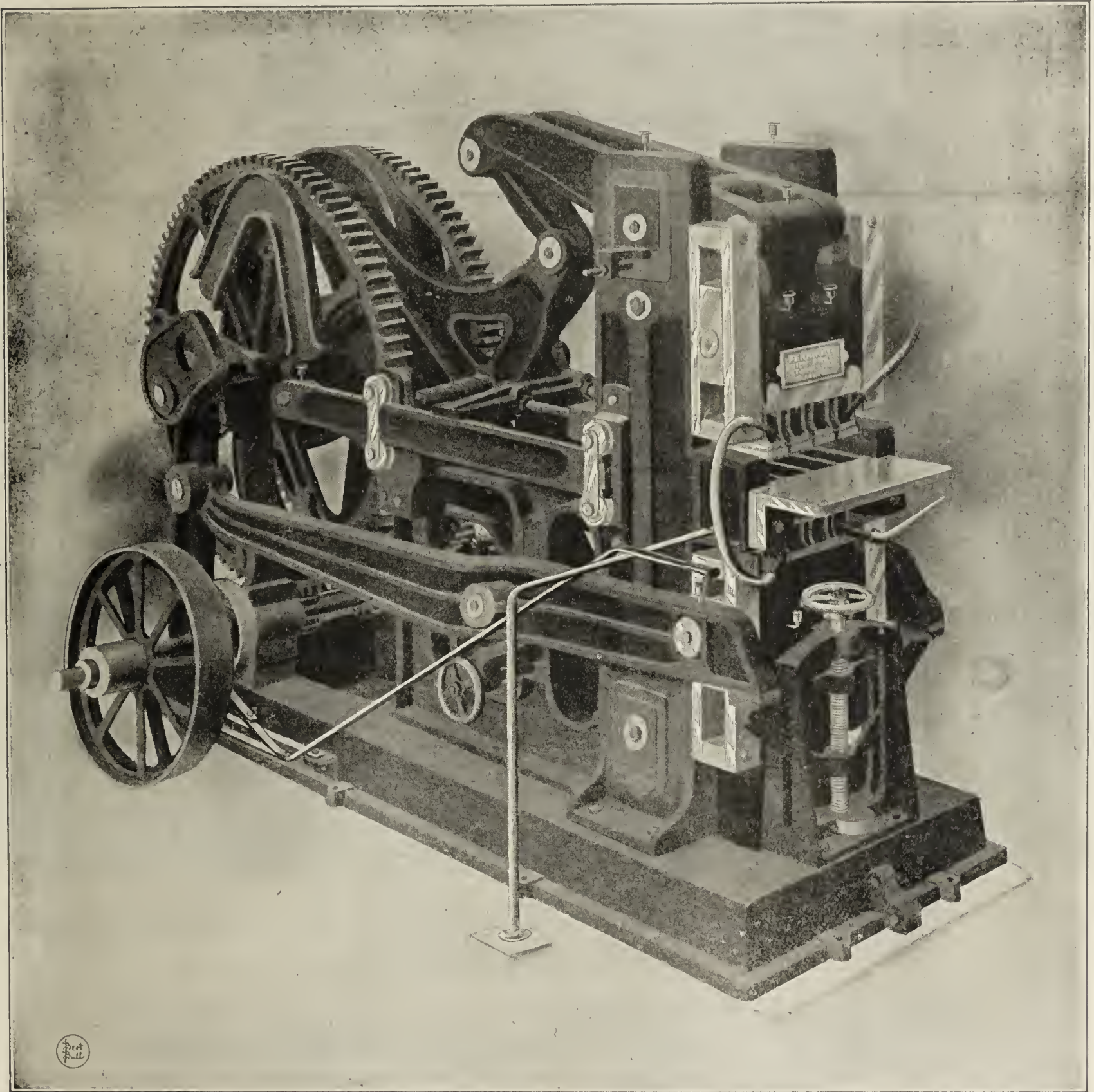
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SAINT LOUIS

OUR MODEL FOR 1907 PLACES THE ANDRUS
AS ONE OF THE MOST UP-TO-DATE
PRESSES IN THE WORLD.

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.



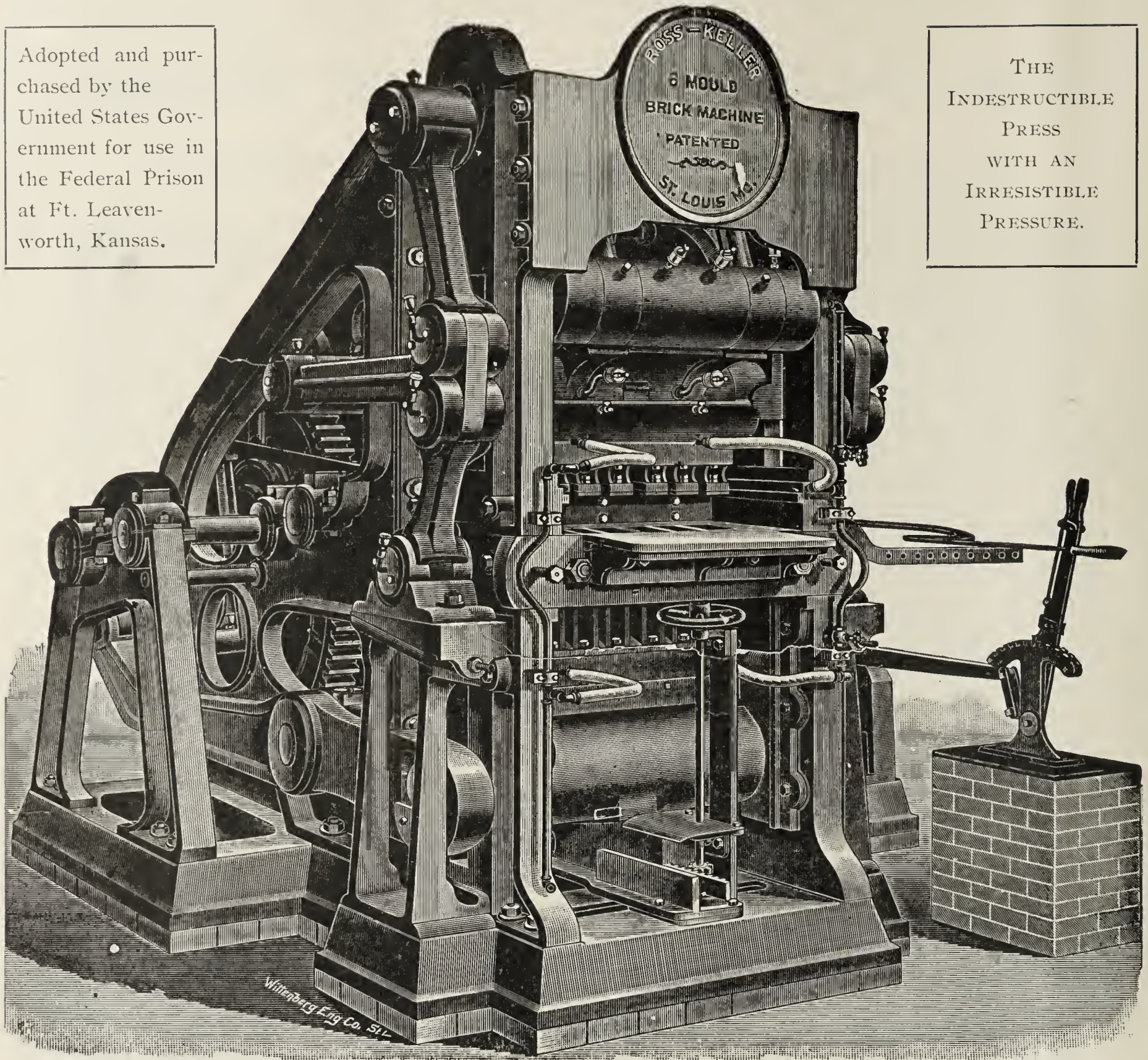
If you want an up-to-date Dry Press, one that will give you
RESULTS—See this machine in action.

The Fernholtz Brick Machinery Co.,

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Adopted and purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

THE
INDESTRUCTIBLE
PRESS
WITH AN
IRRESISTIBLE
PRESSURE.



WE BUILD

**Sand-Lime Brick Plants,
Shale and Clay Brick Plants,**

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Ross-Keller Triple Pressure Brick Press

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

Ross-Keller Triple Pressure Brick Machine Co.,

Offices: Fullerton Building,

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DRY PRESS BRICK MACHINES

Reliance Dry Press
The Machine of the Future.

OLD STYLE TOGGLE MOVEMENTS SUPER-
SEDED BY NEW AND BETTER
PRINCIPLES.

THE ONLY MACHINE not using the Toggle Movement.

THE ONLY MACHINE applying Pressure from the Bottom.

THE ONLY MACHINE making a Uniformly Pressed Brick.

Only Machine Making Brick Without Granulated Centers.

Every Brick is a Face Brick. 4 Mold Press 20,000 per day. 6 Mold Press 30,000 per day. Adjustment permits any pressure desired (a feature peculiar to the **Reliance**). Cheapest because having fewest parts. (Also cheapest to keep in repair.)

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S T R O N G
E F F I C I E N T

We Design and Equip Dry Press Brick Plants Complete.

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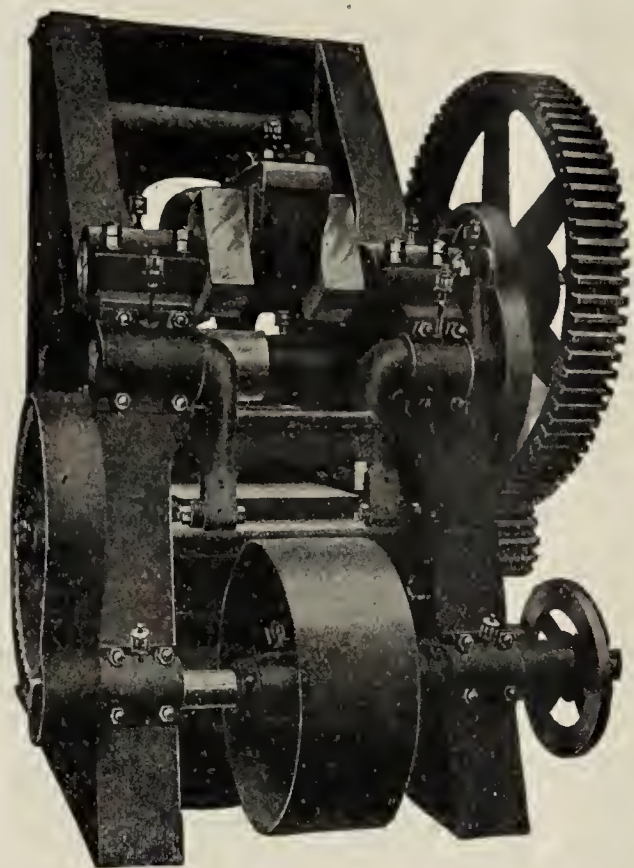
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New Model Berg Brick Press



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Lead
and
One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

CUT GEARING

of either iron or steel, if desired.

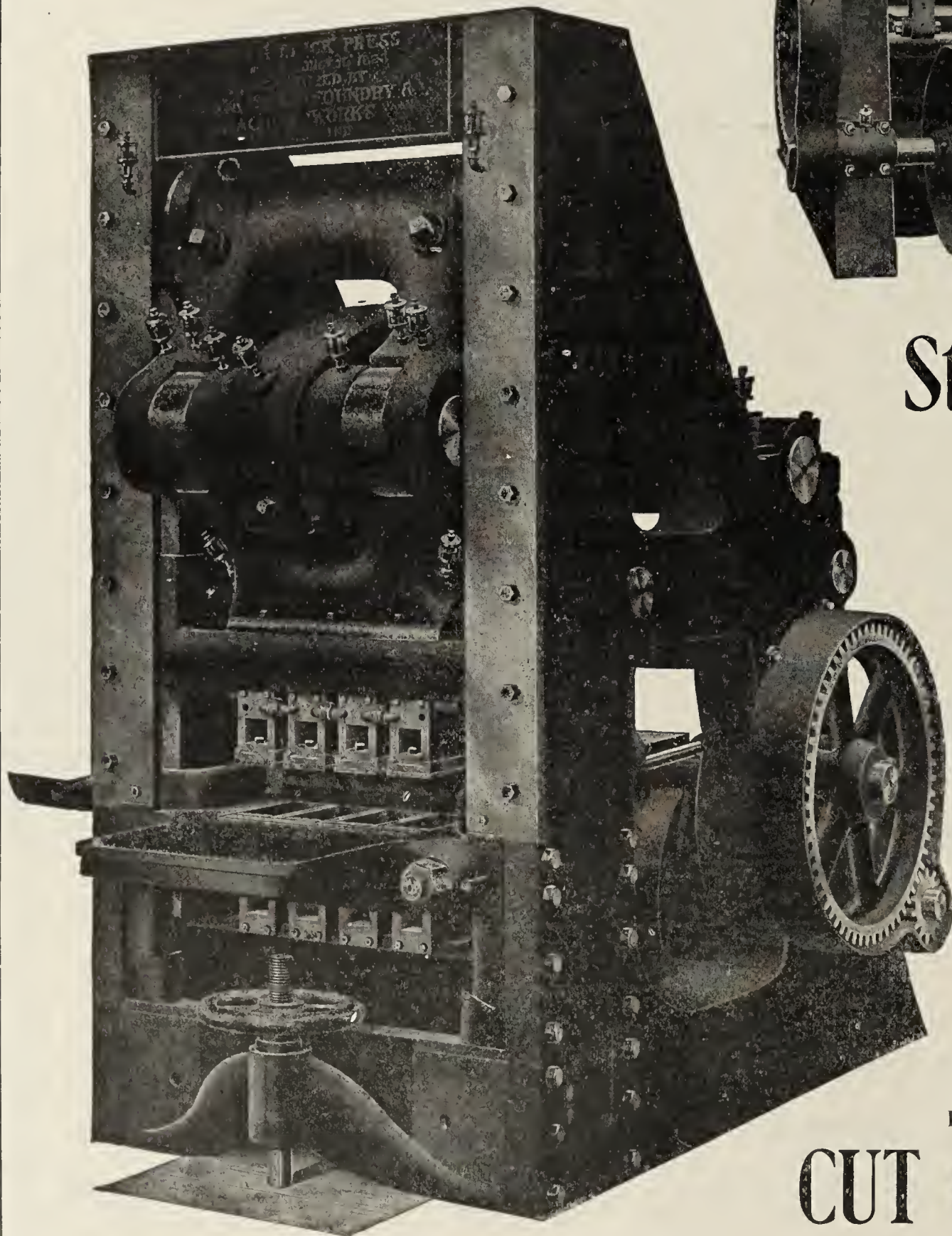
Manufactured by

Anderson Foundry & Machine Works,
ANDERSON, IND.

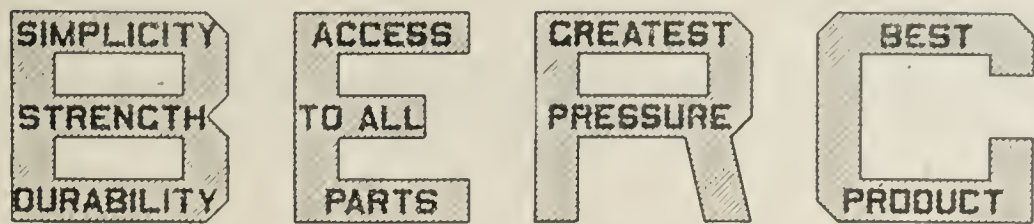
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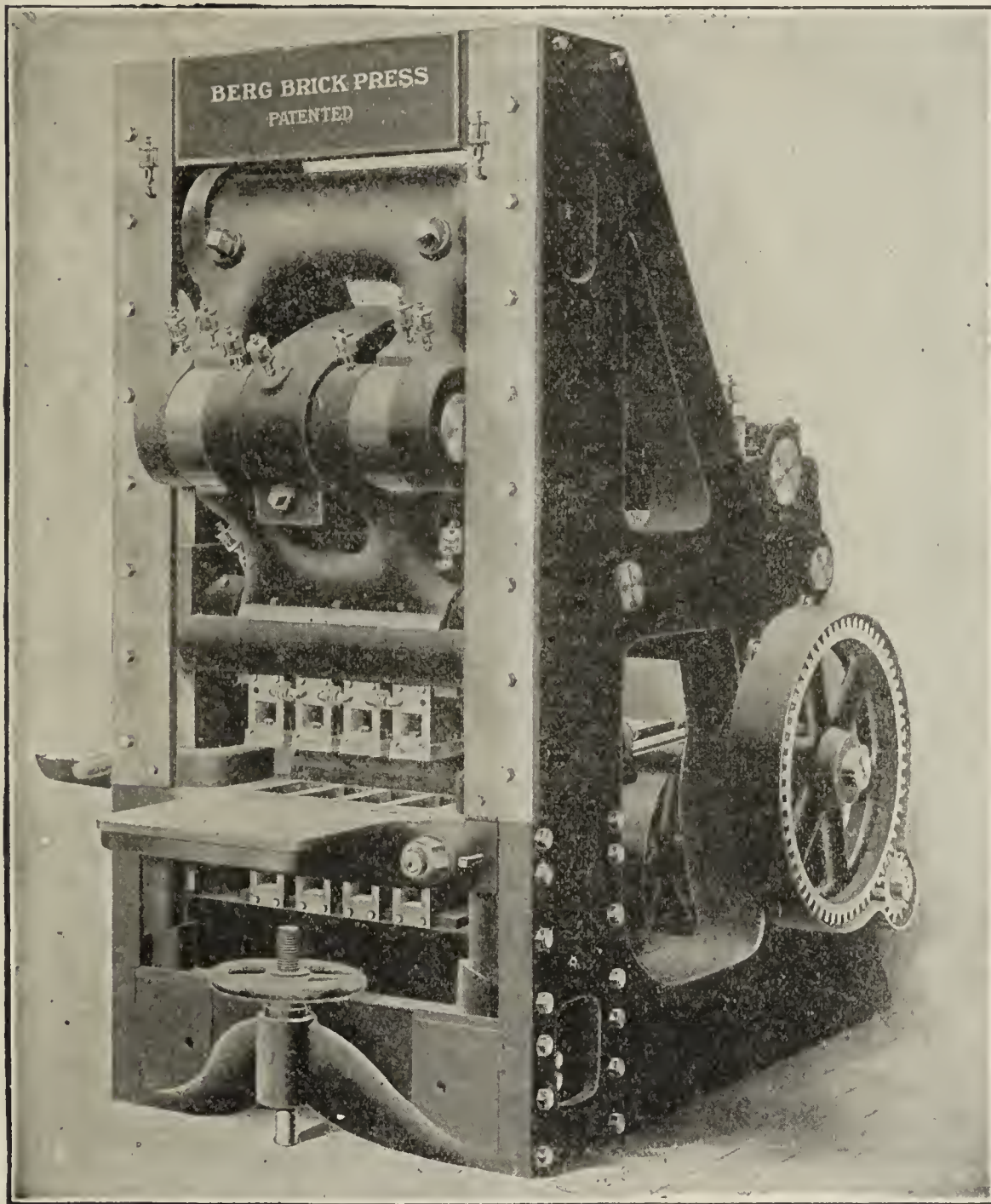
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No. 77 Jackson Blvd.



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The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

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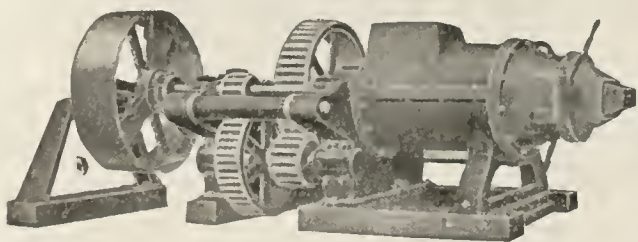
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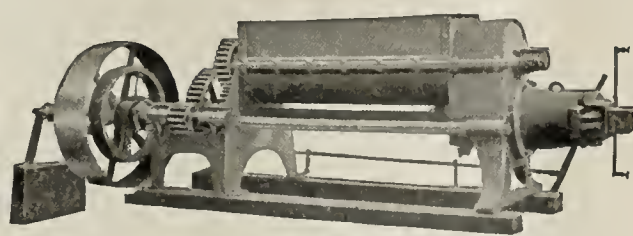
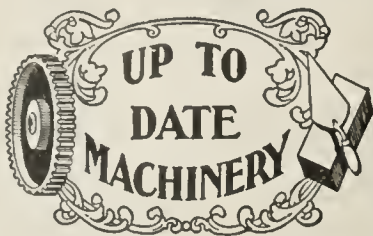
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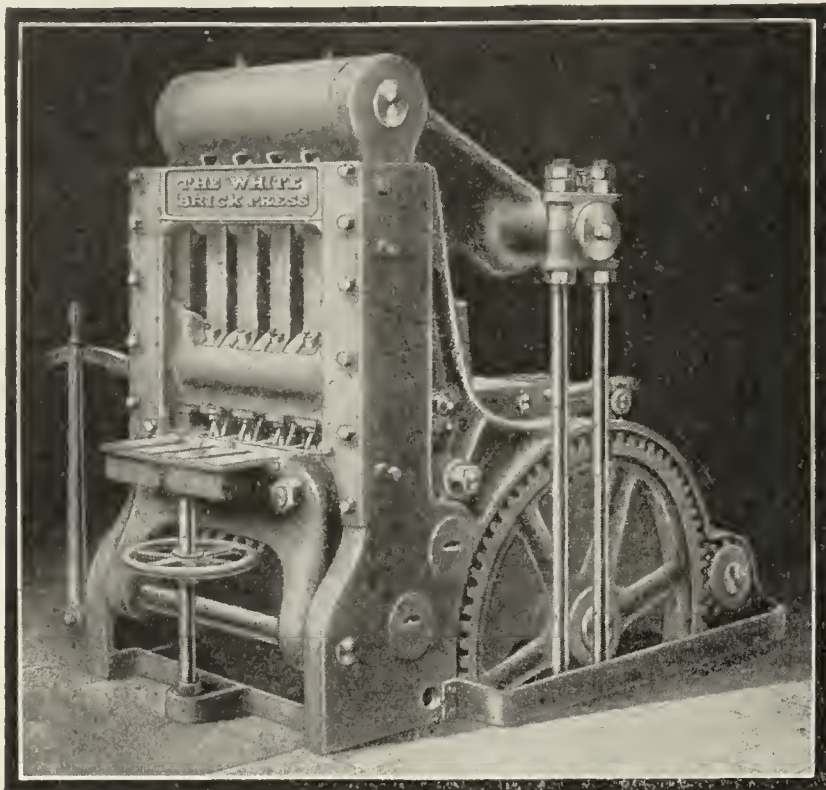
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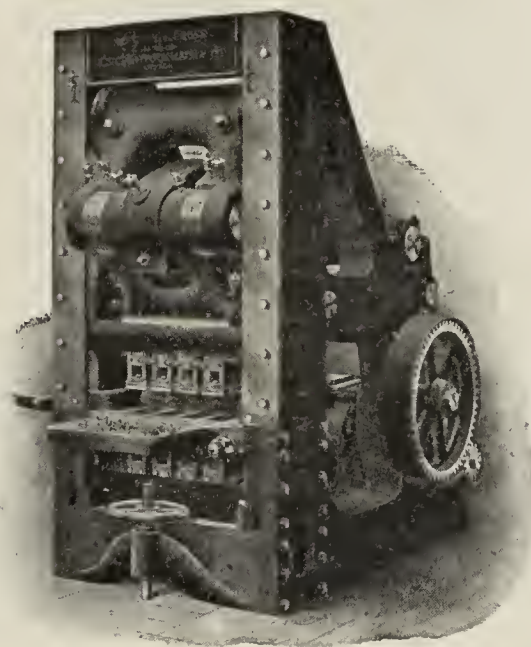
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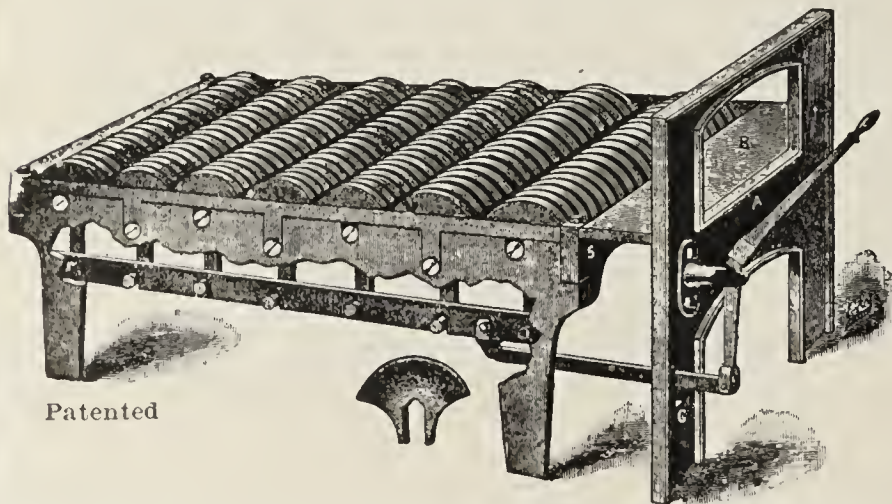


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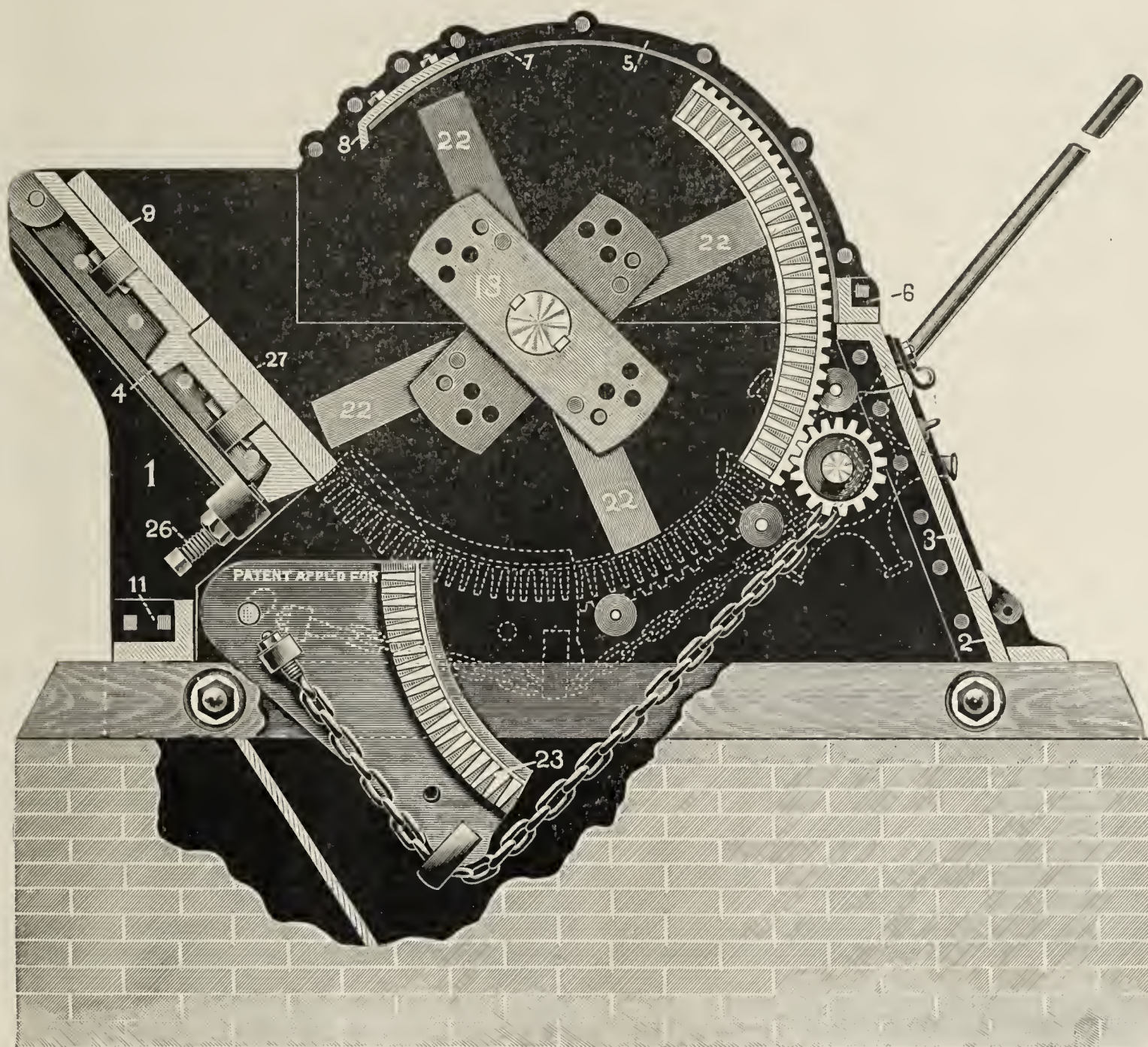
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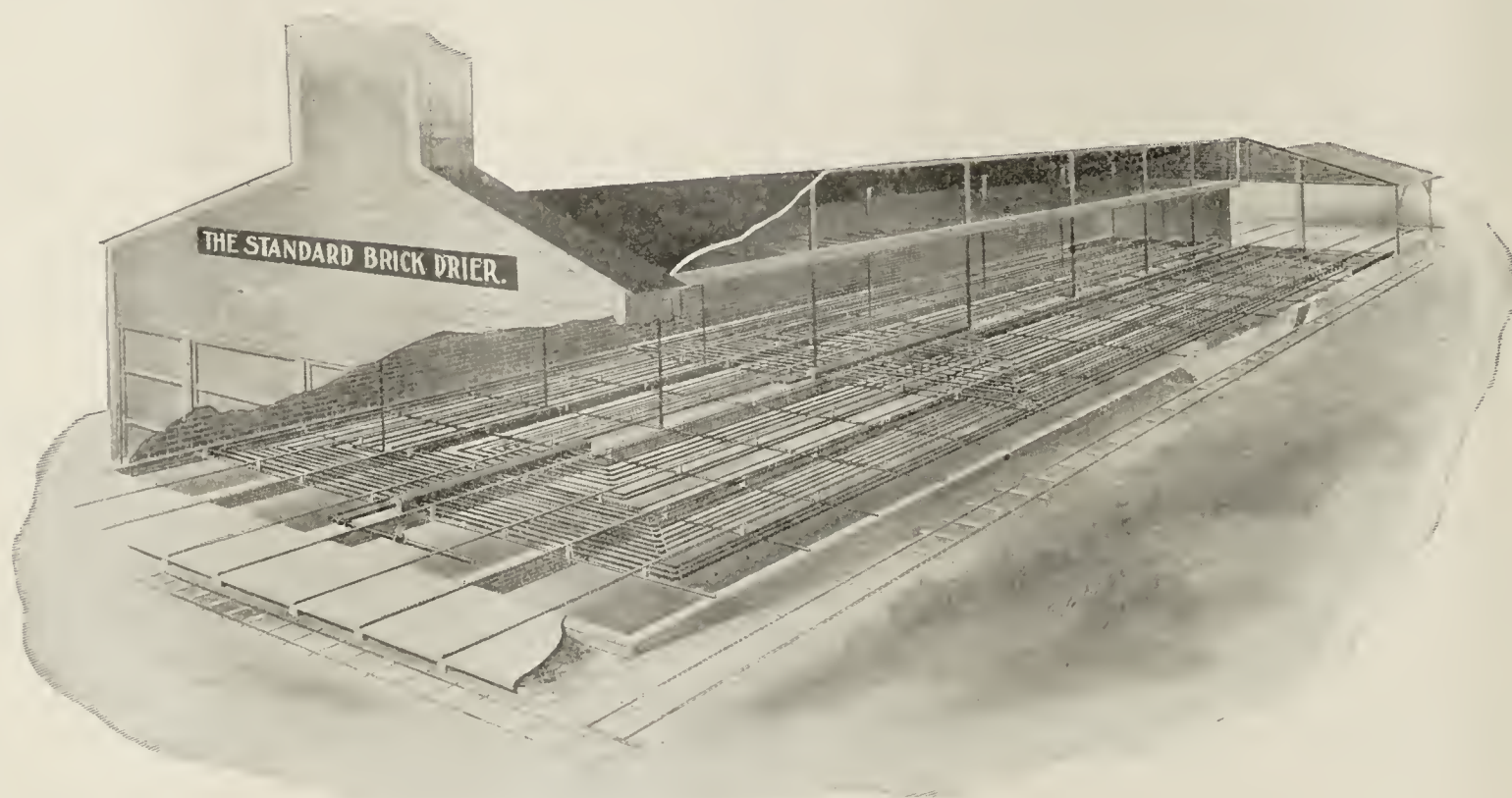
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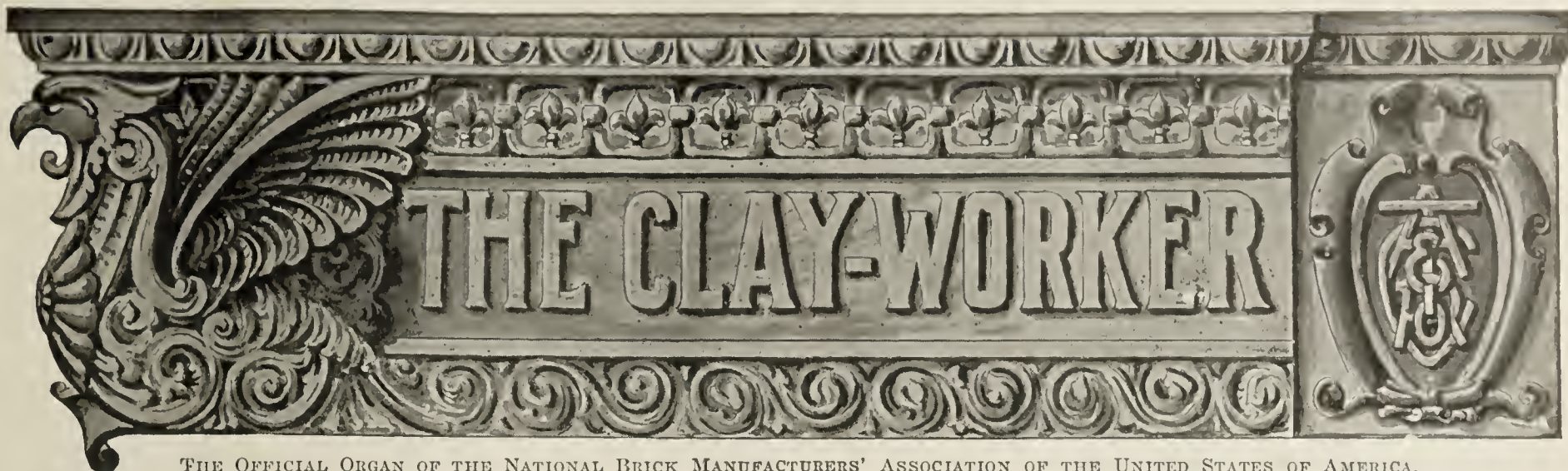
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THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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INDIANAPOLIS, IND., MARCH, 1907.

No. 3.

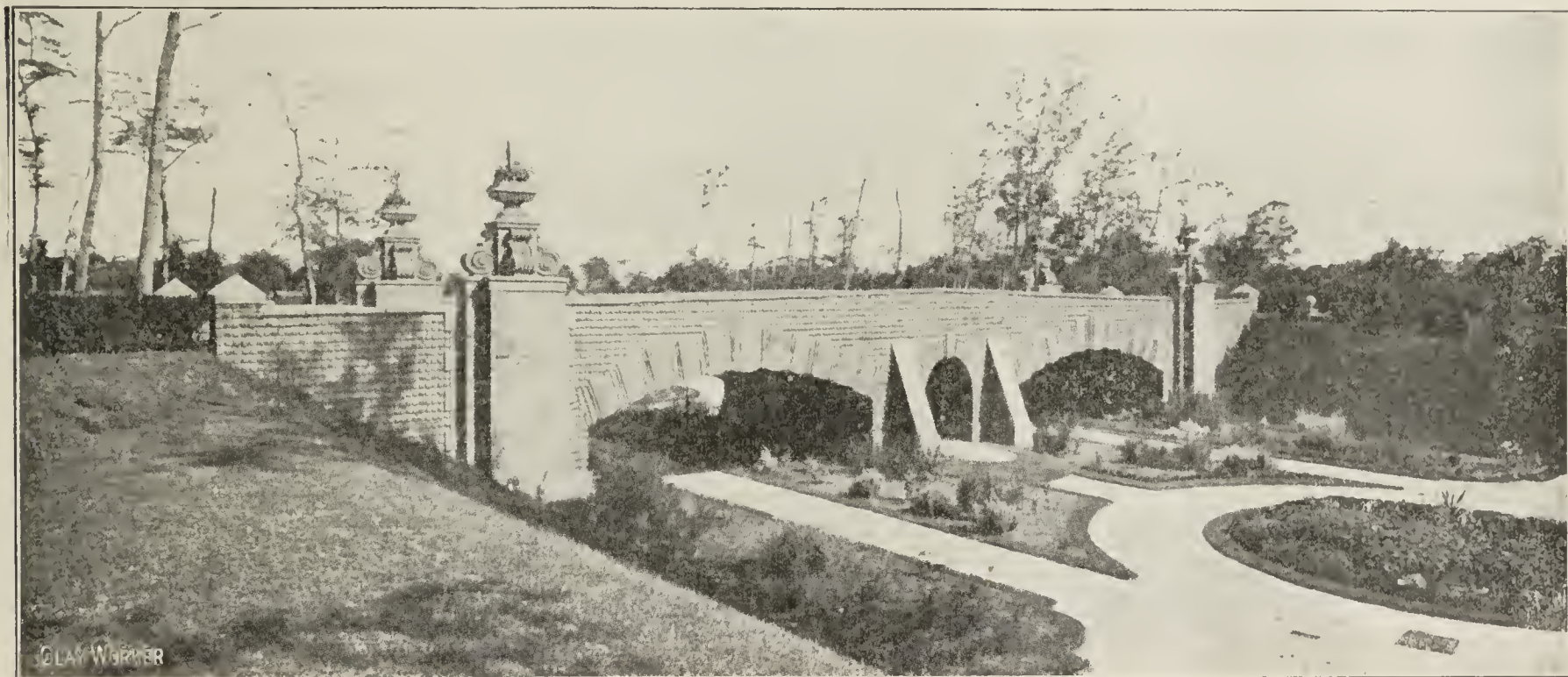
ARTISTIC BRICKWORK.

By J. M. White, Champaign, Ill., Dean of the College of Engineering, University of Illinois.

A paper read before the Convention of the National Brick Manufacturers' Association, held at St. Louis, Mo., February 6, 1907.

I HAVE selected the above subject because I feel that you must all be interested in promoting a truer appreciation of the artistic possibilities of brick masonry. You have made good brick, the best that can be found in any market and in ample variety of size and color; your next

We can improve conditions only by educating people all along the line. The architect, who should be the most important factor in raising the standard of public tastes, receives plenty of encouragement from the manufacturers and artists, who create, but scant co-operation from the mechanics who must execute the work. It is for just this reason that the aesthetic standard of modern brickwork is so much lower in the United States than in England, France and Germany. Many architects have given up in despair and accepted work which stands the test of the line and plumb and is "free from solecisms and mistakes, but in which all the virtues are negative and which is devoid of character and life."



Brick Bridge, O'Day Estate, Deal Beach, N. J. G. K. Thompson, Architect.

duty is to see that people are taught how to use them to the best advantage. Many of our architects, almost the entire public, the majority of the masons and even the brick manufacturers, need to be educated on this point. The public does not realize at how slight an expense a monotonous brick wall might, by a variation in texture or color of the material, have been made interesting if not really attractive.

Brick is regarded as a cheap material and it therefore receives a cheap treatment. Its strength, durability and fire-proof qualities are recognized, but attempts at artistic effects, except with pressed brick, are looked upon as questionable experiments.

The receptivity of the mechanic is a force which has much to do with the general development. The mason's sole ambition is to cultivate dexterity, and it is usually done at a sacrifice of those effects which, though largely accidental, are expressive of his artistic sense in selecting and grouping the individual bricks.

I have often wished that the Masons' Union, in order to stimulate pride in artistic as well as mechanical excellence, would establish an Honorary Order of Craftsmen, a sort of first degree, to which no one would be admitted who did not appreciate the artistic side of his work. Among the older civilizations of the world I presume that a large majority of

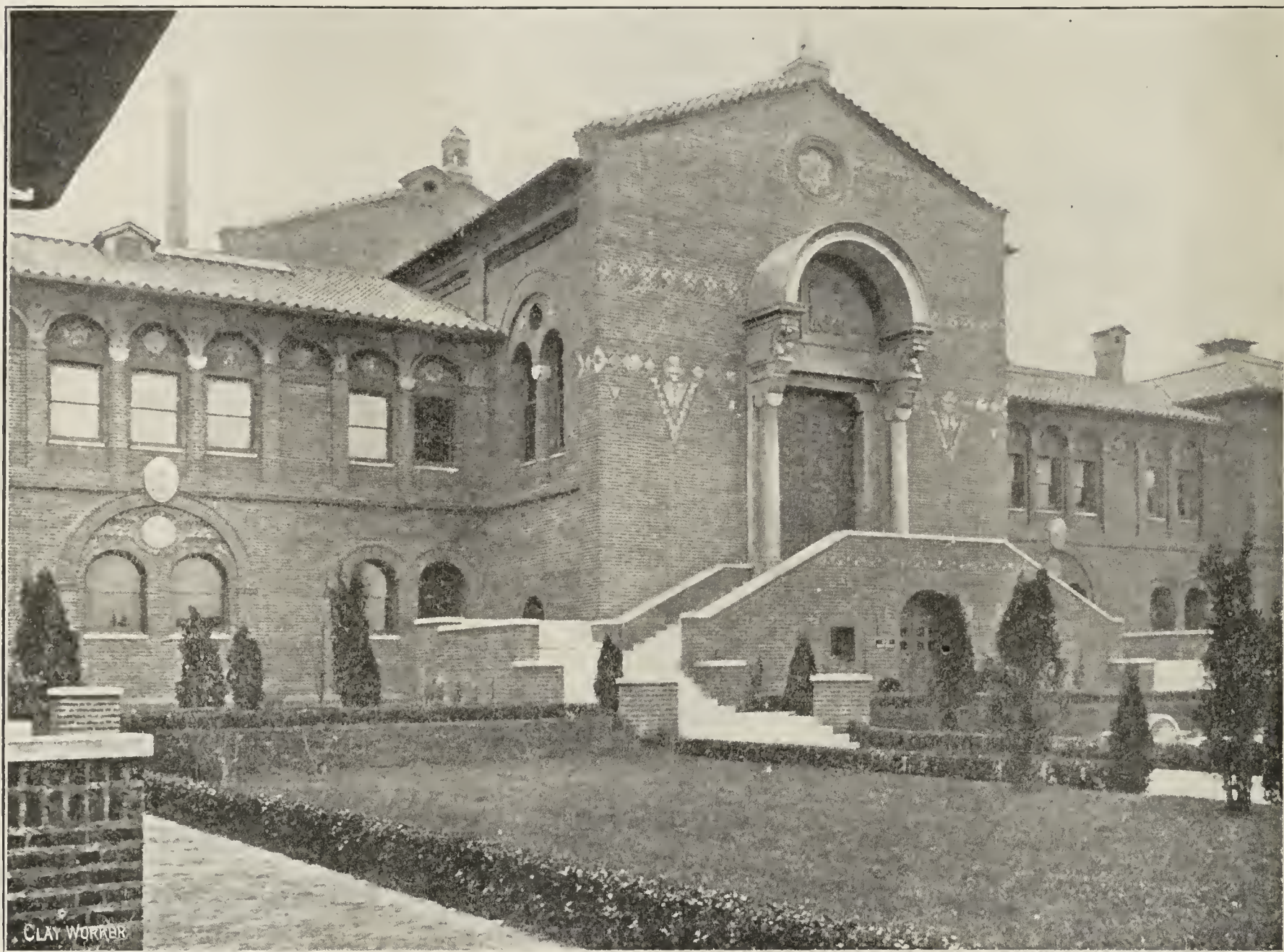
the mechanics would be included in such a class. "Education, like the mass of our age's inventions, is, after all, only a tool; everything depends upon the workman who uses it."

Artistic effects can not be obtained by rule, and though we hear it said that designs must always be related to the material in which they are executed, that we must always bear in mind the capacity for appropriate expression of the material with which we are working, that we must use it in a proper manner and keep it in its natural sphere, bearing constantly in mind its possibilities and its limitations, we do not feel much wiser as to our own method of procedure, even though we recognize that there is truth in the statements.

It is true that stone is better suited than brick for monumental buildings built upon large lines and employing

charming. The first eight are of Mohammedan buildings in Persia, and are taken from "Denkmaler Persischer Baukunst" by Sarre, which contains the most interesting material available illustrating the polychromatic treatment of clay products. The next fourteen are Italian buildings of the early Renaissance from Bologna, Piacenza, Cremona, Pavia and Milan.

Following these I will show nine illustrations from "Brique et Terre Cuite," by Chabat, to illustrate the most interesting historic details which may readily be adapted to modern work, and lastly some views of good modern brickwork. Some of these effects have been decided upon only after building panels about six feet square and studying the effects obtained by varying the bond, by using various col-



Court Yard Museum of Science and Art, University of Pennsylvania, Philadelphia, Pa.
Cope & Stewardson, Frank Miles Day & Bro., Wilson Eyre, Jr., Associated Architects.

heavy masses of material. The natural use of wood is for work that employs the stick straight, though more or less carved and ornamental. Metal is susceptible of twisting and bending and hence is the natural material to employ where such effects are desired. Glass in its finished state should express the lightness of a bubble and is more appropriate when blown into light feathery shapes than in the form of cut glass.

It is easy to enumerate some things we should not do, but difficult to say where to draw the line. Some excellent architects will not use either pattern brickwork or moulded brick. Personally, I admire both in their proper places. I will not attempt to explain my opinion in words alone, but will show a series of views which, though interesting, are inadequate because lacking in the color effects which are so

ored mortars, by varying the width of the vertical and horizontal joints, and also by studying the effect of the weather upon the texture of the mortar through a period of three or four months. Good results are not accidental.

A few of the illustrations and descriptions follow:

The University of Pennsylvania Museum.

The work on this building is of Sayre & Fisher bricks of the ordinary sort with arch leaders. The shade of the bricks was very carefully selected and the arch leaders are not very black. The bed joints are about $1\frac{1}{2}$ inches in thickness and are laid with mortar containing a good many pebbles so as to secure a rough texture. The mortar has a slightly yellowish tinge. In spite of the fact that a full dose of cement could not be used in this face mortar, owing to its

producing too blue-gray a color, the mortar has stood remarkably well and shows no sign of disintegration.

The bond used is—from its use in that building—known locally as the "Museum" bond. It consists of two stretchers laid as close together as possible with the joint between of mortar the same color as the bricks. This produces the effect of a stretcher twice the length of the ordinary brick. The vertical joints between such couples are made of the general face mortar and are about one inch in thickness. Over each blind joint appears a header.

Mr. Wilson Eyre, Mr. John Stewardson, Mr. Walter Cope, and Mr. Frank Miles Day, all of Philadelphia, were associated as architects of the building, and their combined thought

The Columbia University Chapel—Howells & Stokes, Architects.

(Extracts from December, 1906, Brickbuilder.)

The dome of the Columbia University Chapel has a diameter of 48 feet and a height of 91 feet. This chapel would appear to be one of the very earliest completed churches in the United States (if not the first) which is vaulted throughout the entire construction and in which a truly constructive central dome and its supporting arches are designed to be, and actually are, self-sustaining.

From another but closely related point of view, this same chapel marks a departure in church architecture in America, in the sense that the entire interior color scheme and



Sheldon Court Dormitory (Court Side), Ithaca, N. Y. Wilkinson & Magonigle, New York, Architects.

has given us certainly the most distinctive and probably the finest example of brickwork in America.

Sheldon Court Dormitory, Cornell University, Ithaca—Wilkinson & Magonigle, Architects.

The brick used is a common pinkish red brick made in New Jersey. The mortar is a light gray, consisting of lime, dark blue local sand and Portland cement, uncolored. The joints are about half an inch thick and are cut off flush with the face of the brick, but are not struck. Some variety is gotten in the work by occasionally setting a vertical header back slightly and covering the whole end of the brick with mortar. The dentil course at the top of the first story shows a background of plaster of the ordinary mortar. The top story has plaster panels with Grueby plaques in blue, green and white terra cotta.

decorative treatment are obtained solely and wholly in the constructive materials. Here again a note has been struck which will meet the sympathetic approval of every true artist in the United States.

The architects have relied for the color effect of their walls on the overburned brick of their actual construction. To the masons themselves was left the task of obtaining the broken effect in color which is always superior to a uniform shade. They were encouraged to select in a partly haphazard and partly calculated method such a variety of natural tones of the brick as would obtain the desirable results of broken color. In the rose-colored tiles of the dome and of the pendentives and vaultings the color effects obtained by the predetermined irregular association of the lighter and darker tints of rose are beautiful. The effect must be seen

to be appreciated. It is much assisted by the employment of a deep purple color in the pointing, and this color in the cement was the result of careful experiment.

Terra cotta relief ornament has been used in the interior for the framing of the main door, for the base molding, and in very rich and beautiful detail, which is reminiscent of the Della Robbia designs, for the archivolts of the great arches supporting the dome. Here again the ornamental details are not applied or attached, but are constructive ornament, not only in the sense that they emphasize constructive lines, but in the sense that they are physically portions of the constructive material of the arches.

TECHNICAL EDUCATION IN ITS RELATION TO THE CLAY INDUSTRIES. *

BY PROF. EDWARD ORTON, COLUMBUS, OHIO.



IN THE INVITATION of your Secretary, seconded by the Honorable Mr. Pyne, Minister of Education, I have come from Ohio to speak to you on a topic of Technical Education. From the fact that I have offered to these gentlemen to speak on other topics, and that they selected this one, I infer that this subject is now under discussion among you and that if you have not already decided that you want a clayworkers' school in Canada, you are at least interested in discussing such a project.

Before you can reach any intelligent opinion as to whether you want or need a clayworkers' school in Canada, you must first consider what the present situation of the clay industries is, what their needs are, and lastly whether the establishment of a school would be likely to meet these needs, in whole or part. I assume that Canadian clayworkers are very much like those to the south of the line, and that the needs of one class are not very different from the needs of the other. Of course, sterner climatic conditions, less dense population, and the requirement of a more varied output from any single plant, prevents the specialization in manufacture which we practice in some parts of the United States; all these will modify the situation somewhat, and rather in the direction of making the requirements of success more difficult here than in your southern neighbor.

As I see it, clay manufacture is one of the largest branches of the great mineral industry, coordinate with and of almost equal importance with metallurgy, the manufacture of metals from their ores, and like it, is really a phase of chemical engineering. By chemical engineering is meant the conduct of processes on a scale which require the use of engineering methods and appliances, but which are fundamentally chemical processes after all. Probably many of you have not been accustomed to think of your work as either chemical or engineering, but I am sure that a little consideration will show you that it is both, and nothing else.

For instance, let us see what ordinary and universal processes of clay manufacture really are when viewed from this standpoint.

To begin with, there is the occurrence of the raw materials of clay manufacture to be considered. We can not erect and operate clay plants without locating the clays and other minerals, first; at least, we ought not to try unless we have more money than we need. However, every little while some unfortunate investor calls upon me with his tale of woe which, summarized, means that he and his associates have gone into the clay business without taking pains to be sure that they had a suitable deposit of clays to permanently support an in-

dustry, and now find themselves with an idle and useless plant on hand.

What kind of knowledge is called in play in locating, inspecting and testing clay beds? First, Mineralogy, which tells of the many minerals which the clayworker must use to get his effects, or get rid of to avoid future troubles. Clays themselves are for the most part complex rocks, composed of other rocks powdered and mixed together until all are indistinguishable. One need not be a highly trained mineralogist to be a good clayworker, but he certainly ought to know the composition, chemical and physical properties and heat behavior of twenty or thirty of the commoner minerals which make up the good and the bad portions of clays, the world over.

Second. Geology, which tells us how clays and other rocks occur, how they lie with regard to each other, and in what formations and under what surroundings to search for them. Think of the enormous loss of energy and time which annually occurs from ignorance of the fundamentals of this subject. For instance, in Ohio, although we have the greatest white ware industries in the United States, we have not a pound of white burning clay of our own. Every bit of our



Prof. Edward Orton.

white ware materials must be imported from other states, some of it even from abroad. And in Georgia, Alabama, Virginia, Pennsylvania, Missouri and elsewhere, are localities which have the white clays, the quartz, the feldspar and the coal in close proximity. Think of the lost energy and the gigantic waste involved in this useless transportation of heavy cheap crude materials instead of light and costly products. One does not need to be much of a geologist or to know more than its merest fundamentals to know where to search and, better still, how to avail himself of the knowledge and researches of others, in looking for a given material. No one today expects to do everything for himself. We have grown too complex in our civilization for that; the man succeeds in this day who best knows how to avail himself of what has already been done, and who starts in the light of other people's useless failures, and not in the darkness where they started.

Next, let us consider the preparation of clays for manufacture, and the manufacture of the prepared body into various wares. What kind of forces are we dealing with here?

* A paper read before the Convention of the Canadian Clay Product Manufacturers' Association, Toronto, Ont., December 13, 1906.

Two, chiefly. First, Chemistry, and second, Mechanical Engineering.

Chemistry is the fundamental consideration; i. e., it controls the success or non-success of the operation. For instance, if we have a bed of good shale, with one calcareous layer, it is chemistry which warns us of its effect and advises us to throw it out. Or, if it is too intimately mixed with the rest and can not be rejected, it is chemistry which tells us to pulverize it so finely that its effect will be evenly distributed throughout the product and not appear as unsightly blemishes wherever a grain occurs. Again, if we have a clay with a little pyrites in it, and we want to make a face brick, it is chemistry which tells us not to weather it, but to work it direct from the pit to the machinery if we want to avoid the dreaded scum. Again, if we want to make stoneware pottery from the same clay, it is chemistry which tells us to weather it and tells us how to do so to purify it with the greatest speed.

If we wish to make a refractory material, it is chemistry which defines the field of suitability—it is chemistry which tells what grog may be added, and what must be rejected. It is chemistry which tells us why a sandy bond clay must be avoided in one case and sought in the next. It is chemistry which tells us what flux to use where we want to make a stony porcelain for electric wares and what to use when we want to make a translucent porcelain for dish wares. And so instances by the hundred might be adduced which will demonstrate that in the field of clay body compounding, whether it be the simple task of making an ordinary brick body from a single naturally occurring clay or the complex one of compounding a porcelain body from a dozen widely scattered ingredients, chemistry is the final and fundamental consideration. And yet, even when all our chemical work is done, and our proportions are ever so cleverly adjusted, if our mechanical preparation is faulty, we have not reached our goal. Inefficient washing, or pulverizing, or tempering, or making all mean bad ware, no matter if the body analyses just right under the chemist's balance.

In the drying of clay wares, we have chiefly another field of science to determine our course. Here physics, rather than chemistry, or at least the physical aspect of chemistry is in control. On the dry plateaus of Mexico, where every day is a sunny one, with a dry air and a tropical sun, clay drying can be kept almost wholly a matter of common labor, and drawing very little from the field of technology. But in the cool, humid climate of Canada, where frost interferes with outside drying the larger part of the year, and frequent rains break into the short months of the summer, drying must become almost wholly an artificial process. The fundamental considerations here are the generation of heat by combustion of fuel, the use of this heat in vaporization of water, the relative volumes and weight of gases under all sorts of conditions, the movement of bodies of gases by stacks and fans, the amount of air to do a given amount of drying work, and the allowances to be made for the friction of walls, the turnings of flues, and the surfaces of wares to be dried. But beyond and on top of all this comes the recognition of the peculiarities of the clay itself—the physical factors of its fineness of grain, its plasticity, its shrinkage, its hygroscopic qualities, its surface phenomena, capillarity, viscosity, absorption, and the factors of safety which all these considerations entail in the design and operation of a dryer.

When we come to the burning of our dried ware, we are once again in the field of chemistry. The generation of heat from fuel, the preparation of the clay for hardening, by the roasting out of its volatile constituents, the recognition of the minerals which require slow oxidation, the adjustment of the air supply to help or hinder this process where the carbon contents vary in amount or kind, the final vitrification, the theory of solid solutions by which alone the composition of vitrified and glassy silicates becomes intelligible, the use of fractional molecular formulae to picture to ourselves what is taking place in these complex mixtures which are forming wherever clays are burnt, the recognition of the conditions which lead to the slow gradual hardening of safe clays and the quick sudden fusion of tricky ones, the function of temperature versus time, and the means of controlling temperatures, all these belong chiefly in the field of the chemist.

But in the building of kilns to carry out these processes, we draw once more on the engineer and the physicist. How big shall our kiln be? How shall the draft be taken, up, down, horizontally or reversing? How tall a stack shall we make? How many fire places for a kiln of given diameter? How much fuel for a given weight of ware? How thick walls? Shall we use periodic or compound or continuous kilns? Does the type of the ware and the type of the kiln show any necessary relationship? Is it always most economical to use the kiln which shows the highest fuel economy? All these, and uncounted other questions of like nature, arise to connect this crucial period of clay manufacture indissolubly with the field of the physicist as well as the chemist.

When at last we reach the decoration and beautifying of our clay products, I think I can hear some say, "Here, at least, we can leave the domain of science and enter the field of art, where the imagination, the recognition of symmetry of line, the beauty of color and the charm of historical symbolism replaces the sordid balance of the chemist and the rule and square of the engineer." But, softly! Who gives to our artistic friend the delicate translucent porcelain from which he fashions so clean and pure an outline? The chemist. Who is responsible if it warps and twists out of shape in firing, destroying the beauty but lately imparted to it? The chemist. Who devises the colors with which it is adorned? Who decides what colors may be blended, what type of glaze to employ, over or under the painting? The chemist. In short, who can be most easily supplied—the artist who draws the picture or the chemist who makes the work of the artist possible? Look at the relative compensation of the two and you have some sort of a criterion as to how the world views this question. The master-potter, whether he works in terra cotta or pottery of tile, is invariably the commanding feature, even in art establishments. In the famous Rookwood art pottery, of Cincinnati, they could better afford to lose a dozen of their best artists at once than to lose Stanley Burt, their chemist and superintendent, who coordinates the work of the body-maker, the modeler, the fireman, the glaze maker, and the artist, and whose scientific insight smooths the obstacles and adjusts the conflicts which every department would precipitate if left to its own devices.

In this hasty review of some of the controlling factors of the clay industry, we have seen that the clayworker must deal with chemical, physical and mechanical considerations chiefly; that he ought to be a little of a geologist, a mineralogist, a draftsman, a surveyor and an engineer if he is to handle with wisdom and precision the problems which are a daily part of his business. In fact, it seems as if we have a tremendous and prosperous industry, directly and necessarily depending on science and engineering, yet not recognizing this connection in any formal way. We have been blundering along, making money it is true, because the public must have our products—but only making money because we can not suffer from foreign competition. Clay products, except the finer, are too cheap to transport long distances, and hence, the clayworkers of any country are not going to be displaced from their trade by foreign competition. But they may be doing poor work, making poor products, getting small returns from their expenditures—in short, running their business at a low efficiency.

My argument is, then, that the clay industry is a chemical engineering industry, and that it will only reach its proper development and its true place among the professions when it is treated as a profession rather than a trade.

The function of the clayworkers' school is now fairly before us. If the status of the clay manufacturers is to be improved and put where it belongs, it can only be done by a bringing into the industry men who more fully and clearly understand these sciences and the way in which these sciences control clayworking operations. And the only way to get such men is to train them for their future work. They are not to be had in any considerable number, either in the industry or out of it. Hence, to increase the supply we must make it for ourselves. Practical men have learned much about clays and clayworking, but they have so far chiefly learned it in spite of obstacles, and without the aid of scientific training. The function of the school is to show the "why" as well as the "how" of clay manufacture. Any one can learn to do it then in a given way, and so long as conditions are

made the same, can get fairly good results. But the untrained clayworker can not with safety apply the experience gained in one place in another, because he can not allow for the effect of variations in his conditions.

The question may be asked, "Why do we not bring into the clay industries young engineers and young chemists who have studied in the existing schools of technology? They all study the same list of sciences given above. If a knowledge of these sciences is all that is needed, why not bring them in to help the clay industry?"

This is a pertinent question. Without doubt such a step could be taken with great benefit. If there were no better way, this plan should be carried out. But the present connection between clayworking and chemistry and engineering as these subjects are usually taught, is not very clearly discernible. Scientists do not deny the connection, but they have not the necessary familiarity with the industry to enable them to draw illustrations from it or to attempt to explain its problems. Comparatively few men have originality and power to think deeply into new fields. Hence, a chemist must, as a rule, be helped in applying his chemistry to any new industry, whether it be mining or metallurgy or weaving or dying or clayworking. Especially is this true in the beginning of each young chemist's work. He applies chemical reason with confidence to industrial work, only when he has been shown their very close and vital relation.

There is no question, then, but that training in what the clay industries have done and are doing is just as necessary to the success of a clayworkers' school as special training in mining is necessary in a mining school. There is, however, some diversity of ideas among clayworkers as to what kind of a school is needed. In brief, there are three types in existence—the trade school, the art school and the technical school. Each has its advantages and its limitations.

The Trade School. In Lauban, in Germany and Svedala, in Sweden, they have the best advantage of high grade trade schools for brickmakers. They operate but a limited part of the year—the winter, when the industry is most inactive. They are supported partly by the municipality, partly by the government bureau of education, partly by the fees of the pupils. They use a considerable part of the time of the pupils in actual brickmaking operations. At Svedala, at least, they make and sell bricks, having a skeleton force of regular hands to run the plant, which force is filled in with the scholars from day to day, each man working at different positions in rotation. They study part of each day and work a part. The brick plant comprises as many kinds of machines and as many kinds of kilns as can conveniently be used, so that the men may practice on all methods. The period of school is short—a few months in the winter for one year, or at most two seasons.

The output of the trade school is designed to be good mechanics and good artisans. Its maximum product would scarcely exceed the foreman grade and the training is not designed to make superintendents and masters.

The Art School. There are a number of schools, both in Germany and other foreign countries, as well as in America, where a high grade training is given in pottery work, especially the modelling, mold making, drawing, painting, and designing, but also including instruction in the glazing, firing and a limited amount of theoretical work in mathematics, chemistry and physics. The typical school of this sort is at Bunzlau, Germany, and is under the able direction of Mr. Pukall, a most accomplished ceramic chemist.

The product of this class of schools at their best is the superintendent of a pottery plant, but they are much more likely to land men in positions as artists or department foremen. There is no engineering training as such in their courses and, while they make highly competent men in shops and potteries, men of great personal capacity in doing things themselves, they can not in the nature of the case lead to positions of great technical and financial responsibility.

The Technical School. The technical school in clayworking treats the subject as indicated in the earlier portion of this paper, i. e., as a branch of chemical engineering. It devotes not more than 25 to 35 per cent. of its time to specifically clayworking subjects—the other 65 or 75 per cent. is devoted to a good stiff drill in sound engineering—to mathemat-

ics, physics, chemistry, drafting, surveying, designing, mechanics, geology and similar hard mental labor. Schools with such solid courses of study exist at the Ohio State University, and the University of Illinois; schools with general cultural subjects largely replacing engineering exist at the New York and New Jersey State Schools of clayworking and ceramics at Alfred, New York, and New Brunswick, New Jersey, respectively. In New England, the training given at Victoria Institute at Tunstall is also of this grade, being deficient in engineering phases. In Germany, the Technical Hoch-Schule at Coethen, is more akin to the work of the best American schools than the English school is, and gives strong, sound engineering training so far as it goes.

And here let me tender my advice—advice born of experience in this work and actuated by a strong desire to see the movement for ceramic education succeed and become more vigorous as the years go on.

My recommendation is—start your school on the highest possible plane—do not be led by any short-sighted policy or by the hope of quicker returns into establishing a school of any less grade than a thorough four-years engineering course. Furthermore, do not make the mistake of establishing your school under the auspices of any but the strongest and best equipped institutions. You have technical and engineering schools in Canada worthy of a place among the best that the world affords. In these schools you can find young men preparing for civil, mechanical and electrical engineering, for mining and metallurgy, and for architecture. Is the profession which you represent, the profession which, as the forests dwindle, is destined to supply the construction materials for the world—which even now, in its infancy, so to speak, produces a valuation surpassed only slightly by that of the utilitarian metals (exclusive of silver and gold)—is your profession to be satisfied with a less rigorous or less fundamental training than that given to the miner of iron or the smelter of lead?

And again, let me advise that you select for the director of such a school a clayworker. Do not select any one who represents the school side only—a university man whose life has been spent in the school room and library. Go out into the industry and find some man who has a good technical education—who has acquired a good sound knowledge of at least one clay industry—who is on his feet in this specialty, and who knows what clayworkers are doing and thinking and needing. Such a man will, if he have the spirit of a teacher, soon repair the gaps in his own knowledge and adjust himself to the duties of a professional chair. He is infinitely more likely to succeed than any scholar who has grown up in the atmosphere of the university. No one but a clayworker can instill the clayworker's spirit into young men.

These reasons all gather strength and conviction when one has familiarity with the results which four years of hard drilling attain with the average raw youth which we receive. And this brings me to the point, "What may we properly expect from a graduate of a four-years technical course?"

There are, perhaps, some radical, or at least some frequent misconceptions on this topic. I find employers, as a rule, have a foggy and often a very erroneous idea of what a young graduate from a technical school should be called upon to do.

Schools are for two purposes: First, to impart knowledge; second, to train the judgment. The first they can accomplish much better than the second. The mind of the student is so fully occupied with grasping the new truths that are put before him and practicing himself in their use that, in the very nature of the case, he can not progress far in the process of ripening his judgment.

The feature of responsibility, the most powerful factor in maturing the judgment, is necessarily largely absent from college exercises. The student is thus likely to emerge from his training period with much knowledge stored away in his head, but with an unformed judgment. He is not an engineer, merely because he carries the university degree. He becomes an engineer only when he unites knowledge and judgment. Practice, experience and responsibility are necessary to convert the raw young collegian into a sound and dependable engineer. The school receives its crude material as pig iron. It makes it into steel. But experience is the smith that forges this steel and tempers it to meet the duties which are awaiting it.

I sound this note of warning, that you as clayworkers may not expect the impossible from your young graduates. The boys may know a good many things that you do not—they probably will—at least they ought to. But it does not for a moment follow that their judgment can replace yours in the plant. It may after a time if the boy continues studious and works hard and develops his judgment by continuous use. But the green college graduate is not very much different, so far as his usefulness or power in your business is concerned, from any other young green-horn. The chief difference is in the quality of the raw material; one is steel now, waiting for the tempering, while the other is still pig iron, and likely to remain as such.

Beside this whole question of what the school can do for you, there is another—closely related, but still distinct. Assuming that you are by this time converted to the idea that technical education is needed by the clay industry—in your own factory for instance. Assuming that you also agree with me that you want your young clayworkers to have only the best kind of an education that can be given them and that your school must be of the most thorough type. Assuming that you have been thoroughly disillusionized as to what to expect from the product of the school when it first comes into your factory and that you now see that you must really assume in some degree the position of teacher to him instead of his being a teacher to you, and that what he becomes in your business really depends largely on the tact and skill with which you use him and develop him. Assuming that all these things are understood and agreed upon, there is still one other most important thing to consider, what you can do for the school. If you Canadian clayworkers are going to set up a successful technical school for your industry you must first realize that it is not wholly a question of what the school can do for you, but also a question of what you can do for it. If the school succeeds, it will only be by mutual co-operation of clayworkers and teachers. The school will need your constant help and support in two ways, first, in placing its graduates in places where they can at once begin to acquire the experience which alone is able to ripen their judgment and make them useful. This entails a sacrifice upon your part. You may not particularly need a young man, but it should be your pleasure to make a chance for him if you can. Even for the short three months of the summer vacation they need the chance to do work and see work done. It will not often be profitable for you to use them for a short time engagement, but that is not the question. The question is what the boy needs. You must all of you adopt as a principle, the practice of helping your ceramic engineers to get their feet on the ground by contact with actualities—whether you personally expect to realize anything from their services later or not. You must expect to “cast your bread upon the waters” and have faith that it will be richly returned to you “after many days.” If you approach this matter in the broad spirit of optimism and altruism, actuated by a sincere desire to make the clay industries of Canada the best in the world, and can sufficiently submerge for the time your own petty personal interests for the broader, bigger, higher interests of your profession as a whole, then you will find a way easily enough to take these young colts fresh from the stock farms and teach them their paces in the great speedway of life.

Besides this, there is another requirement, viz., that you show yourselves willing to aid the teachers in your technical schools in securing their data, to help them in determining the principles and laws of your business, and to show them the troubles which beset the industry. How can the teacher know these things except as you help him to see them. He can not be an expert in all branches of the clay industry. He should be in one. But the expert knowledge which he needs to give the boys has not found its way into books as yet. Physics and chemistry he can teach—there have been scholars devoting their lives to those subjects for the last two hundred years. But in clayworking there is no ancient literature to consult, except on the historic or artistic side. Scientists have, as a rule, passed it by. There are only a few who are devoting their lives to solving its problems. Further, the better knowledge of all engineering and scientific industries comes from the industries themselves. The investigator working alone in his laboratory is not able to reproduce the

conditions which surround the work in the factory or the kiln. His conclusions are unsafe until they have been carefully tested in practice.

Therefore, I assert that only by intimate and constant contact with plants working under regular trade conditions can the chemical engineer of the clay industry reach the truth about the problems of the clay industry and give safe guidance as to their control.

And here comes in to interfere and hold back, that miserable relic of barbarism—Trade Secrecy. Do we find rival firms discussing ways and means of improving the known defects of their wares? By no means. They talk about the weather, or the races or anything else. Will one brickmaker willingly let another one know what his fuel costs per thousand? Not if he can help it. Potters carry their glaze and body mixtures in their little memorandum books, securely in their inside vest pockets, apparently unconscious that each of them is making pretty much the same thing as his neighbor and that his receipt cannot fluctuate outside of rather narrow limits or the ware would be bad. And so the game goes endlessly on. Each one of us goes limping and halting through life, making poor ware and little money, because forsooth, he fears some one else may possibly profit more than he by the adoption of publicity.

If you undertake to establish a technical school, you ought, each and every one of you, to mentally obligate yourselves to give to that school, or to its professors and directors, every bit of data which you yourselves have, or which they can show you how to find out. If these conditions can be brought about—the professors working hard to give the boys the facts and to develop their reasoning power and you co-operating with the professors to prepare data—then you Canadian clayworkers will in truth soon lead the world.

Any body of men who set themselves with enthusiasm to co-operate toward such noble and high minded ends become irresistible in their progress. There has been less of this kind of co-operation in clay manufacture perhaps than in most other industries. The strides of the iron and steel industry of the United States which have astonished the world in the last quarter century, are easily explained when we consult the literature of the American Institute of Mining Engineers to see how completely they have forgotten about trade secrecy.

And now, in conclusion, let me recapitulate the points of this talk:

First. Clayworking has been shown to have a strictly scientific basis, in which engineering methods and chemical principles are of equal importance.

Second. It opens itself to the assistance of school methods and laboratory investigation as well as the other mineral industries, mining and metallurgy, which have long since received recognition in the curricula of engineering schools.

Third. It is not now using the aids of science in any large degree for the personnel of the superintendents and owners of clay plants, includes relatively few technically educated men, and practically none who have had the training of a ceramic school.

Fourth. Ceramic schools of high grade have been established elsewhere and have been in successful operation for ten years or more, and their graduates have won brilliant successes in many industries, and have shown their power to grasp and overcome the difficulties which they meet.

Fifth. The ceramic graduate is not able, as he leaves school, to stand alone, and needs kind and encouraging treatment.

Sixth. If given this kind of treatment, a year or two makes him a useful and often an invaluable man—one whose horizon is wider and whose grasp is stronger than the product of any other kind of training.

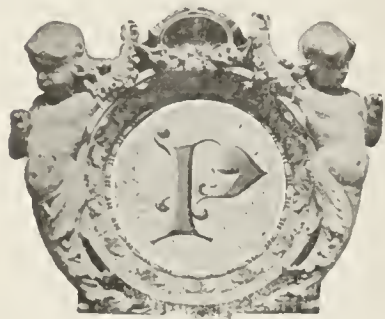
Seventh. The establishment of a technical school for clayworkers in Canada, especially if brought about by the influence of this body, should commit you one and all to a broad policy of publicity and the free interchange of data.

Eighth. If, in order to make this school a success, you adopt this policy, you will soon find that the value of the school has become secondary to the broader advantages of freer intercourse and more helpful spirit between manufac-

turers. In short, you Canadian clayworkers will find that in embracing the cause of science and education you have entertained an angel unawares.

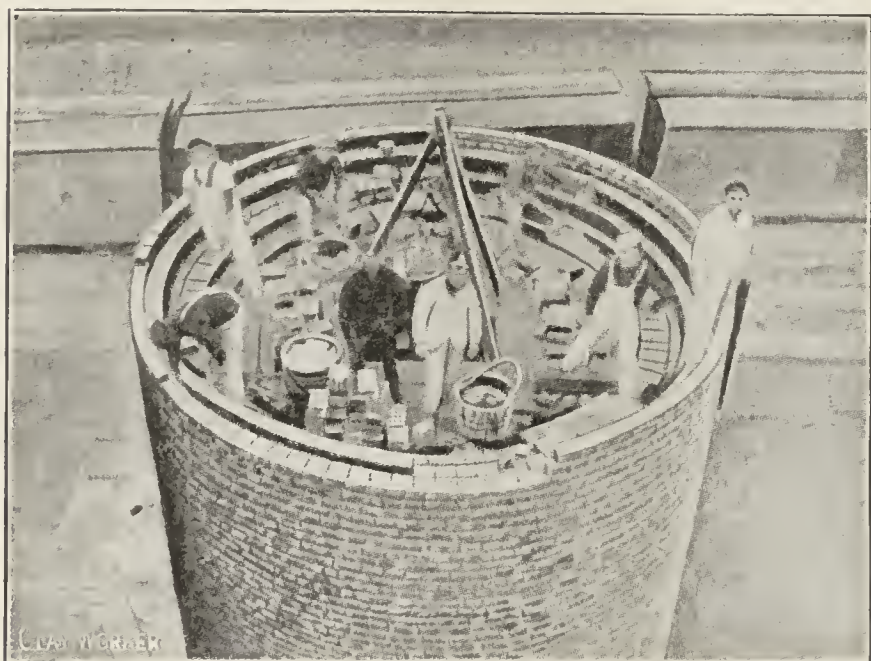
Written for THE CLAY-WORKER.

PROBLEMS OF BUILDING LARGE BRICK CHIMNEYS.



ROBABLY THERE is no line of brick construction which presents so many complex problems as the erection of tall brick chimneys. They must be all sufficient and able to withstand the force of winds, the effects of terrific fires and the corroding influence of gases, salts and chemical compounds which ascend through them and find their way into the outer air.

Brick has always been the favorite material with which to construct large chimneys, for since their use has been demanded, brick has arrived at a state of efficiency which makes it a material par excellence for such structure work. Common brick, however, which was used extensively in the old



Constructing a Modern Brick Chimney.

days, has since given way to some innovations, and it is about these that this article will deal particularly. While granting that ordinary brick may be useful for the construction of small chimneys which do not require great resistive power, it must be acknowledged that some of the new lines of brick seem more adaptable for the purposes required of them.

Tall chimneys are required chiefly nowadays in large centers of population where the smoke from manufacturing plants is found to be exceedingly offensive and destructive to plant life as well as human.

Chimneys are by no means an ancient discovery, and the tall ones have been in use only a comparatively short time. Prior to the thirteenth century chimneys were entirely unknown. Manufacturing was carried on in small houses, and such places as the huge industrial institutions of today were undreamed of. Houses were heated by wood burned in iron pots set in holes in the center of the floor, the smoke being allowed to escape through an aperture in the roof, just as the Indian today ventilates his wigwam.

Then somebody discovered that warm air had a tendency to rise just as water has to seek its level. A funnel was invented to carry away gas and vapor, and behold! the first chimney was invented. When a chimney fails to draw it is because it is not constructed properly. A chimney attached

to a fireplace will often refuse to work, but will draw good if a stove is used.

Tall chimneys of brick are built from a central base, with side flues leading to a central cavity. This cavity varies from three to fifteen feet in diameter, according to the size of the stack.

Round chimneys are almost exclusively taking the place of square chimneys. They draw better and an economy is effected in their construction. They are also better able to withstand the force of storms and high winds.

Common brick, the chimney experts claim, are not adaptable for large chimney building. They are not adapted for laying in circles and too much chipping requires an extra amount of mortar to fill voids which, of course, weakens the



Adding to the Height of a Brick Chimney While in Continuous Use.

stack. Common brick also varies greatly in quality, making it somewhat unsuitable for evenness of construction.

One of the big chimney concerns, the Custodis Company, uses a perforated radial brick which has been found very useful for chimney construction. These brick are made from the purest selected clays, burned at a high temperature to render them dense and impervious to moisture. The blocks are much larger than common brick and are formed to suit the circular and radial lines of each section of chimney so that they can be laid with thin, even mortar joints and smooth, regular surfaces. On account of the increased size of the blocks mortar joints are reduced one-half.

In addition to the blocks being shaped in radial form, they are molded with vertical holes, or perforations, to permit of more thorough burning in manufacture, thus increasing their density and strength while reducing their weight. The per-

forations also serve to form a dead air space in the walls of the stack, preventing the rapid heating and cooling of the wall and causing a maximum draught by conserving the heat. In laying the blocks the mortar is worked into the perforations one-half inch, effectively locking the blocks together and making the wall of the tightest possible construction.

Chimney building is an art in itself, and although a man may be a splendid bricklayer and able to lay a perfect wall he might make a bad mess of his first job of chimney construction unless under a competent instructor, for chimney building has many little features in it which require technical knowledge and skill.

By the use of colored blocks attractive designs may be



Five Little Chimneys All In a Row. A Form of Construction Adapted to Glue Factories, Etc.

worked into tall chimneys which may be seen a number of miles away on a clear day.

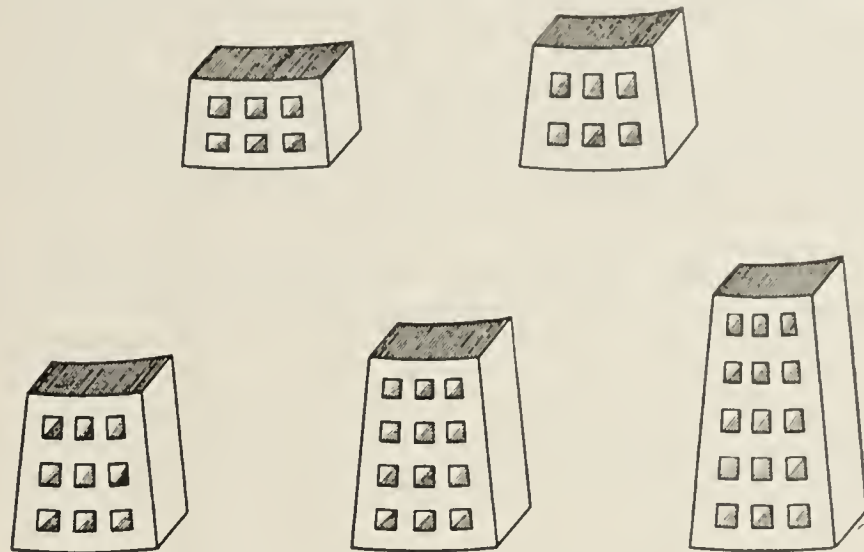
Some of the big construction companies will take contracts to add to the height of a chimney while it is still in use. This is a delicate operation, for it is impossible, sometimes, to control the flow of smoke and human life is occasionally sacrificed in this work.

Some of the factory chimneys are so large that tables are set on their tops and banquets served at the time they are dedicated. Out in Salt Lake City is one of the largest chimneys in the world, and is used by a smelting company. It is over 300 feet high and 30 feet in diameter.

Manufacturing concerns which belch forth quantities of gases and corrosive elements have their chimneys lined with especially made fire brick, which effectually protect the shell from crumbling.

Quite frequently the chimney builders are required to build new stacks to take the place of old ones, and then have the job on their hands of "wrecking" the old chimney. This is done by undermining the chimney and then blowing it up—or down—with dynamite. It comes crashing to the ground with a great display of dust and noise.

Nothing has been found which can eclipse brick as a material for chimney construction. Iron stacks when exposed to the elements are likely to corrode very rapidly and become

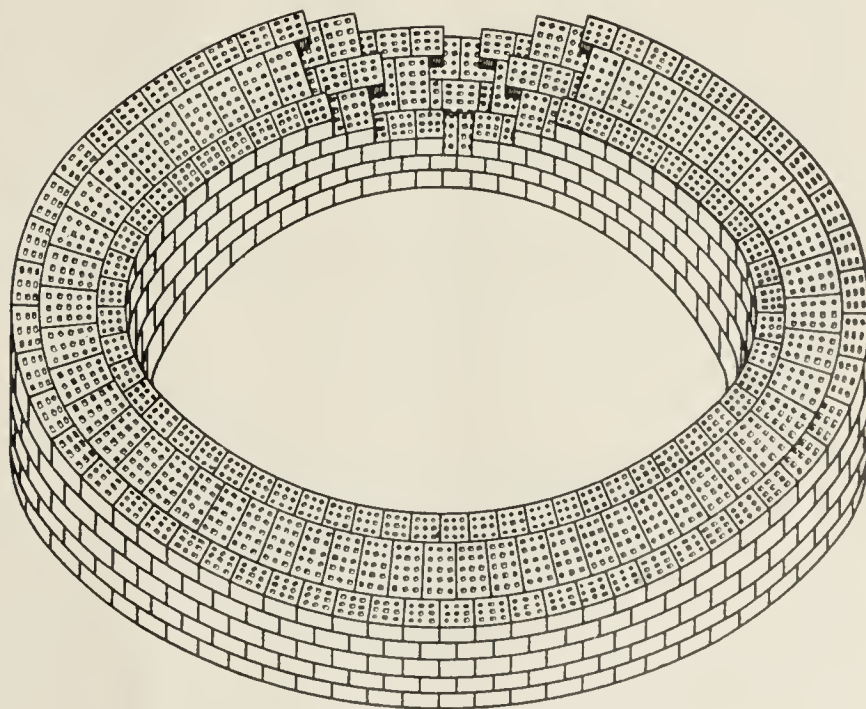


Forms of Hollow Brick Used in Modern Chimney Construction.

unsafe. Some small chimneys have been built of cement, but owing to the tower heights of some of the stacks, it is impracticable to use concrete for the larger ones.

In new chimneys the work is usually done from the inside, the scaffolding being built up and up as the stack shoots skyward. In chimneys which are being added to the work must naturally be carried on from the outside.

Chimney building has come to be recognized as an art in itself and in building plants requiring large chimneys to ac-



Section of Modern Brick Chimney.

company them, contracts are now usually let separately to some firm which makes a specialty of that line of work.

A Monument Made of Porcelain.—The porcelain factory of Unger & Schilde, in Roschutz, has made recently a porcelain bust in full size of the Prince of Altenburg. The bust is placed on a porcelain column which is $1\frac{1}{2}$ meters (5 feet) high. On the column is painted in under glaze color the coat of arms of the Prince. The column rests again on a pedestal which measures about $1\frac{1}{2}$ meters square. The finish is porcelain bisque, and is a rather imposing piece of workmanship.—Deut. Topf. & Z. Z. No. 93, 1906.



Tombstones of Brick and Terra Cotta.—In an illustrated article architect Rublack shows the possibilities of press and face brick in connection with terra cotta for tombstones. This style of tombstone in place of sandstone and granite has been used quite frequently by the Germans and the illustration shows what can be erected at about half the expense of sandstone tombstones.—*Keramische Monatshefte* XII, 1906.

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The Clayworking Industry of Switzerland.—According to statistics just published the brickmaking in Switzerland was very good in 1905. There were in operation 318 brickyards with a yearly production of 449,000,000 brick. The total amount of employes was 14,390, and there were 341 kilns in operation. The county Bern shows the greatest amount of brickyards and also the greatest production with 54 brickyards and 8,500,000 brick.—*Deut. Topf. & Z. Z.* No. 96, 1906.

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The Raise in Price in Roofing Tile....Late in 1906, the German roofing tile manufacturers announced their intention of raising the price of roofing tile by the first of January, 1907. They pointed out that the cost of manufacturing had been higher than ever before. Coal had raised in price, the cost of raw materials and also the glaze being about twenty-five per cent. higher than last year. Therefore, they considered that the customers would stand a small increase in price in order to meet these extra expenses.—*Baukeramik*, No. 2, 1907.

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Magnesite Industry of South Africa.—According to a long report received from an Austrian engineer, Emil Kocks, from Malelane, the first factory for the manufacturing of magnesite brick is now in full operation. The Transvaal has a very rich country in which magnesite is found in large quantities. The factory is built of iron construction, and has four kilns and three gas generators. The erection of a 24-chamber continuous kiln is now begun, and before long brick will be made for export. The capacity of the plant is at present 30 tons for eight hours work. The machinery used is mostly of German make.—*Thonwaaren-fabrikant*, No. 2, 1907.

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Interesting Decision in Regard to a Brick Trademark.—The German firm, Ludowici, of Ludwigshafen, which have been manufacturing the well-known "Ludwigshafen roofing tile," had first the factory in Ludwigshafen, which was moved later on to Jockrim. The firm changed the name of the product to "Ludowici Tile." The customers, however, specified always Ludwigshafen Roofing Tile. Another firm which bought the Holz factory, advertised its product as the real Ludwigshafen roofing tile and got a great amount of the trade. The firm Ludowici brought suit to prevent the other firm from using the old trademark of "Ludwigshafen Roofing Tile." The court decided that while the trade was in the habit of calling the "Ludowici tile" "Ludwigshafen Roofing tile," the tile were not made there, and consequently there was no case for a law suit.—*Keram. Rundschau*, No. 52, 1906.

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The Use of Calcareous Clays for Brick Manufacturing.—In a very interesting paper read before the East Thuringia Engineer and Architect Club, Dr. Carl Loesser showed the results of experiments conducted along the lines of the clays which contain a large quantity of lime. The large beds of clays found in Northern Germany are all of the calcareous character, and the manufacturers produce a very desirable shade of yellow buff brick. The results show that the lime should be very finely powdered, otherwise it will slack the

brick after burning. The fine powdered lime has already acted as a fluxing agent by low temperature, while the yellow color has not made its appearance as yet. The only drawback of the calcareous clays is the fact that they are very porous even at high temperatures. When they are burned to such a temperature as to start to vitrify, they very often melt entirely without giving any warning that the vitrification has already been reached. The manufacturing of buff brick from calcareous clays can be made a very profitable business, but care should be taken to understand very thoroughly the different processes to which the brick are subjected in the making and burning.—*Thonwaaren-fabrikant*, No. 1, 1907.

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Graphite Gas Retorts.—Retorts which will stand the most fire are those made of a mixture of clay and graphite. The mixture is about two-thirds of graphite and one-third of high grade fire clay. A good grade of graphite should be used, and the fluxes should be very low. Retorts made from fire clay only do not stand the changes of temperature as good as the graphite retorts. The clay mixture is usually made and stored in cellars. Then it is repugged again. It should be worked fairly stiff in order to obtain a closer body. If it is used too soft the body will be more porous than by using a stiffer clay.—*Tonind. Z.*, No. 150, 1906.

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Broken Saggars as a By-Product.—In the German Porcelain industry the broken saggars amount to a great expense through the year. Formerly it was customary to grind these saggars up and make chamotte brick and put them on the market. The last few years have seen considerable improvement in the kiln systems and we find also that the fire brick manufacturers are putting brick very cheap on the market, so that it does not pay the potteries any more to make brick from the broken saggars. They have, therefore, combined and formed a selling agency to take care of the broken sagger output. This agency is now able to get a good price for broken saggars, which are sold to fire brick manufacturers, and in that way the great pile of broken saggars which was formerly a waste is now made productive.—*Keram. Rundschau*, No. 49, 1906.

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The Temperature in Stack of a Porcelain Kiln.—To ascertain the temperature which the kiln gases had which passed through in the second story of a porcelain kiln, the following results were obtained with a Le Chatelier pyrometer. There were used two apparatus, one was connected in the lower story where the porcelain was glazed, and the other was put into the stack which took the gases from the second or biscuit story. The kiln was finished with Seger cone 12.

Temperature—Degrees—Centigrade

Glaze kiln	Stack	Glaze kiln	Stack	Glaze kiln	Stack	Glaze kiln	Stack
160	150	880	500	1160	720	1320	830
300	180	900	510	1170	730	1340	850
340	260	950	510	1180	740	1360	870
420	290	970	520	1200	740	1360	880
480	330	990	560	1230	740	1340	880
530	380	1020	600	1240	740	1310	860
560	380	1030	620	1230	780		
640	400	1040	640	1250	800		
700	410	1080	660	1270	810		
740	410	1100	660	1280	820		
800	440	1120	700	1300	830		
840	460	1140	700	1320	830		

—*Sprechsaal*, No. 50, 1906.

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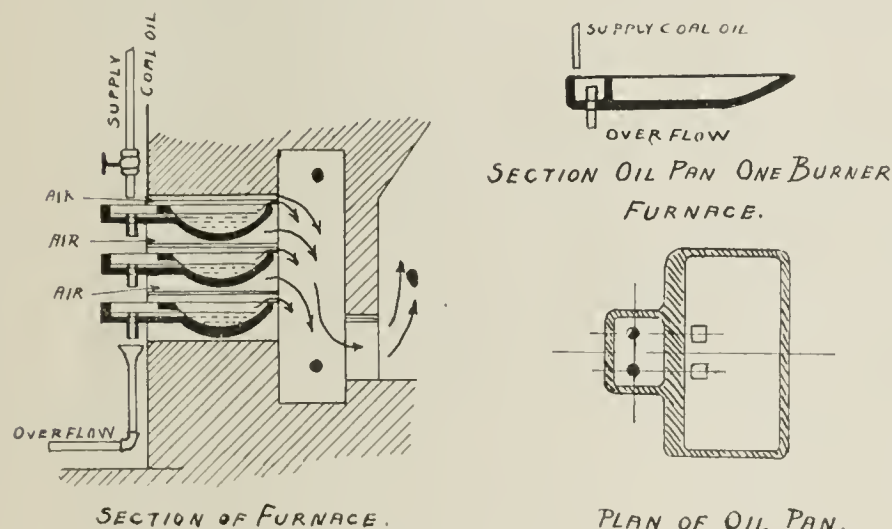
Continuous Kiln for Sewerpipe Burning.—In reply to a question as to the results obtained in burning sewerpipe in a continuous kiln we find the following answer. There are two kinds of kilns which could be used for burning sewerpipe successfully, the chamber continuous kiln with down-draft principle, and the continuous kiln fired with gas, however, with this condition, that all chambers can be separated from the continuous principle without interference as to the balance of the kiln. The saving on fuel is about fifty per cent. against periodical kiln. In the continuous kilns with down-draft principle we have either the firing from top or the gratebar system. Both systems are used by the greatest sewerpipe fac-

tories. In these kilns the chambers are so arranged that each can be taken out of the continuous arrangement after salting. For a good salt glaze one of the first principles is the right mixture of clays, second the temperature at which it should be burned. Care should be taken that the bottom arrangement is such that there is not much difference between top and bottom. Another point which should be taken care of, that it is useless to try to salt glaze sewerpipe when the body is not fully vitrified, as the results with a porous body are not very good.—Tonind. Z. No. 152, 1906.

* * *

Petroleum Burner for Kilns.—The use of petroleum, or still better, naphtha for burning purposes has been tried in different places in Europe, and principally in Russia. The specific gravity of Russian naphtha is 0.912, and 1 cubic meter naphtha weighs 912 kilos, while 1 cubic meter coal weighs 900 kilos. German naphtha has from 9,700 to 10,000 B. T. U., while American naphtha has from 10,000 to 10,900 B. T. U., and Russian naphtha has from 10,000 to 11,190 B. T. U. The great value of naphtha for ceramic industries lies in the fact that the flame is very clear, and does not make any soot or ash. The contents of sulphur are very much lower than with coal. For the ceramic industry we can use only two systems of burners. First, the direct burning of the naphtha in open vessels or pans, and the drip burner. So far the drip burner has only been used for glass industries and also for iron furnaces.

In the ceramic industry there is only used the pan burn-



er. The principle of this burner is as follows: In the regular fire box of a kiln, we place three pans made from cast iron, as per sketch. Every pan is provided with an overflow pipe by which the overflow of naphtha flows on the second pan, and so on on the third pan until the surplus goes back to the supply tank. The air necessary for complete combustion is admitted under every pan, which keeps them cool at the same time. Regulating of the air and the naphtha supply can be done by dampers and valves. With such a burner arrangement the best fire brick has been brought down to melting point. According to close investigation it has been proven that the heating power of naphtha is 44 per cent. greater than coal. The consumption on 10,000 bricks, burnt at cone 09, was 2,500 kilos of naphtha.—Tonind. Z. No. 129, 1906.

* * *

A German and Austrian Kaolin Syndicate.—A large number of kaolin mine owners of Germany and Austria have perfected in Dresden an organization for the controlling of prices. Quite contrary to the general prevailing idea the mines have been run at great loss, and some of them are shut down. It is hoped by controlling and consequently raising of the prices that the mines may become again a good investment.—Moniteur Ceramique, No. 1, 1907.

* * *

Capacity of Continuous Kilns.—In reply to a question, if a fourteen chamber continuous kiln will burn four million brick, we find the following data: The chambers are 4.50 meters (14.75 feet) long, 3.30 meters (10.82 feet) wide and 2.60 meters (8.50 feet) high. The chimney is about twelve feet from the kiln and has a height of 40 meters (130 feet). Every chamber holds about 8,000 bricks. The advance of the fire under normal condition, according to the draft measures

of the stack, is about 23 feet every 24 hours. If the duration of the season is figured at ten months, the daily setting capacity should be about 12,500 bricks, which would give a capacity of 3,750,000 bricks for the season.—Tonind. Z. No. 123, 1906.

* * *

Sand-Lime Bricks.—The sand-lime brick industry in Holland has made great progress. The main fact is that the sand is of such excellent quality. The lime is mostly imported from Belgium. The yearly production is about 40,000,000 sand-lime brick. A few months ago an article made the rounds in the different trade journals in regard to a report which Mr. Pohlmann, from Berlin, had made to the French government. According to the last information this report was very misleading, in that Mr. Pohlmann has nothing to do with the Prussian government as far as his experiments with sand-lime bricks are concerned. The German trade journals which are catering especially to the sand-lime brick industry reprinted this article without knowing the facts in the matter, and consequently the misleading statements were made public.

* * *

The Melting Point of Feldspar.—New determinations for the melting points of feldspar have been made by C. Doelter. The old data at hand was from Day and Allen, and give the following melting points:

Albite	1225 degrees Centigrade
Oligoclase	1360 degrees Centigrade
Labradorite	1463 degrees Centigrade
Anorthite	1532 degrees Centigrade

Doelter used for the determination of the melting point the optical process with a polarization microscope and a Hereaus electric furnace. The temperature was taken when the melting was just started, and when the melting was complete. He obtained the following results:

Albite	1130 and 1215 degrees Centigrade
Oligoclase	1160 and 1240 degrees Centigrade
Labradorite	1185 and 1275 degrees Centigrade
Anorthite	1255 and 1340 degrees Centigrade

—Tonind. Z. No. 126, 1906.

* * *

The New Magnesite Deposits of the Transvaal.—In connection with the reports made some time ago in regard to this new magnesite deposit of the Transvaal we have the following data: The deposit is located on the railroad from Delagoa Bay to Johannesburg, between the stations Kaap-Muiden and Malelane, about 140 kilometers (90 miles) from Delagoa Bay. The deposit is located in a ridge which raises between the railroad and Krokodill river. It is about 13 kilometers (8 miles) long and about 2½ kilometers (1½ miles) wide. The magnesite is usually found in layer formation of about 30 meters thickness. In the vicinity of Salt Creek is another immense deposit which is about 600 meters long, 60 meters wide and about 90 meters in thickness. It has been calculated that this deposit carries about one million tons of magnesite. As the samples and the deposit have been closely examined, it has been found that this magnesite is just as good as the Greece deposits. It is pure white and breaks with shell-like fractures. It is hard and close-grained, and in appearance it is not unlike unglazed porcelain. Theoretically magnesite has the composition of magnesia 47.4 per cent., carbonic acid 52.6 per cent. The Transvaal magnesite shows that it is very pure and free from lime, clay, and iron. The following table will give a comparison of the different magnesite in the market:

	Greece.	Austria.	California.	Transvaal.
Magnesia	 44.90	42.43	44.58	46.44
Carbonic acid	 44.56	50.41	49.00	49.66
Silicia	 0.52	0.92	2.70	3.61
Alumina	.....	4.30	....	0.20
Iron oxide	 0.80	....	0.40	....
Lime	 1.50	1.68	2.78	traces

The magnesite industry in time will be very important in that country. There is a large supply of wood in that section, and also coal is not very far away. The coal mines of Middelburg are the closest, and coal could be laid down there for about \$2.40 per ton. The fuel question is important as there is used for burning 100 pounds of magnesite about 16 pounds of coal.—Tonind. Z., No. 120, 1906.

VALUE OF FEEDING LIVE STOCK ON BRICK PAVED AREAS. *

By LOUIS D. HALL, First Assistant in Husbandry, University of Illinois, Urbana, Ill.



APPLICATION of brick pavement to stock feeding is confined mainly to the fattening of cattle and hogs. In view of the further fact that the only definite available data on the subject deal with those classes of animals, this paper will consider the subject only in its relations to the production of beef and pork under conditions comparable with those of Illinois.

The improvement of the surface of feeding yards has received comparatively little attention at the hands of farmers and stockmen generally. Systematic inquiry by the Illinois Experiment Station into conditions

the need of and opportunity for improvement in feed lot surfaces.

The methods of surfacing employed by those cattle feeders who have attempted to provide against mud may be briefly considered. In the investigation just referred to it was found that but two per cent, or ten feeders, of all our correspondents had yards completely covered with paving material. Of these, two were equipped with brick paved lots, two with rock pavement, three had lots laid with railroad ties, one partly with rock and partly with railroad ties, and one with cinders. It is evident from this that the need of solid surfaces in feed yards has been recognized by practical feeders and that efforts are being made to meet the need. Since the time of the above correspondence, some four years ago, a number of brick pavements have been laid in Illinois cattle feeding yards. Hon. T. S. Chapman of Jersey County, who has used one for more than ten years, says, "I think the pavement is the best investment I have on the farm for the money."

The value of pavement in cattle feeding consists of two elements, namely, the saving of feed and the increased selling price due to the cleaner condition of the stock. The Illinois

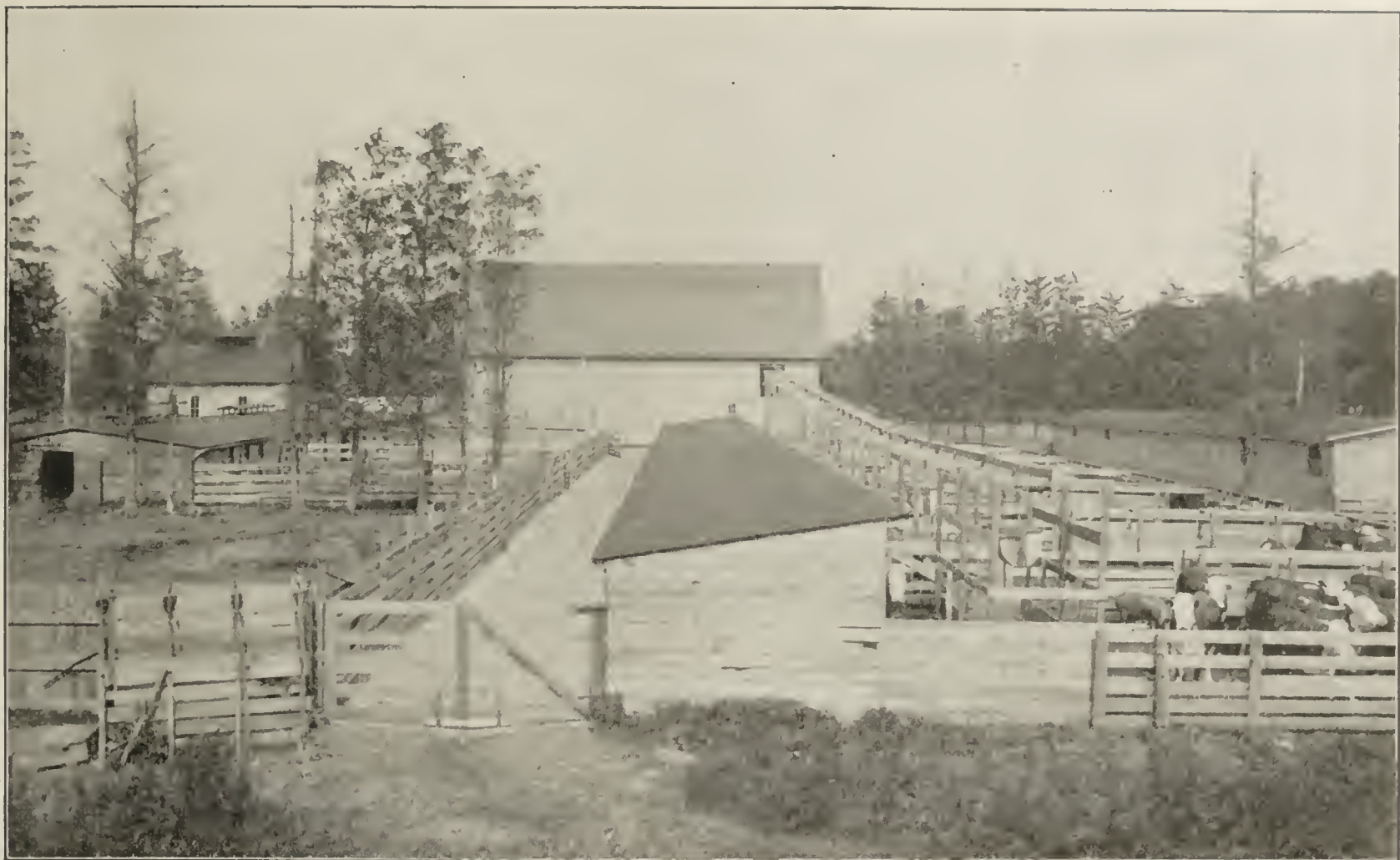


Brick Paved Feeding Lot at the University of Illinois.

in this State based on the statements of over five hundred representative cattle feeders, showed that only 7 per cent. of our correspondents made definite provision against mud, other than that afforded by waste feed trampled under foot. Further, only two per cent. besides these seven per cent. stated that their lots were so drained as to obviate serious inconvenience from muddy surfaces. That muddy lots do constitute a serious problem in cattle feeding is indicated by the following suggestive replies received from feeders in different parts of the state. "I have no way of preventing mud. Wish I had one." "Can't prevent yards from getting muddy. I advise brick pavement." (This man has fed one hundred cattle per year for ten years). "Have no way. Wish you would devise some plan." "It is a hard proposition. I do the best I can, but that is poor." These facts are certainly significant of

Agricultural Experiment Station has conducted some experiments which furnish data on these points. In one test a car load of choice two-year-old steers was fed in a paved lot and another car load of steers was fed in an ordinary mud lot. Those in the mud lot had access at all times to an open shed where the bedding was kept dry at all times. This shed was made large enough for all the steers to lie down at the same time. The feed box in which the corn was fed was only about 15 feet from the shed and the water tank about 20 feet. The experiment extended from December 1st to June 1st, so that the mud lot was frozen during a large part of the time; and only during part of the last two months was the mud lot in bad condition. Both lots of steers were fed on the same ration and all other conditions excepting the surfaces of the lots were the same. The gains in weight made by the steers during the six months were practically the same in both lots. During the last two months there was a difference of 5 per cent. in gains in favor of the steers on pavement. The pigs following the latter steers, however,

*Paper presented to the Illinois Clayworkers' Association, Champaign, Illinois, January 23, 1907



A Portion of the Cattle Feed Lots With Brick Paved Runways, Champaign, Ill.

made nearly one pound more of pork per bushel of corn fed the steers than did those following the steers in the ordinary mud lot. In other words, while the pork produced by the pigs following the "mud lot steers" paid for only 12.86 per cent. of the total feed given the steers, the pigs following the "paved lot steers" paid for 16.67 per cent. This would amount

to about \$1.50 per steer with pork at present prices of \$6.00 per hundred-weight.

The difference in market value of the cattle at end of this test was ten cents per hundred-weight in favor of the steers fed on pavement. A discrimination of ten to twenty cents per hundred-weight is commonly made in the cattle



Feeding Swine on Brick Paved Yards at the Illinois University Experimental Station.

markets in favor of cattle with clean hides as compared with those having dirty, manury hides. Generally, therefore, \$1.50 per steer would be gained by this item; and, together with the increased pork production, approximately \$3.00 per steer should be credited to the pavement. A pavement designed to accommodate 15 to 20 cattle cost us a total of \$153.00, so that the economy of the investment is clearly evident in this case. We are not to apply these results to cattle feeding generally, since a large proportion of the cattle fattened for market are fed during the summer and fall when surface conditions are much better and when the cattle and hogs are not confined in small yards to such an extent as in the spring months. The foregoing results are believed to indicate what may reasonably be expected under similar conditions during the winter and spring months.

The Illinois Experiment Station is provided with a number of brick paved feed-lots which have been considered almost indispensable in the experimental feeding tests that have been conducted. These lots have a fall of one inch to six feet away from the open sheds. There is also a side slope to each lot with a tile at the lowest corner to carry off surface rain water that falls on the pavement. As the pavement is frequently cleaned there is no serious leaching of manure.

After the proper grade had been secured the ground was covered with six inches of gravel, which was rolled and tamped down solid, covered with one inch of fine sand, upon which No. 1 paving brick were laid flat, herring-bone pattern, except in the alley and around the scales, where they were placed on edge. After being put in place the brick were rolled down even, and, upon inspection, if any were found to be soft they were replaced with good ones.

The space between the brick was filled with a grout "filler" consisting of one part clean, sharp sand and one part of Portland cement. The cement and sand were thoroughly mixed dry in tight boxes, then made into a mortar of the consistency of cream and thoroughly broomed into the joints between the brick. This was done to keep water from getting underneath the pavement; which if allowed to enter, would soften the sub-grade or cause the heaving of the brick, by allowing freezing and thawing.

The cement filler was allowed to set a week before heavy loads were allowed on it and as the work was done in summer, the sun's rays were kept off by means of a canvas for the first day. A retaining curb of 2x8 plank, braced by a 4x4 placed two and one-half feet in the ground, was put in at the gates to keep the animals from breaking the edge of the brick.

WANTED—A LITTLE INFORMATION.

One of our readers at Washington, Pa., is in need of information and writes us, asking for a few facts, and wishes us to answer the following questions:

"Will the surplus of the United States Steel Corporation reach \$100,000 this year, and will it start payments of dividends on the common stock January next?"

"Will the Pittsburg Coal Company resume the payment of dividends on the preferred stock this year?"

"Will the stock of the Tonopah Extension Mining Company sell at \$25 within the immediate future, and will the company start dividends of 25 per cent. quarterly?"

"What is the highest point to date at which United States Steel preferred has sold?"

"When will a person who bought Crucible Steel common at 25 be able to sell out even, including interest?"

We have answered that 113¼ was the highest point at which United States Steel preferred has sold.

Regard the other questions we refused to commit ourselves, not wishing to be quoted, but might state that if we were able to answer we would not continue in the newspaper business.—Money.

Written for THE CLAY-WORKER.

THE NEW PLANT OF THE SCHENECTADY BRICK CO., SCHENECTADY, N. Y.



NE OF THE BEST and most modern sand-lime brick plants in the country is the one owned and operated by the Schenectady Brick Company, of Schenectady, N. Y. The accompanying cut shows an interior view of this factory, which is located on the main line of the Delaware & Hudson Railroad, a short distance from the city limits of Schenectady. The plant was erected during the summer of 1905 and has been successfully operated ever since its completion.

The sand is of the very hard granite variety and is obtained from a sand bank situated adjacent to the factory building. The sand is delivered to the rotary sand dryer, in which machine it is thoroughly dried and then elevated to the dry sand bin. The hydrated lime is also elevated to a bin situated at the side of the sand bin. From these bins the sand and lime are passed to the conical measuring device where they are measured in the correct proportions and then fed into the hopper of the



A Glimpse of the Factory of the Schenectady Brick Company.

tube mill. Here it is thoroughly mixed and pulverized. After the mixture has passed through this tubemill, it is of the proper mesh for making perfect sand-lime brick. From the tube mill the mixture is elevated to the dry mix bins, at the bottom of which is located one of the automatic variable speed spiral conveyors, which delivers the dry mixture into the double shaft differential motion wet mixer, where the proper amount of moisture is sprayed onto the material as it passes through the machine. After the material has passed through the wet mixer it is of the correct constituency for sand-lime brick in every respect and is discharged into the press feeder, where it is agitated and fed uniformly into the press. The improved model "C" press, which is the most important unit in the plant, then takes the material and presses it into bricks, after which they are run on the cars into the hardening cylinder. After the hardening process is completed they are ready for the customer. It will be seen from the above description that the process is continuous and that very few employees are needed in the factory.

The power plant includes a suitable Corliss engine and boiler with necessary auxiliary apparatus. The boiler is equipped with an up-to-date fuel economizing system. With

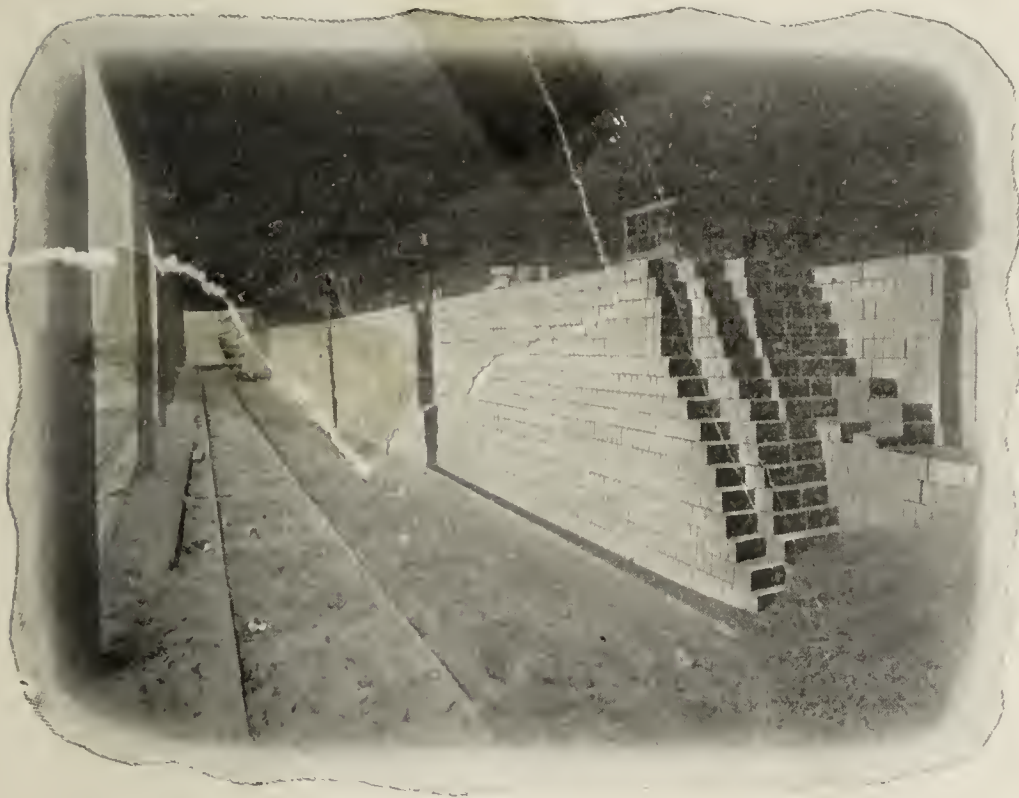
the other equipment is included a complete electric light plant and a suitable arrangement for supplying water in large quantities.

The bricks produced at this plant are of uniformly excellent quality and have an ultimate compression strength far in excess of the ordinary sand-lime brick. The plant is a one-press plant having a capacity of from 16,000 to 20,000 brick per day of ten hours.

This entire plant, including power, lighting, storage bins, brick machinery and transmission, was furnished and installed by the American Clay Machinery Company, Willoughby, Ohio, who likewise made the first 100,000 brick before turning the plant over to the Schenectady Brick Company.

DRAINAGE AND ALFALFA.

QUITE a good deal of interest is being worked up in the growing of alfalfa. The late report from the State Statistical Department of Indiana reports that there are 37,000 acres growing alfalfa in the State. The feasibility of growing this profitable legume crop was up for discussion at almost every farmers' institute held in the State the past institute season. Again and again it has been asserted that the land must be well drained to insure success in growing



In the Schenectady Brick Company's Stock Shed.

alfalfa. So far no one has failed, so far as we can learn, who took pains to prepare a good seed bed and sow good seed on well underdrained land. In many instances men have said, "My alfalfa looked well in the fall but heaved and was drawn out by the freezes because the land was not tile drained." One good farmer said, "I am going to grow alfalfa, but I have to tile drain first. I have got the tile hauled to tile drain eight acres and then I will show you that I can grow it. Sure!"

Charles Wing, in his story of "What Alfalfa Did for the Old Farm," says, "I remember how my brother Joe took off his coat and went into an old clayey cold crawfish field and began to dig deep drains and lay tiles, and how he called to me to come and hand him tile as he laid them in the finished ditch, and how he said, 'Charlie, some day on this old field we will grow clover, clover first, then corn, and after we have enriched a little I hope that we may grow alfalfa, too, and Charlie, my boy, some day out of this tough old clay I hope that we may make a living for us all and a home for myself, if I happen to get married first.'" And Joe Wing's dream has come to pass. The farm has been underdrained and has waving fields of alfalfa that pay better than a gold mine. There are thousands of acres of land in this and adjoining States,

which, if underdrained and sowed to alfalfa, would, as Charley Wing says, pay better than a gold mine. And in part the same would be true if the land was tile drained and devoted to the growing of other farm crops.

Emerson very truly said, "There are farms underneath our farms that we know not of until we tile drain."

Written for THE CLAY-WORKER.

REVIEW OF THE TWENTY-NINTH ANNUAL CONVENTION OF THE ILLINOIS CLAYWORKERS' ASSOCIATION.

Held at Champaign, Illinois, January 22 to 24, 1907.

FOR THE third consecutive time, the Illinois Clayworkers' Association met at Champaign for a very successful convention. The attendance was very much smaller than in former years owing to a combination of circumstances. However, the sessions were most interesting and pleasing to the enthusiastic members. The influence of the Illinois University was much in evidence and some of the most instructive papers of the convention were delivered by members of the University faculty and students in the ceramic course.

Prof. C. W. Rolfe read an interesting report on what has been accomplished during the past year at the school of ceramics of the Illinois University, and Professors Breckenridge, Hall, Case and Purdy, also contributed valuable papers. Two of the students in the ceramic course, Mr. J. K. Moore and Mr. H. R. Straight, read excellent papers on the "Cost and Estimates on Handling of Clay Materials."

The crowd of delegates was a representative one, having a number from Iowa, Indiana, as well as Illinois. The Hotel Beardsley comfortably housed the visitors, while the Elks' lodge room, next door to the hotel, was wisely selected as the convention hall. This is a very commodious hall and well adapted to the needs of large conventions. The machinery men and various manufacturers exhibited samples of their products or advertised by means of placards near the entrance of the hall.

Tuesday Session.

Tuesday morning, January 22nd, was given over to the enrollment of members and the renewing and forming of acquaintances. The convention proper began Tuesday afternoon at 2:30 sharp, at which time that well loved President, John W. Stipes, of Champaign, called the convention to order. An audience of eighty odd enthusiastic clayworkers listened attentively to the address of welcome of Mr. S. P. Atkinson, who acted as substitute for Mayor George E. Gere, who was unable to attend. Mr. H. DeJoannis, of Chicago, editor of Brick, responded to the speech of welcome. The response was brief and to the point.

President Stipes then called on Mr. George F. Beardsley to act as his substitute and to say a few words for him. Mr. Beardsley was one of the oldest men present. So beloved is he by the citizens of Champaign that he has been reverently nick-named "Grandpa" Beardsley. His talk was full of humor and good will. He took his audience back to the olden days when an old mare was hitched on before a yoke of oxen to do the plowing. He spoke of the advancement we have made and pointed out the need of giving every advantage possible to the younger generation, that the future of the clay industries may be in good hands. He spoke in a delightful manner of his friendship with Mr. John W. Stipes and referred with some feeling to a little motto Mr. Stipes had placed over his desk twenty years ago, when he was then only a salaried laborer: "Pull with the tide. Pulling against the tide gives oceans of exercise, but very little of the stuff that builds brown stone fronts."

After Mr. Beardsley's talk Professor Rolfe, who is the director in the course of ceramics at the University, made his report, which follows in full.

REPORT OF WORK DONE IN THE DEPARTMENT OF CERAMICS OF THE UNIVERSITY OF ILLINOIS DURING THE YEARS 1905 AND 1906.

Gentlemen: In making this report of progress, it seems best to begin with the organization of the department, even though some portions of the report may repeat what was said last year, as this course will make it cover the first eighteen months of this legislative biennium.

As soon as notice was received that Governor Deneen had signed the bill which made provision for instruction in ceramics the University began its search for a competent man to take charge of the technical work. It was thought that the preparation of the man appointed should combine a full course in some reputable college, successful experience as a teacher, and technical training in some well equipped clayworking establishment.

It soon developed that there were but three or four such men in this country, and but very few in England, France or Germany, and that all of these were employed at salaries far greater than we could hope to pay. After modifying our demands several times without finding a man to meet them, Mr. Ross C. Purdy was appointed late in September, he being, all things considered, the best man who could be obtained. He began his work October 1, 1905.

Up to this time we had refrained from making any purchases of apparatus or laying out detailed plans for work, believing that the appointee should be consulted in all such matters. Consequently, preparation for work really began fifteen months ago; and much of this time was consumed in the selection, purchase and installation of our equipment, so that research work did not really begin until late in the spring of 1906.

Instruction was offered to students at the opening of the second semester, at which time also Mr. Junius F. Krehbiel began work as an instructor.

Three students entered the course and carried their work through the second semester. This number was increased to nine at the opening of the fall semester. We have now two juniors, one sophomore and six freshmen. Permit me to say that this is a better showing than any school in this country has made in the time.

In the line of investigation we have now practically ready for publication a report in the Paving Brick Industry of Illinois, containing chapters on The Geology of Clays; The Geological Distribution of Paving Brick Materials in Illinois; Studies of Illinois Clays Now Being Used for the Manufacture of Paving Brick; The Construction and Care of Brick Pavements; and Tests Which Should Be Applied to Paving Brick. This report was prepared for and under the auspices of the Geological Survey by the staff of the department assisted by other departments of the University.

Besides the above search was made in the most promising portions of the State for fire clays and a considerable number of those tested prove to be of good quality. In this case the field work was mostly done by geologists employed for the purpose, the analyses were made by the chemical department, but the testing was done by the department of ceramics.

In addition to the above the department has undertaken several investigations for its own account, which will be published in the series of bulletins issued by the University.

The first of these, The Course of Efflorescence on Brick Structures, by J. C. Jones, is now ready for distribution. It is a bulletin of eighteen pages and has been highly commended by those who have seen it.

The manuscript for the second, Limits of Variation in Composition Heat Treatment of White Ware Glazes Using a Constant Combination of Fluxes, by R. C. Purdy and H. B. Fox, is now ready for final revision. Up to the present no recorded attempt has been made to ascertain the limits between which each of the elements entering into the composition of a white ware glaze may be varied or the range of temperature in which such glazes will mature properly. In the preparation of this bulletin a method by which this might be accomplished was devised, the necessary calculations made, glazes of varying compositions, compounded and fired at different temperatures. Over 2,200 test pieces were used and the results charted in a series of graphic tables which show the ranges of variation nicely.

The manuscript for a third bulletin is nearly ready. This is a study of crystalline glazes. Manufacturers of art pottery are much interested in the production of crystalline glazes, but up to the present no attempt has been made to ascertain the effect of variations in composition on the formation of crystals. The formulas used were empirical. The underlying principles were not known. In the studies upon which this bulletin is based, eighteen hundred glazes were compounded and trial pieces burned. The results were charted with necessary descriptions and the charts show graphically the limits between which crystals may be expected to appear in the glaze. The bulletin will probably be followed by others touching other parts of the field.

The manuscript for a fourth bulletin is practically ready. It is a study of the pyro-chemical behavior of clays. That is, a study of the reactions which take place in clay during burning and the physical effects which these changes have upon the structure of the clay. This is a subject about which little is really known, and the present bulletin is intended to be the first of a series.

The studies for a fifth bulletin have been completed and the manuscript is now being prepared. It deals with the effect of alternate freezing and thawing upon brick. The brick for these studies were frozen and thawed quickly many times and the effects of these sudden changes upon the brick carefully noted. Other studies are in progress.

During the remaining six months of the biennium we hope to complete several other helpful studies. Among them an investigation of the properties of those dense clays which give so much trouble in drying. For this purpose I would like to ask any members of this Association who can obtain for us 200 pound samples of such clays to give me their addresses with all facts at command in reference to the occurrence of these clays and their behavior.

I shall also be grateful if any member of the Association who has a problem or problems in mind whose solution he thinks will be helpful to clayworkers at large will write me concerning them. Such a list would help us to decide what investigations we would best undertake during the coming year. Of course, it is understood that these would be suggestions only, and that many of them would be entirely beyond our reach, but they would help nevertheless by indicating the difficulties with which manufacturers have to contend, and so enable us to make our work helpful to practical men.

At your meeting last winter, a resolution was passed asking us to arrange for an institute lasting something like ten days, either just preceding or following the meeting of the Association, which should be open to all clayworkers without fees.

Acting on this request, we sent to each member of the Association a letter asking what topics he would like to have discussed at the institute. Perhaps one-fifth of those addressed replied, and in nearly all cases suggested "Drying and Burning" as the topics. We have arranged an eight-day program on these subjects.

We consider ourselves peculiarly fortunate in being able to secure the help of Messrs. Richardson and Watts and Professor Bleininger, as well as that of Professors Parr and Watson and Dr. H. F. Bain, of the University faculty. I think I may justly say that the clayworkers of the State have not often had an opportunity to listen to as reliable and thoroughly helpful a series of lectures as those which will be presented at this institute, and we bespeak for them a generous patronage.

It will rest with you to say whether these institutes shall be continued. The University will make the necessary provision for them year by year, provided the clayworkers show enough interest in them to attend. Of course, you would not expect us to continue them if the lecturers had to speak to empty seats or to a mere handful of auditors. The future of the institutes then, is in your hands.

Last year I called your attention to the need of a reliable list of clayworkers and clayworking establishments of the State. We have taken great pains to collect such a list and have nearly a thousand names, but find that the list is wholly unreliable. We have resorted to several schemes in the effort to correct it. First, we selected what seemed to be the largest plant in each county and sent to its proprietor a list of all the plants in that county as we had them, asking him to correct the list. Replies were received from perhaps twenty-five per cent. of these persons, most of these coming from counties which have but few plants. Next "Brick" and "The Clay Record" published special articles and sent sample copies containing these articles to each address, requesting an acknowledgment. Not three per cent. of those receiving these paid any attention to the request. We next sent out over eight hundred circular letters stating that we would soon be ready to distribute bulletins containing the results of our work and saying that these would be sent to those replying to the circular. Something over two hundred replies have been received. As the other six hundred were in return envelopes, they must have reached their destination. I state these facts, not as a complaint, but in order to show you that we need your co-operation in this matter. Can you not devise some way by which we can secure a correct list of the clayworkers in your vicinity? Would it be asking too much if we requested each member of the Association to make for us such a list for his part of the State, covering one, two or three counties?

In regard to plans for the future, we need a laboratory something like 60 x 120 feet, which can be erected at a cost of about \$10,000, with an equipment of heavy machinery costing from \$2,000 to \$3,000. We need, also, to increase our force of permanent workers, and the salaries of these men, together with the expense of carrying on the investigations we estimate, will require \$6,000 to \$6,500 per year. These sums we have asked your legislative committee to arrange for, if possible.

Now, gentlemen, we have endeavored to set before you fairly the things which we have done in the last year and a half, and we have told you not all of our troubles, but those only which we think you can help us to overcome. We leave it for you to say whether the end has justified the means. Whether the results of our work contain enough of promise to warrant the labor and self-sacrifice which will be involved in your continued co-operation. (Applause.)

Value of Illinois Coals.

Following Professor Rolfe's report, Professor Breckenridge, Professor of Mechanical Engineering at the University, read a very interesting and instructive paper on the "Economic Value of Illinois Coals." He stated that Illinois is singularly favored in all the conditions requisite for a rapid and permanent industrial development. He spoke of Illinois' vast area underlaid with productive coal seams, the net work of railroads, the unexcelled facilities for transportation and the richness of the extensive arable land. He spoke of the gradual westward movement of the center of population of the United States and declared that it was due in Illinois about

1930, and it is still further build up the State of Illinois. He also showed the path of the center of manufacturing, showing how it has traveled toward Illinois, starting in Harrisburg, Pa. in 1850, the rate of advance being nearly 100 per cent. a decade, bringing the state from the fifteenth into third place of rank in the value of manufacturing products. Prof. Breckinridge stated that the unparalleled resources of Illinois, if properly exploited, should make it the greatest producing and manufacturing state in the whole of the Mississippi Valley.

Illinois stands next to Pennsylvania in production of coal, yielding 14 per cent. of the entire quantity mined in the United States. In 1904, the United States produced 36 per cent. of the world's total output. He then went on to speak of the character and uses of the Illinois coals and gave the agencies which have been active to determine the conditions under which Illinois coals can be burned with economy. He then gave results of the actual tests of Illinois coals made at St. Louis and Champaign and in his summary stated that the encouragement and support should be given to the agencies which are working out the problems of the production and utilization of Illinois coals; (a) the fuel testing plant of the United States Geological Survey, (b) the Engineering Experimental Station of the University of Illinois, (c) the Illinois State Geological Survey.

After a long discussion on this paper, two students in the ceramic course at Illinois University, Mr. J. K. Moore and Mr. H. R. Straight, read a very interesting paper on the "Cost and Estimates on Handling Clay Materials." This was a very thorough paper on the subject and was illustrated by means of curve plotted sheets, which were hung on the wall in a conspicuous place so they could be carefully inspected and studied by the delegates. This paper dealt in a technical manner on the cost of handling clays under many different conditions and traced the cost from the clay field, pit and bank to the brick machine, in all the different processes, from hand digging to the large steam shovel. It would be impossible to do this paper justice in such a short review, as the value of this contribution to the Illinois Clayworkers' Association ceramic literature depends for the most part on the careful study of diagrams and curve sheets in following the thought of the paper. It will be published in full in a subsequent issue of THE CLAY-WORKER.

Following this paper there was an extended discussion on the question, "Should Tile Be Layed Deep or Shallow to Get the Best Results." Prof. Bain then made a talk on the work of the Survey in regard to the upbuilding of the clay industries in Illinois and the afternoon session was closed by the appointment of a committee on resolutions.

This first day's work could be characterized as being the University of Illinois session, as all of the papers given were by University professors and students.

Tuesday evening a large crowd of delegates attended the theatre in a body, and were entertained between acts by the Illinois college songs and yells and antics of the jolly students, who had just taken their final examinations.

Wednesday Sessions.

The convention opened its morning session at 10:00 o'clock. Mr. W. D. Gates, the good natured owner of the Gates Pottery, who has endeared himself in the hearts of the clayworkers throughout the United States, being an ex-president of both the N. B. M. A. and the A. C. S., delighted a large audience with his humorous and interesting talk on "Teco Ware." We will publish this talk in full in the April CLAY-WORKER. After a humorous talk by Mr. Loy, who recited a comic poem on Gates' Pottery, Mr. L. D. Hall, assistant in the Animal Husbandry at the University, read a very valuable paper on "The Value of Feeding Live Stock on Brick Paved Areas." This paper will be found on a preceding page of this issue.

Mr. W. P. Blair, President of the National Paving Brick Manufacturers' Association, read a well written paper on "What Constitutes a First Class Paving Brick." This was delivered in Mr. Blair's characteristic enthusiastic manner. He had a number of samples of paving brick on exhibition, which he had taken from different streets that had been laid for twenty odd years. He referred to these samples during the

reading of his paper and drew attention to the fact that though these brick had been subject to years of heavy traffic, they had not worn an eighth of an inch. This paper will be of interest to our readers and will be published in a later issue in its entirety.

Following this paper there was a long discussion on expansion joints in brick pavements. Mr. Blair stated that expansion and contraction could easily be taken care of by providing an expansion cushion parallel with the curb, and expansion joints running at intervals of fifty feet across the street.

President Stipes here appointed a nominating committee and the session closed with an interesting discussion led by Prof. Purdy, instructor in ceramic course at Illinois University, on the subject, "Can First Class Paving Brick Be Made From Any Kind of Clay?"

The afternoon session was called promptly at 2:00 o'clock, the first subject taken up being a paper by Frank W. Butterworth, of Danville, Illinois, on "The Advantages of a Technical Education for Clayworkers." Mr. Butterworth said that the tendency of business operations of all lines during the first six years of the twentieth century is toward specialism and consolidation and that this condition will continue to a greater degree even than in the past. The two things which make any business enterprise successful are money and brains, and it has become quite as much a question of money finding brains as it is of brains finding money. We are confronted in clayworking with the problem, "How can we train our young men in the shortest possible time, so they will use money and get from it its maximum efficiency?" He said, that this is an age when money wants not only the maximum knowledge, but it wants this knowledge coupled with the maximum energy, adaptability and resourcefulness and it has figured it out that these last qualities are procurable to a greater extent in the young men than in old. The young man of today, to use capital in the clay industries with reasonable assurance of ultimate success, must be capable of first, to judge the merits of a location for a plant as to quantity, quality and accessibility of the raw material and the market; second, to select the machinery, apparatus and kilns which are best adapted to the raw materials and which produce ware which will be suitable to the available market; third, to design and erect the plant in the best and cheapest way and in the least possible time; fourth, to operate the plant in the most economical way commensurate with the production of the most salable product; fifth, to sell that product to the best advantage and collect the money for it.

He declares a man can become proficient in the knowledge and qualification of this thing by practical experience, but it takes a life time. He said that he firmly believed that a young man, a graduate of our ceramic schools, with five years' practical experience, has a higher efficiency as a clayworker than a man with the same natural aptitude with twenty years' exclusively practical training.

He spoke urgently in behalf of ceramic schools and pointed out the fact that the University needed \$15,000 yearly, but that it had had only \$5,000, that the school had been very successful, but that it needed to enlarge the buildings and needed to put up new machinery, and hence, the Association ought to send five or six men down to Springfield to induce the Legislature to make the proper allowance.

The next paper on the program was by M. T. Goss, president of the Goss Engineering Company, of Chicago. His paper was on the subject of, "What Type of Boiler is Best for Clay Plants for Efficiency and Maintenance."

He stated that the type of boiler that was best for clay plants or for any other steam plant, where such a boiler can be installed, is an inclined water tube boiler, in combination with a furnace that will fulfil the requirements of accessibility for inspection and repairs, boring out the tubes when necessary, washing the heating surface inside and removing soot from outside.

The area of connecting mediums between the lower drums and steam drum must not be less than one square inch to six square inches of tube area or a ratio of one to six, in order that rapid and complete circulation can result. The steam drums should be horizontal and of sufficient diameter and

length to provide a large steam liberating area and a large reservoir to insure practically dry steam, even when the boiler is developing 50 per cent. overload. There should be ten square feet of heating surface for evaporation of $34\frac{1}{2}$ pounds of water per hour, or 30 pounds per hour with feed water, temperature of 100 degrees Fahrenheit, into steam at 70 pounds gauge pressure. The tubes should be straight with diameter, generally speaking, not less than three inches or more than four inches. The grate area should not be less than one square foot to from 45 to 55 square feet of heating surface, depending on the character of coal used and percentage of refuse present. It must be so designed that a thick fire brick arched Dutch oven furnace can be built under the boiler, not over seven feet wide in any case, set with a rise of not less than six nor more than twelve inches of sufficient length to insure a thorough mixing of the gases from volatile matter with oxygen from the inflowing air, while the furnace temperature is sufficiently high for ignition. Mr. Goss then went into detail on these various subjects.

After quite a discussion on this paper, President Stipes announced that the question, "What Has Producer Gas Done for the Clay Manufacturer During 1906?" was up for discussion. There were several arguments for and against the gas producer and the convention then passed on to the question, "What Method Should Be Used in Drying Soft Mud Brick in Medium Sized Yards?" After a short discussion of this question, the convention adjourned for the day to allow the dele-

stated that Cook county holds the world's record for high production and low cost in spite of the fact that all fuel shipped in and it is paying the highest brickyard ^{gas} known. He explained that this fact was the result of good management and the employment of the best labor saving devices. Steam shovels are used when possible, and ^{as} reduce greatly the expense for gathering the raw material. The best possible machinery is used, the engines are economical and the gearing on all the machinery is steel cut, which Mr. Blair insists is the ideal condition. He explained in detail the equipment of their yard and declared that the ^{cheap} brick is the ultimate solution of the building material problem, that the brickmakers throughout the country must get into the fight and raise the efficiency of his plant to such a point as to defy competition and must educate their trade to take a brick which can be made twice as fast and sold for 5 per cent. less money.

The last paper of the convention was a very instructive one by Prof. Ross C. Purdy, whose subject was, "How Fast Can Brick Be Burned?" This brought forth an earnest discussion, after which the resolution committee made its report, in which they incorporated a resolution for the continuance of the standing legislative committee, giving the committee all the power of propagating the conditions under which the needed appropriations could be secured for the establishment of better facilities and more rapid development of the ceramic course at Illinois University.



General View of the Factory of the Swift-Campbell Brick Co., Ottumwa, Iowa.

gates to go in a body on a special car out to the University, where they were delightfully entertained with an illustrated lecture on "The Aesthetic Possibilities of the Use of Clay Products in Architecture," by Prof. Case, Professor of Architectural Design at the University. The stereopticon views displayed photographs and sketches made of clay work of Italy and Spain, the most interesting of these being sketches made personally by Prof. Case and colored as near like the originals as possible. The originals were seven panels twenty feet long and four feet high on the Ceppo hospital at Pistoria, Italy, thirty-three feet from the ground. The work was done in the fourteenth and fifteenth centuries by the family of Della Robia, which family retained the secret of colored enamelling of clay work for a hundred years. The work is apparently as good today as it ever was. On the panel are figures of monks in their different modes of life, represented as visiting those in prison, washing the feet of pilgrims, giving alms, drink to the thirsty, embalming and laying out the dead and giving food to the hungry. After the lecture the delegates were shown through the testing laboratory and power plant of the engineering department.

Thursday Session.

The first paper to be read at the last session Thursday morning was by M. W. Blair, of Chicago, on the subject, "The Manufacture of Common Brick in Cook County." Mr. Blair

The following officers were then elected unanimously for the ensuing year:

President, W. M. Pratt, Earlville.

Vice-President, J. H. Mamer, Campus.

Secretary, Geo. H. Hartwell, Chicago.

Treasurer, Wm. Hammerschmidt, Lombard.

The convention then closed sine die for the twenty-ninth time.

The Annual Banquet.

Wednesday evening a very delightful banquet was tendered the Illinois Clayworkers' Association by President Stipes at the Beardsley Hotel. The tables were tastily decorated with carnations and ferns and dainty menus were to be seen standing at each plate. A stringed orchestra played from an overhanging balcony and aided materially in making merry the hearts of nearly one hundred and fifty banqueters.

Mr. W. D. Gates, of Chicago, pleasingly filled the position of toastmaster and introduced the speakers in his usually humorous manner. The toast list was an excellent one. Joseph Carter, of Champaign, spoke on "Workers in Mud." R. C. Purdy, Champaign, "Clayworker Students." J. W. Robb, Clinton, Indiana, "The Boys." Prof. E. J. James, Urbana, "University." Wm. P. Blair, Terre Haute, Indiana, "Tainted Money." L. P. Breckenridge, Urbana, "Smoke." D. O. Le ^{men} Watago, "An Everlasting Structure." ^{ou.}

Clayworkers' Institute.

Beginning Thursday afternoon, January 24th, the Department of Ceramics of the University of Illinois, held for eight consecutive days, a course of instruction, given entirely for the benefit of the clayworkers of Illinois, the purpose of which was to demonstrate what the University was doing for the younger minds and to aid the delegates in their troublesome problems, if possible. The meetings were fairly well attended considering the time of the year at which this institute was held. A number of the convention delegates had to return home immediately after the closing session Thursday, to prepare for their leave taking for the National Convention. The scope of instruction offered was very thorough, including four lectures on kilns, two on dryers, three on fuel, two on heat, three on clays, and five lectures on burning of clays.

Most of the lectures were given by members of the University faculty and were very instructive and interesting. Several prominent ceramists were also on the program and contributed the feature lectures of the institute. Mr. W. D. Richardson, A. M., senior member of the Richardson-Lovejoy Engineering Company, of Columbus, Ohio, headed the program beginning Thursday afternoon and delivered seven lectures. His lectures were mostly on plant construction, kilns and dryers, drying of green ware and general yard management. He has had much practical experience as superintendent and manager of clayworking plants and is known as one of the most successful ceramic engineers in the country. His lectures were well attended and proved one of the most enjoyable features of the eight days of instruction.

Prof. F. R. Watson, of the University, delivered two interesting lectures in the physics laboratory, one on "Elementary Description of Kinds of Heat Energy and Generation." This was illustrated by demonstrations. His second lecture took up the subject of "Measurement of Heat." This was on thermometers, pyrometers, cones, etc. He gave the history of the different measurement apparatus known to the clayworking world and explained their construction and usages.

Prof. Bain delivered a lecture on the origin of coal, while Prof. Rolfe, who is Professor of Geology in Illinois, gave a very interesting lecture on the "Geological History of Clays."

Prof. Ross C. Purdy, who has so wonderfully advanced the work in the ceramic department at Illinois, delivered three very interesting lectures, i. e., "Economic Classification of Clays," "Limits of Hardness to Which Clay Ware Should Be Burned," "Testing Clays With a View to Determining their Possible Commercial Uses."

Prof. Bleininger, one of the most capable chemists and ceramists in the world today, delivered three of the most interesting lectures on the program. He told in his first lecture of the effect of heat upon the structure of red, buff and white burning clay, dividing the lecture into five divisions, each representing a different stage in the burning, namely: (a) Watersmoking, (b) Dehydration, (c) Oxidation, (d) Vitrification, (e) Fusion. His second lecture dealt with the colorations produced by heat and flame, while his third lecture was on the subject "Colors Under Oxidizing and Reducing Conditions," such as flashing, blue smoking and salt glazing.

The last lecture was by Mr. A. S. Watts, ceramic engineer for the Locke Insulator Co. His subject was "Burning of Fine Wares in Down Draft Kilns."

The Largest Trade Ever in 1906.

Editor THE CLAY-WORKER:

Enclosed find draft for \$2.00, for which please send me THE CLAY-WORKER for the year 1907, and with it we wish you a prosperous and happy New Year. Have had a good trade during 1906, and should have sold all of my tile and most of my brick if we had had good roads. I burned 113 kilns of tile and brick during 1906, nine kilns more than during 1905, and the most I ever burned. My output for the year 1906 was as follows: 433,000 four-inch tile, 70,000 five-inch tile, 53,000 six-inch tile, 19,000 seven-inch, 32,000 eight-inch, 48,000 nine-inch, 16,700 ten-inch, 294,000 twelve-inch, 2,600 fourteen-inch, 4,000 fifteen-inch, 2,600 sixteen-inch, and 650,700 brick. Total pieces, 1,317,800. I could have sold more large tile, above

twelve-inch size, but had no room to dry them. Demand is increasing on large tile.

Brick trade has fallen off some on account of the cement block foundations for dwellings. There are no new tile or brick plants erected in this country, but almost every town has a cement block factory. All they need is a \$50.00 machine, a car of sand and a few barrels of cement and then launch out into business and try and knock out the brick-maker, who probably has from twenty to twenty-five thousand dollars invested in a plant. But I know one thing, if we have to quit, we can use the factory for a cement block factory. I am using four kilns, three 20-foot and one 24-foot, round down draft.

GEO. J. WALTERS.

Chatsworth, Ill.

THE IOWA IDEA.

The Swift Coking Table and Its Hustling Inventor.

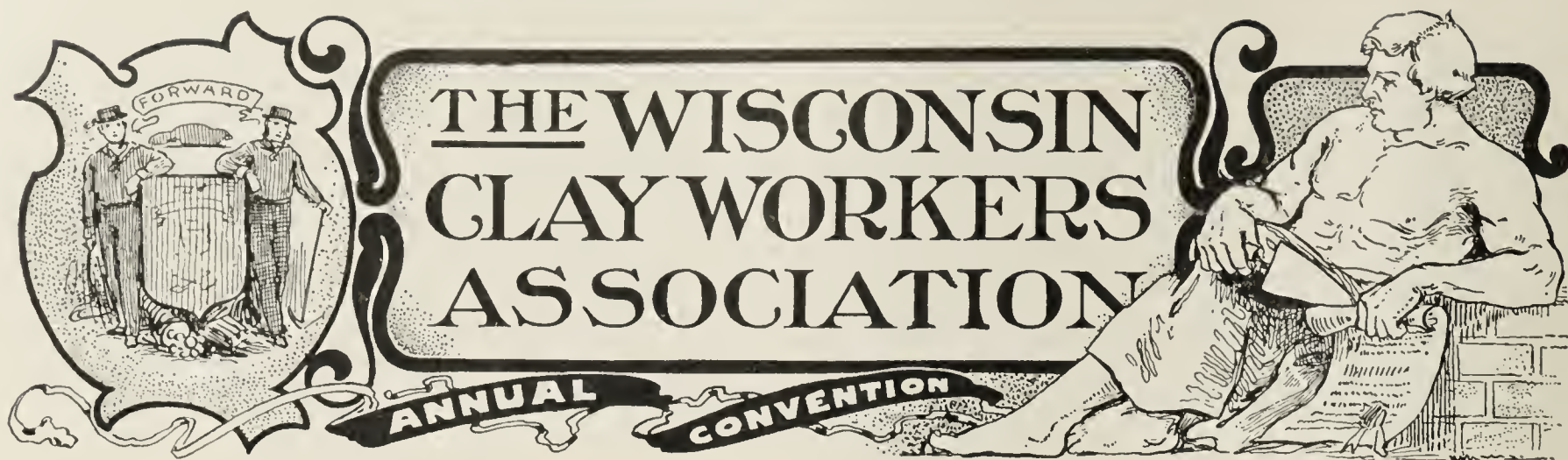
TIME was when it was rather a far cry from Iowa to Ohio, but in this day and age of rapid transit, telegraph, and long distance telephone communication, "things are not as they used to be." One can be a Buckeye in the matter of residence, and a Hawkeye in the matter of business, and successfully, too, as is demonstrated by Mr. F. E. Swift, known to fame as the inventor of the Swift Kiln Coking



Brick and Tile Plant of the Swift-Campbell Co., at Ottawa, Ill.

Furnace. Mr. Swift is a native of Iowa, having been born in Washington County, February 7, 1855. For more than two score years, he has been identified with the brick business, either as a manufacturer or as the inventor, builder and vendor of brick and tile kilns. Now, at the age of 51, Mr. Swift is, in the language of the street, "on easy street," and has taken up permanent residence at Dayton, Ohio, at which point he proposes to conduct his kiln business and direct his brickmaking interests in Iowa, where he is connected with the Swift and Campbell brickmaking plant at Ottumwa, and in Illinois, having an interest in the brick plant at Ottawa. Both of these plants, which we illustrate, have had a busy, prosperous season. They are well equipped throughout, and particularly so as to kiln equipment. Brickmakers looking for information on the all important subject of burning are invited to visit these plants and see for themselves the perfection and economy in burning made possible by the Swift method. Those who cannot visit the plants will be supplied with full particulars on application to Mr. F. E. Swift, whose permanent address is 514 West Fourth Street, Dayton, Ohio.

The machine which does not answer your purpose may be just what some one else needs. Tell the "needee" about it in a card in the "For Sale" columns of THE CLAY-WORKER.



PROCEEDINGS OF THE SEVENTH ANNUAL CONVENTION OF THE WISCONSIN CLAYWORKERS' ASSOCIATION.

Madison, Wis., February 27, 28, and March 1, 1907.

AT THE CALL of the President, Mr. Oscar Wilson, of Menomonie, the convention came to order at 2:30 o'clock Wednesday afternoon, and the meeting was opened by prayer by the Rev. F. A. Gilmore, of Madison.

Rev. Gilmore: Let us unite in prayer. Oh, Thou who art the great source out of whom we have issued, the Creator of our powers of mind and of body, and who hast set us useful tasks to do in the world, we thank Thee for the privilege of coming together here, each one out of his little corner of life, coming together here and looking into each other's faces and exchanging experiences and learning one from the other. We thank Thee for the past year with its labors and its failures and its successes. Help us to see the deeper meaning of our work and our labors, that each successive gathering may find us a step further than the previous one. Help us to see that we must put into the brick we make, or whatever we produce that goes into the industries or the arts, something of our character, our honesty, our love of truth, our humanity. So make fruitful our gathering together here, our interchange of views and opinions, send us back to our several places, and give us the best and most fruitful year that we have ever had. So would we live and act in this world as children of God. Amen.

At the suggestion of the President, the roll call was omitted at this time and members were asked to sign the Secretary's register at their convenience during the first intermission.

The Hon. J. C. Schubert, Mayor of Madison, was at this time introduced to the convention and spoke as follows:

Mayor Schubert's Welcome.

Mr. President, Members of the Wisconsin Clayworkers' Association:

As Mayor of the city, it gives me great pleasure and I consider it an honor to welcome you in behalf of the city and the citizens of Madison. When I was invited to welcome this convention, it was designated to me as a convention of brick-makers. I suppose that as Mayor of this city here, I am no different from public officers of other cities. They all come in contact, more or less, with what are commonly known as "bricks," usually of a very inferior quality, and when we strike them they go to pieces more or less.

I am glad to see so many of you here considering the limited number of clayworkers that you have in the State. I always feel that it is the duty of every man to attend the conventions which are directly in line with his work, with his business. Yours is one which affects, more or less, the general welfare of us all, and those who do not attend conventions are a great deal like the turtle which the two Irishmen saw along side of the road with its head cut off. They argued as to whether the turtle was dead or alive. They finally met Jake, to whom they left the decision as to whether the turtle was dead or alive. Jake said, "I'll tell you. He is a dead one, but he don't know it." (Laughter.)

I am sorry, however, that your convention is called at a time of the year when Madison shows up in her poorest garb. If your convention time could be changed to June, or any time from then until October, I know that you would enjoy the beauties of the city.

Now, gentlemen, I don't feel that I want to take up any of your time. I want to thank you, however, for having selected Madison as your place of convention, and hope that you may meet here many times hereafter. Remember, however, that while you are in the city, the city is yours, and I sincerely hope that you will enjoy yourselves while here. I hope that you will have a successful and instructive convention. I thank you and wish you God speed! Come again. (Applause.)

President Wilson: Gentlemen, according to our program, Mr. F. L. Sanborn, of Portage, was to respond to the Mayor's address, but he has been unavoidably delayed and will not be able to be here until tomorrow. Mr. H. De Joannis, however, who is one of the best brickmakers that we have, has kindly consented to respond in place of Mr. Sanborn.

Mr. H. De Joannis: You very nearly missed getting me. Mr. Mayor, the city of Madison has many charms as you have stated, but there is one serious objection here to newspaper men, and that is that every street almost has five corners, and in my usual condition, I find it extremely difficult to find my way to certain places which I am desirous of reaching. Mr. Sanborn would have been a much better representative than I and he was good enough to send in to President Wilson what he would have said had he been here, and in his absence I will read to you what Mr. Sandborn has prepared, and leave my own little speech under the desk.

Mr. Sanborn's Response.

Mr. President and Mayor Schubert: In behalf of the Wisconsin Clayworkers' Association, I wish to thank you most heartily for the cordial welcome which you have extended to us, and I assure you that we appreciate this courtesy very highly.

In the fall of 1901, our Association was formed in your beautiful city and therefore we feel quite at home on returning after six years. Since we were here last we have grown older and I hope wiser as an association, and while we have not accomplished all that we had hoped to do, yet we have accomplished much that is of benefit to us individually and as an association.

We come together at this time, not to form a trust or to raise prices, but to listen to and discuss papers that shall be of interest to us now as well as a benefit to us during the coming season. We are also able at these meetings to compare notes and tell of our successes and failures during the past year and in this way profit by each other's experience. Competition is growing sharper each year and it is only by adopting the most approved methods and making use of the latest improvements that we can hope to get a fair return from our products.

By coming together each year and comparing notes, we are able in many cases to improve the quality of our products as well as reduce the cost of production, so you will see that our annual meetings are not only very enjoyable, but also in many instances of great value to us.

This seems to be an age of conventions and associations, for we find that men engaged in almost all lines of business meet once a year in convention that they may become better acquainted with their competitors and at the same time learn many things that are of the greatest benefit to them in their business.

We have with us today men representing manufacturers of brick machinery and owners of patent kilns who would lead us to believe that if we would install their machinery and erect their kilns, our financial success would be assured. But, alas, we are too often, after following of machine men and kiln men, in the position of the negro roustabout on shipboard. When one of his companions was found, supposed to be dead, and he was ordered to throw the remains overboard, as he picked up the body and started for the rail of the ship, the supposed dead man protested, but the negro insisted on throwing him overboard and when a bystander interfered, he said, "Massa, I know he says he's not dead, but him lies so we can't believe him."

Mayor Schubert, again we thank you. (Applause.)

President Wilson: The next number on the program is one that probably ought to be dispensed with, but the President will read what he has prepared for the occasion.

President Wilson's Address.

Gentlemen of the Wisconsin Clayworkers' Association: Again we are assembled in annual session to exchange greetings and to discuss among other practical things in and out of clays.

At our last annual meeting it was my pleasure, among other things, to have the clayworkers of Wisconsin visit my home town and see what clayworking industries have developed from what was originally a lumber town. Today instead of being a host, I am glad to be classed among the guests, and from the very warm words expressed by the Mayor of our Capital City, the question naturally arises in my own mind, if clayworking industries are the development of what was originally a lumber town, what may we expect to develop from a city where the laws of the State are made?

The demand for brick and other clay products has been large the past year, probably greater in some localities of the State than others, and I trust each member of this Association has received his full measure of its benefits. The building public is and has good reasons to expect the clayworking industries to keep abreast with the times in producing an article that will pass rigid inspection and stand the test of time, and as operators in the different arts and sciences of the business, we must aim at the high mark, perfection.

To some of us who have been associated in the clayworking business but a few years, like myself, and some of you who have been in the business many years, I trust the following, which is an extract from an article by Prof. Edgar J. Banks, field director of the Babylonian Expedition of the University of Chicago, on clay products of early Babylonia, and appeared in the January issue of THE CLAY-WORKER, will be of interest. Prof. Banks says in part:

"In my recent excavations at Bismya for the University of Chicago, we were fortunate to come upon the oldest known civilization of man, and among the ruins which may date as early as ten thousand years ago down to 2400 B. C., were found 45 varieties of brick. The first brick ever made by man was an irregular rectangular chunk of clay dried in the sun, and it was the only brick known until about 4500 B. C., when men learned to bake them. Who the great discoverer of the burned brick was we shall never know, but certainly he was some half-naked Babylonian who noticed that the mud beneath a previous camp fire had become red and hard like a stone. The discovery was one of the greatest ever made, for it gave the world its most common building material and the common household utensils of clay.

"In every age of Babylonia, clay was employed for nearly every purpose that we now use paper. The books of the day, and they were many, and some of them were so long that they were in several volumes, were all of carefully kneaded clay finely inscribed with minute wedge-shaped characters, and baked. The contracts of the people, receipts for all sorts of transactions, letters, tags for attaching to merchandise, the

historical records preserved in the walls of public buildings, and in fact, everything which called for writing was made of clay. Probably half a million inscribed clay tablets have been found in Babylonia, and many of them are as perfect as ever. In size they vary, according to the amount of writing which they were intended to contain. Some of them are 18 inches long and 12 inches wide, and upon each side are six finely written columns, while others are hardly half an inch square, merely large enough to contain the two or three words for which they were made. Sometimes the letters were provided with envelopes, also of clay. When the letter had been stamped with the little wedge-shaped marks of which the language is composed, a thin coating of clay was wrapped entirely around it. Sometimes the inscription was repeated upon the envelope, or merely the name of the writer was inscribed, and the letter was then placed in the sun to dry or in the oven to bake. A sharp pointed bronze instrument was employed to open it by breaking the envelope away."

From this you will readily observe the working of clays has been going on for ages, and the most of us at this time are continually experimenting with a view of improving our product. Good goods are demanded in other lines, and the demand is met by the manufacturer of those particular articles. Good brick are demanded and it is up to the brick manufacturer to meet this demand. Good goods in other lines invariably bring good prices. Good brick can not be very much



President Oscar Wilson, Menomonie, Wis.

to the contrary unless we as manufacturers fail to see the wisdom of getting their value.

Attention is called to the report of clays in Wisconsin by Prof. Ries, issued by the Wisconsin Geological Survey, which has recently been distributed. This report, as every one knows, has been unavoidably delayed by the State printers, but has now been distributed and is a volume of scientific information and is of great value to clayworkers, and proper resolution of thanks and appreciation of this work should be passed at this session.

It is hoped that each member present will find something of value on the various papers on the program, and the discussion following each subject.

In closing I want to particularly thank Mr. Samuel Weidman, of Madison, and our worthy Secretary, Mr. Hamilton, for their very able assistance in making the pleasant arrangements for this session; also those who have kindly and liberally contributed to our program, and last, but not least, to thank you one and all for coming to this meeting, which means interest and attendance at our annual meetings, and results in success. (Prolonged applause.)

President Wilson: It has been the usual custom for the Secretary to have a few communications from absent members, or others, and if there are no objections and the Secretary has any such communications, he may present them.

Secretary Hamilton: Mr. President, I have received no

communications from any of the members saying that they are not to be here; so I think I have nothing of interest to present at this time.

President Wilson: I may say that the appointment of committees was put upon the program at this time for the purpose of affording an opportunity for the appointment of any committees for the session that may be desired. Has anyone any suggestions to offer?

Mr. H. De Joannis: Committee on Resolutions.

Mr. Kennedy: I think, Mr. President, that your committee ought to be appointed at this time to prepare their ticket for the officers for the ensuing year and that will give the candidates a chance to get around among the boys and buy the cigars. It is embarrassing to wait until the last minute and buttonhole them. (Cries of Hear! Hear!)

Mr. Kennedy's motion having been seconded by Mr. Frazier, President Wilson asked for remarks. None being forthcoming, the motion was put to vote, viva voce, and carried.

President Wilson: The Committee on Resolutions will consist of Mr. H. De Joannis, Mr. J. B. Theriault and Mr. A. W. Hooker. The names for the other committee I will announce later in the afternoon.

The President here declared a short recess of about twenty minutes, and suggested that during the intermission the members would have an opportunity to sign the register of the Secretary and also to relieve themselves of any ready cash they had that the Treasurer might need.

Wednesday Afternoon Session.

At 3:05 p. m. the convention was again called to order by gavel of the President.

President Wilson named as members of the Committee on Nominations and to report on the place of holding the next meeting, Messrs. S. Weidman, Madison; F. Vogt, Milwaukee, and L. T. Crabtree, Crandon.

President Wilson: During the recess, the Secretary has found a couple of communications, which, if there are no objections, he will read at this time.

Secretary: The following communication has been received from R. B. Watrous, of Milwaukee, Secretary of the Citizens' Business League of Milwaukee, dated February 27th, 1907.

Wisconsin Clayworkers' Association, Madison, Wis.

Gentlemen:—The Citizens' Business League extends to you a cordial invitation to hold your next annual convention in Milwaukee.

We do so in the belief that Milwaukee possesses to a marked degree all the necessary qualifications for the holding of successful State conventions. Our central location and easy access by rail from all parts of the State ensure a large attendance and our ample hotel facilities and excellent meeting places ensure the best accommodations for all those who attend.

We remember with much pleasure your second annual convention, held in this city, and should esteem it an honor to have you vote to return to Milwaukee for another session. We assure you that all the people of Milwaukee would be glad to join in tendering you a hearty welcome.

(Signed.) R. B. WATROUS, Secretary.

Secretary Hamilton: Perhaps the following letter should be submitted to the convention at this time. It is from Thurmer Hoggard, of Baraboo, Wis., and dated January 25th, 1907:

Mr. J. G. Hamilton, Secretary, Grand Rapids, Wis.:

DEAR SIR:—I have your kind favor of the 18th, inviting me to attend the coming convention of clayworkers association to be held at Madison on the 28th day of February, and have been trying to see my way clear to do so.

I regret exceedingly, that I will not be able to attend any of the meetings, as I expect to be out of the State for a month or six weeks about that time, and in view of this uncertainty, I would prefer not to accept a place on your program for a paper.

I take the liberty though, of sending you herewith at-

tached, a reprint from the Iron Trade Review giving a description of our plant at Joliet, Ill., and a few details in the manufacture of silica brick. I would also be glad to have sent you at Madison within the next two weeks, a few specimens of the brick and a sample of the Devil's Lake quartzite, from which they were made, if they would be of any interest to you or the convention.

Thanking you for your kind invitation.

Very truly yours,

(Signed.)

THURMER HOGGARD.

President Wilson: If there are no objections, the communications from the Citizens' Business League of Milwaukee and from the Mayor of Milwaukee, will be referred to the committee to select the place of holding the next meeting, and we will now take up the program. The first number is a paper on "Sand Lime Brick," by Mr. E. W. Smythe, of Madison.

SAND-LIME BRICK.

BY E. W. SMYTHE.

There seems to be a general impression that sand-lime brick is a new and untried building material; scarcely out of the experimental stage. Although sand-lime brick cannot boast of a pedigree traced to the time of the Pharaohs or the Tower of Babel, still it has been in use long enough to establish, without doubt, its quality as a first class building material.

Sand-lime brick were first made in Potsdam, Germany, about 1820. Potsdam, situated in central Germany, is surrounded by a broad sandy plain; there being no clay or stone available for building purposes, sand and lime were made into mortar, molded into bricks and allowed to cure from three to four months in the open air. These brick withstood all the required tests and increased in hardness with age. The attention of Dr. Michaelis, of Berlin, in 1880, was attracted to this peculiar kind of brick, and after experimentation, he discovered, that by subjecting the green brick to steam, under pressure, the brick after a few hours were rendered as hard as though they had been exposed to the atmosphere for many months. After the discovery made by Mr. Michaelis, the manufacture of sand-lime brick increased rapidly throughout Germany and many large plants for their production were erected.

In our own country, the oldest sand-lime brick of which we have any record, are those in the walls of a house in Mobile, Alabama, built fifty years ago. As to whether these brick were made in this country, or elsewhere, is not known, but at any rate they are in good condition and appear to have been made in a manner similar to those first made in Germany.

But not until 1901 were sand-lime brick manufactured in any considerable quantity in the United States. During this year two plants were in operation. In 1903, sixteen plants; in 1904, fifty-seven, and in 1905, 130. At present, there are probably about 200 plants, all told. Among these plants there is a great diversity in the manner of handling and combining their materials. These differences occur from local conditions and the way in which they hydrate the lime and the manner of incorporating the lime with the sand.

In a general way, I shall now describe the process of manufacturing sand-lime brick, as carried on by the plant in this city, and then refer briefly to some of the methods used by other manufacturers.

The sand, as it is brought in dump cars from the bank, is shoveled into an elevator boot, from which it is elevated about thirty-five feet and discharged upon a vibrating screen. Here it in run through a ¼-inch mesh screen, and falls into a conveyor over the numerous coils of a steam dryer. The sand must be perfectly dry. There can be no half-way place in regard to the dryness of the sand, for you cannot mix sand and lime intimately, unless both are thoroughly dry. The wet sand, as it rests upon the pipes, dries and runs down into a hopper shaped bin in the bottom of which is a conveyor for drawing the sand out as it is needed.

The lime is slacked in water tight, steel boxes, mounted on wheels. Each of these has a capacity of about 450 pounds of dry slacked lime, a quantity sufficient for one thousand brick. The quick lime is weighed out, placed in the boxes and the proper quantity of water added to it. To determine the correct amount of water to apply to the lime, in order that a dry slack may be secured, is not always easy, as the lime, when received at the factory is nearly always more or less air slacked, and also there is considerable variation in the quality of lime, even when the lime-stone comes from the same ledge. After applying the water, the lime cars are run under the brick cars in the same cylinder in which the brick are hardened, and the slacking is thus completed, and the surplus of moisture (if not too great) dried out. The dry slacked lime is now dumped from the cars upon a grizzly, which takes out all the large cores. Passing through the grizzly, the lime descends into a hopper and is conveyed to an elevator, which discharges it into a bolting machine where all the small cores are extracted. Leaving the bolting machine, the lime falls into a bin, directly opposite the bin containing the dry sand.

Between the lime and sand bins is a measuring device, and the dry sand and lime are brought to it by conveyors, placed in the bottoms of their respective bins. The right proportions being

measured out, the mixture is allowed to fall into a preliminary mixer, where for two or three minutes the sand and lime receive their first mixing. Passing on from this mixer, the sand and lime are fed by a conveyor into a tube mill, where they are thoroughly ground and mixed; each grain of sand is completely coated with minute lime particles. Leaving the tube-mill, the mix is at once elevated to a pug-mill, where just sufficient water is added to cause it to cling together when compressed tightly in the hand. The pug-mill discharges the dampened material into a four-mold press. The green brick are loaded upon cars, one thousand brick to a car, and run into a large steel cylinder, fifty feet long by six feet in diameter. After filling the cylinder (which holds a day's run), live steam is turned into it. About two hours are required to bring the steam pressure up to 120 pounds per square inch, which pressure is maintained for eight hours. After steaming, the brick are ready for market. Twenty-four hours have elapsed since the sand left the bank until it leaves the cylinder, a finished brick, ready to lay in the wall. In several instances, we have afforded masons the unusual pleasure of laying hot brick on a cold morning.

In the process of manufacture just described, the lime was slacked before incorporation with the sand, but in some processes the quick-lime is ground, then mixed with the sand and passed through a tube or ball mill. After grinding, the proper amount of water is added, and the mixture is conveyed to a silo, where it is permitted to slack and cure for twenty-four or forty-eight hours. It is then withdrawn and made into brick. Others grind but a part of their sand and lime and some do no grinding whatever. There are some factories which use the damp sand directly, as it comes from the bank. To this damp sand, damp slacked lime is added. The two are run through a short pug-mill, then to the press and made into brick. The process is beautiful for its simplicity, but the product is not a credit to the sand-lime industry.

The materials entering into the manufacture of sand-lime brick are as common as that entering into the production of clay brick, but as all clays are not suitable for making good clay brick, so all sands are not suitable for making good sand-lime brick. The sand must be clean and contain a high per cent of silica. Of all the impurities in sand clay, iron oxide and feldspar are the most common. The two latter may be left out of consideration, as they seldom appear, save in small quantities. Clay, however, is nearly always found in sand, and many times in considerable quantities. To determine what effect the presence of clay has upon the strength of sand-lime brick, Mr. Pepple, a member of the Ohio Geological Survey, made some valuable experiments. He made up numerous samples of brick, varying in each the percentage of clay. Upon testing these brick, he found that up to 3 per cent. addition of clay, very little change took place in the strength of the brick, but for amounts over this there was a decided decrease, both in crushing and tensile strength. It was also interesting to note, that small amounts of clay decrease slightly the water absorption of the brick, acting to some extent as a water proofing agent.

For the manufacture of sand-lime brick, a high calcium lime is by all means the best. Magnesian limes, while they give just as strong a brick as do the high calcium limes, are too slow in slacking, and one runs considerable risk in using them, since, if the lime is not thoroughly slacked before the brick go into the hardening cylinder, slacking will continue, and the lime expanding, will crack and ruin the brick. The best practice demands 8 per cent. by weight of slacked lime. A less amount of lime than this does not give a brick first class in strength; and a larger per cent of lime than this, while it adds slightly to the crushing strength of the brick, it also adds to the water absorption, and incidentally to the cost.

To secure the best results, the lime must be thoroughly mixed and ground up with the sand. For this mixing and grinding there are various machines upon the market which can be used. Among them are the tube-mill, ball-mill and gyratory-mill. The last two mills mentioned, have one advantage over the former, that is of being able to handle the material when it is slightly damp; whereas, in the tube-mill, a trace of moisture in the material causes the lime to stick and form a coat over the sides of the silax lining, in which case, little or no grinding is done by the mills, I believe the tube-mill to be the best, as it not only gives a very finely ground product, but also gives a more thorough mix than the other two mills. Another point in its favor is, that the cost of repairs on a tube-mill is considerably less than that required by the ball or gyratory mill.

In the manufacture of sand-lime brick, the machinery is subject to much greater wear and strain than that used in the production of clay brick, and the maximum of this wear centers in the grinding mill and the press. The press must be massive and built to withstand excessive strains, because a slight variation in the amount of water added to the mix, makes a very great difference in its compressibility—therefore, the press must have a large surplus of strength in order to withstand this extra stress, which will most likely be brought upon it. Within the press, the greatest wear is on the mold box and mold liners. A set of the best liners will turn out about one hundred thousand perfect brick. Beyond this number, they become considerably worn, and the edges of the brick are feathered and rough, so that they are suitable only for common brick.

In steaming the brick, two methods can be followed to secure the same result. Either a high steam pressure for a few hours, or a low pressure for a comparatively longer period. In either case, the brick will attain the same degree of hardness. Most manufacturers are, however, agreed that eight hours at a

pressure of 120 pounds per square inch (two hours being required to bring the cylinder up to this pressure), is the best and most economical practice. The steam must not be turned in too fast, as the surfaces of the brick will become highly heated, while the interior remains cold; the unequal expansion thus produced, causes the brick to check.

Through the over zealous efforts of machinery jobbers, who think only of disposing of their machinery, an erroneous impression has been spread abroad, that sand-lime brick can be manufactured at extremely low cost. The cost of manufacturing sand-lime brick depends upon the same variable quantities as does the manufacture of clay brick or any other product. Labor and fuel are the main items in the manufacture of brick, and to produce brick cheaply, a dollars worth of labor must be got for every dollar paid for labor, and for every pound of fuel the greatest possible number of heat units must be utilized. It is the stopping of the little leaks that make the profits in manufacturing.

All things considered, I believe that an economically operated sand-lime brick plant and an economically operated clay brick plant, both making a first class product, will, providing the cost of labor and fuel is the same, produce these brick at about the same cost.

In closing, I wish to quote two statements made by men, who, in their respective counties, are well acquainted with building materials. Says Fritz Polman, Architect of the Minister of Public Works of Germany, "The satisfactory experiments made with sand-lime brick have induced the administration of the State and cities to abandon their attitude, which was for a long time unfavorable, and to use this material in numerous public structures." The German government will use only building materials which have been subjected to thorough tests, extending over a period of ten years.

In a report issued by the Department of the Interior, of our government, Mr. Middleton, who compiled the report, makes this



Secretary J. G. Hamilton, Grand Rapids, Wis.

statement in reference to sand-lime brick, "That this method of manufacture of building material is a success, and will be a permanent factor in the building industry, is hardly to be doubted. It is also equally certain that it will never displace the time-honored burnt clay brick." (Applause.)

Discussion.

President Wilson: The paper is now open for discussion. Has any member any question to ask Mr. Smythe? Gentlemen, this paper is very interesting and ought to contain some points that will be interesting to the clayworkers.

Mr. Weidman: I would like to ask Mr. Smythe if he makes any preparation of his materials, such as sand, any more than having them clean.

Mr. Smythe: No, they are simply dried.

Mr. H. de Joannis: Do you run all your sand and all your lime through the tub mill?

Mr. Smythe: Yes, we do.

Mr. H. de Joannis: What capacity do you get daily?

Mr. Smythe: Fifteen thousand.

Mr. H. de Joannis: What is the length of your tubing?

Mr. Smythe: Twenty-two feet.

Mr. Vogt: How often do you put in new liners?

Mr. Smythe: You can run off a million common brick without change, but when you want face brick, you must put in new liners.

Mr. H. de Joannis: Have you ever used the saw-blade liners?

Mr. Smythe: No.

Mr. H. de Joannis: You know of them of course?

Mr. Smythe: Yes, we know about them, but from what we have heard of them from others who have used them, we do not think we care to try them.

Mr. H. de Joannis: How often do you grind your liners before you discard them?

Mr. Smythe: You can grind them twice.

Mr. H. de Joannis: What is the cost of grinding liners?

Mr. Smythe: In the neighborhood of \$8.

Mr. H. de Joannis: As cheaply as that?

Mr. Smythe: Yes.

President Wilson: How many brick, Mr. Smythe, are made at one stroke of the machine?

Mr. Smythe: Four bricks.

President Wilson: Now, Mr. Smythe, it is a very common thing for the clay brick yards to accumulate a few bats that they do not know what to do with. I would like to ask you if you accumulate any bats?

Mr. Smythe: Theoretically, there ought not to be bats, but there are bats. That is probably due to the fact that they will not stand a jar, such as the jar given them when the car is run over a little pebble or something and the lower row of brick will crack. Sometimes such a jar will spoil a whole load of brick.

A Member: I would like to ask you, Mr. Smythe, if you can take that damaged brick, either before or after it is dried, and grind it up again and use the material?

Mr. Smythe: Oh, yes, if you want to go to the expense of grinding, but it would not pay to do that.

Mr. Hilker: What per cent of 15,000 is there wasted?

Mr. Smythe: That is pretty hard to tell. Of course there ought not to be any waste, but, as I have said, the men in handling will break some of the brick, but as to just what the percentage is, I could not say. However, it would be small.

Mr. Hilker: About 5 per cent.

Mr. Smythe: No, it would not amount to 5 per cent. If it does, something ought to be done. It would not do to have that much waste.

President Wilson: I believe Mr. Smythe made the statement that the manufacture of sand-lime brick required stronger machinery than clay brick. Is there anything in this that our machinery friends wish to discuss? It occurred to me that perhaps there might be something in this, concerning which our machinery friends would like to ask a question.

Mr. Smythe: Well, I might say along that line that the press we use is made and used for making clay brick. We have broken the press several times, due to the fact that variations of moisture cause greater strain, and for that reason I think that the machine should be built stronger.

President Wilson: Have you anything to offer along this line, Mr. Stoll?

Mr. Stoll: No, I guess not. Formerly, in the manufacture of a press for making dry pressed brick of clay, the cam shaft was $5\frac{1}{2}$ inches; for making sand-lime brick, we found we had to strengthen the shaft and so enlarged it to 7 inches.

Mr. H. de Joannis: Do you experience any difficulty in staining your brick after they have been in the wall?

Mr. Smythe: No, we have not yet had any trouble.

Mr. H. de Joannis: There seems to be an impression that the brick are liable to stain, or scumming.

Mr. Smythe: No. Of course the brick being white will show a stain more readily than a clay brick.

Mr. Hooker: How many shades do you make?

Mr. Smythe: One color, a light shade.

President Wilson: Any one else any question to ask?

A Member: I would like to ask Mr. Smythe to make a statement regarding the pressure and fire resistance of sand-lime brick.

Mr. Smythe: Prof. Maurer will speak on that subject a little later.

President Wilson: I wish to say, gentlemen, that we are afforded an opportunity of visiting Mr. Smythe's factory tomorrow, and I have no doubt when we are on the ground many of us will feel more like asking questions that may

present themselves to us, than now. If there is nothing further to be said on this paper, we will pass to the next number on the program, "Some Tests of Wisconsin Sand-Lime and Clay Bricks," by E. R. Maurer, Professor of Mechanics, University of Wisconsin:

SOME TESTS OF WISCONSIN SAND-LIME AND CLAY BRICK.

BY E. R. MAURER.

When Dr. Weidman first asked me to prepare a paper for this meeting, it occurred to me that the subject which has been announced by the President, might be suitable, but in working up the material, I found that I had a great many figures to present and it seemed to me that what I had prepared would be dry, it being so full of figures and statistics. Instead of following my original plan, I shall adopt the suggestion of Dr. Weidman, that I take this report of Prof. Ries on the "Clays of Wisconsin," and say something in addition, if possible, on the tests that he had made of Wisconsin brick. The tests that I first worked up for presentation to the meeting, I think, will probably be published through another channel at no very distant date, and I will see to it that the members of the association are furnished with accounts of those tests.

I feel that it is very difficult to say anything in addition to what Prof. Ries has already reported in his bulletin. The matter of judging brick is a pretty difficult one, I know, and I feel quite incompetent to talk to the association on that subject. It is not like testing butter. Butter judges can take twenty samples and grade them properly, they having succeeded in working up a system of judging probably by means of many competitions and conventions of this sort. Nothing like that has ever been worked up with reference to brick tests. Although brick is an old product, the subject of testing brick is not so developed as that of many other building materials. Cement, for instance, is tested every day in every center where much building is done, and although the testing of cement has not been brought to the stage of butter testing, yet certain standards have been adopted, as most of you know, which a good cement must come up to. And a poor cement will not come up to those standards. That is to say, it is possible to authoritatively draw the line between a good cement and a poor cement. There will probably some day be some such standard by which brick will be commonly judged.

Within two years, certain specifications were adopted by New York City for judging brick. Abstracts of these specifications I have had printed and they are being passed around. (The full specifications are here presented; the abstract was Section 14.)

Regulations of the Bureau of Buildings for the Borough of Manhattan, for the Testing of New Materials of Construction.

1. These regulations are to apply to all such new materials as are used in building construction, in the same manner and for the same purposes, as natural stones, brick and concrete, are now authorized by the Building Code.

2. Before any such material is used in buildings, an application for its use and for a test of the same must be filed with the Superintendent of Buildings. A description of the material and a brief outline of its manufacture must be embodied in the application.

3. The material must be subjected to the following tests: Transverse, compression, absorption, freezing and fire. Additional tests may be called for when, in the judgment of the Superintendent, the same may be necessary. All such tests must be made at some laboratory of recognized standing, under the supervision of the Engineer of the Bureau of Buildings. The tests will be made at the expense of the applicant.

4. The results of the tests, whether satisfactory or not, must be placed on file in the Bureau of Buildings. They shall be open to public inspection, but need not necessarily be published.

5. For the purposes of the tests, at least fifteen samples or test pieces must be provided. Such samples must represent the ordinary commercial product. They may be selected from stock by the Superintendent of Buildings, or his representative, or may be made in his presence, at his discretion. The samples must be approximately eight inches long, four inches wide and two inches thick. In cases where the material is made and used in special shapes or forms, full sized samples may also be called for and tested in such manner as may be directed by the Superintendent of Buildings, to determine the physical characteristic specified in Regulation 3.

6. The samples may be tested as soon as desired by the applicant, but in no case later than sixty days after manufacture.

7. The weight per cubic foot and specific gravity of the material must be determined.

8. These tests shall be made in series of at least five, except that in the fire tests, a series of two (four samples) is sufficient. The transverse tests shall be made first on full-sized samples (8 by 4 by 2). The resulting half samples are then used for the compression and absorption tests, but in no case must both halves of the same piece be used in either series. Half samples may also be used for the freezing and fire tests, under the same restrictions. The remaining samples are kept in reserve, in case unusual flaws or exceptional or abnormal conditions make it necessary to discard certain of the tests. All samples must be marked for identification and comparison.

9. The Transverse test shall be made as follows: The sample shall be placed flatwise on two rounded knife-edge bearings set parallel, seven inches apart. A load is then applied on top, mid-

way between the supports, and transmitted through a similar rounded edge, until the sample is ruptured. The modulus of rupture shall then be determined by multiplying the breaking load in pounds by twenty-one (three times the distance between supports in inches), and dividing the result by twice the product of the width (approximately four) in inches by the square of the depth (approximately two) in inches.

10. The Compression test shall be made as follows: The sample must first be thoroughly dried to a constant weight. It must be carefully measured, then bedded flatwise either in plaster of paris or blotting paper, to secure a uniform bearing in the testing machine, and crushed. The total breaking load is then divided by the area in compression in square inches.

11. The Absorption test must be made as follows: The sample is thoroughly dried to a constant weight. The weight must be carefully recorded. It is then placed in a pan or tray of water, immersing it to a depth of not more than one-half inch. It is again carefully weighed at the following periods: Thirty minutes, four hours and forty-eight hours, respectively, from the time of immersion, being replaced in the water in each case as soon as the weight is taken. Its compressive strength, while still wet, is then determined at the end of the forty-eight hour period, in the manner specified in Regulation 10.

12. The Freezing test is made as follows: The sample is immersed, as described in Regulation 11, for at least four hours, and then weighed. It is then placed in a freezing mixture or a refrigerator, or otherwise subjected to a temperature of less than fifteen degrees Fahrenheit, for at least twelve hours. It is then removed and placed in water, where it must remain for at least one hour, the temperature of which is at least one hundred and fifty degrees Fahrenheit. This operation is repeated twenty times, after which the sample is again weighed while still wet from last thawing. Its crushing strength should then be determined, as called for in Regulation 10.

13. The Fire test must be made as follows: Two samples are placed in a cold gas furnace, in which the temperature is gradually raised to seventeen hundred degrees Fahrenheit in one hour. One of the samples is then plunged in cold water (about fifty to sixty degrees Fahrenheit), and results noted. The second sample is permitted to cool gradually in air, and the results noted.

14. The following requirements must be met to secure an acceptance of the materials: The modulus of rupture must average four hundred and fifty and must not fall below three hundred and fifty in any case. The ultimate compressive strength must average three thousand pounds per square inch and must not fall below twenty-five hundred in any case. The percentage of absorption (being the weight of water absorbed divided by the weight of the dry sample) must not average higher than fifteen per cent. and must not exceed twenty per cent. in any case. The reduction of compressive strength must not be more than thirty-three and one-third per cent., except that when the lower figure is still above three thousand pounds per square inch, the loss in strength may be neglected. The freezing and thawing process must not cause a loss in weight greater than ten per cent., nor a loss in strength of more than thirty-three and one-third per cent., except that when the lower figure is still above three thousand pounds per square inch, the loss in strength may be neglected. The fire test must not cause the material to disintegrate. (Note—No great stress will be laid on this last test.)

15. The approval of any material is given only under the following conditions:

(a) A brand mark for identification must be impressed on, or otherwise attached to the material.

(b) A plant for the production of the material must be in full operation when the official tests are made.

(c) The name of the firm or corporation and the responsible officers must be placed on file with the Superintendent of Buildings, and changes in same promptly reported.

(d) The tests must be repeated at any time when called for, on samples selected from the open market, when there is any doubt whether the product is up to the standard of these regulations.

(e) In case the results of tests made under this condition (d) should show that the standard of these regulations is not maintained, the approval of this Bureau will be at once suspended or revoked.

ISAAC A. HOPPER.

Superintendent of Buildings,
Borough of Manhattan.

April 3, 1905.

I thought they might interest you, assuming that you do not already know about the origin of the New York standards, I would say that they came into being through the introduction of sand-lime brick in that city. There, just as elsewhere, the question immediately arose on the appearance of this brick: Is it as good as our common clay brick? The people who had to decide this question got at it in this way: They found out what their accepted clay brick would test and then held the sand-lime brick up to those tests. They tested fourteen different varieties of common clay brick. The samples (about ten of each variety) were taken from the sites where they were being used. The tests were such as are usually made for judging brick, namely, compression, transverse and absorption, also freezing and fire tests. The compression tests were made on half brick. The fourteen varieties showed an average strength of nearly 4,000 pounds per square inch and a few brick tested as low as 2,500.

In the transverse, or cross-bending, test, the brick is supported near its ends and an increasing load is applied at the middle until the brick is broken. Of course, this load depends on the distance between supports and size of the brick. The load corrected in a certain way for size, etc., is the modulus of rupture of the speci-

fications. The fourteen varieties gave an average modulus of nearly 500 pounds per square inch, and few brick tested as low as 300.

The absorption tests were made on half brick. The specimens were well dried, weighed, immersed in water (some only partially) and then weighed again after certain intervals. The absorption in five days (nearly the same as for two days) averaged 15.3 per cent. and few ran as high as 20 per cent.

The freezing tests were made on half brick. The specimens were first thoroughly soaked, then frozen, then thawed, and subjected to this treatment twenty times. "The results of these tests were not very satisfactory."

Upon the data of these tests, fully reported in Engineering News, April 13, 1905, only briefly described here, supplemented by such other information as was obtainable at the time, the New York specifications were based.

Now, it would be interesting to compare the results of the tests on Wisconsin brick with the New York standards. Unfortunately for this comparison, all the different tests provided by the specifications were not performed on the Wisconsin brick, and moreover, the conditions of all the Wisconsin tests were not the same as those prescribed by the specifications. But in the Wisconsin absorption tests the conditions were practically the same as those set down in specifications and the comparison would be a fair one. I find as to absorption that only eighteen per cent. of Wisconsin makes of soft mud brick and only fourteen per cent. of the stiff mud comes up to the New York standard.

In regard to crushing and transverse strength, a fair comparison can not be made because the Wisconsin tests were not made under the favorable condition permitted by the New York specifications. The specifications require that all tests on crushing and cross bending shall be performed on thoroughly dried brick. This preliminary drying is a new feature in testing and is not universally practiced at the present time. The Wisconsin brick were not



J. W. Hinkley, Green Bay, Wis.

dried, but were tested just as they came into the laboratory, which was the common practice. At least, Prof. Ries does not say anything about having dried them, in this bulletin, and I assume that they were tested in a normal condition. Now, drying makes a great difference in these tests. For instance, the man who made the New York tests found that sand-lime brick dried developed an increase of from 20 to 50 per cent. He does not say anything on this point with reference to clay brick, but I find here that he made a test upon one particular variety of clay brick and again tested it after drying, and found that the brick that had been thoroughly dried were stronger transversely by 18 per cent. and in crushing by 45 per cent.

It is worth noting that all the Wisconsin stiff mud brick come up to the New York standard on the transverse test in spite of the fact that they were not dry when tested.

I said at the outset that I believe the time will come when we will have specifications such as we have in New York, or modifications of them, which would stand with reference to the brick industry just as cement specifications with reference to the cement industry.

After specifications were adopted by New York, a set of specifications very similar to those were adopted by Philadelphia, and I think that probably all the large cities will, in time, adopt some specifications which resemble these more or less.

I might also say that the American Society for Testing Materials has taken this matter up. A committee was appointed last summer to standardize methods of brick testing and I understand that the committee is now at work on their problem. I think the next thing the organization will take up along this line will be specifications for brick. (Applause.)

Discussion.

President Wilson: I want to here thank Prof. Maurer for putting before us such valuable information. Is there anything more to be said on the subject?

Dr. S. Weidman: Do you think there is no correct way

of making a comparison of the test made by Prof. Ries with those made in New York?

Prof. Maurer: No. Because the Wisconsin brick were not dry when tested. We don't know how much moisture was in the brick, and, moreover, we don't know exactly, how to allow for the moisture.

Dr. S. Weidman: When the brick are dried and then tested, are they not stronger than they are when in the natural or normal condition in which they were tested by Prof. Ries?

Prof. Maurer: When they are dried, they are stronger than when moist, and it is true that they are not in their natural condition when thoroughly dried. Nevertheless, it seems to me to be the only fair way to compare them, is to bring them to the same standard condition before making the tests. I presume we could bring all brick to a certain condition of moisture, say 1 per cent., but it is much easier to drive all the moisture out than to drive all out but 1 per cent.

President Wilson: You made a statement in one part of your discussion as to the freezing test by the New York specifications. Do I understand you to leave the impression that after the brick had been saturated with water and frozen, that it was dried again before it was tested, or was it tested while it was to a certain extent moist?

Prof. Maurer: The brick are saturated with water and then frozen, then put in warm water to thaw, and that operation is repeated twenty times; and after all the freezing is completed, the brick is dried and then is broken to ascertain how much it has been weakened by the freezing and thawing. [See Art. 12 of the Regulations.] Still another test is provided for in the specifications; I call it the saturation test. It is performed by taking brick thoroughly saturated and testing it for strength while in its saturated condition. The reduction of strength due to saturation is noted.

President Wilson: Has any other member any question to ask on this subject?

Mr. Hinkley: I would like to ask the gentleman, if it would not be well to find a great lot of brick in front of a building and test them and see what they will stand—take them right out of the pile in front of the building.

Prof. Maurer: I think that is a fair way to select a sample—right out of the pile—and all of these tests in New York City were made on brick obtained in that way. The brick were gathered on the ground where they were being used. That is a fair way to select a sample, unquestionably, but whether the way the brick now-a-days, is a fair way, is an open question. There is no way that I know of, however, to subject brick to the same circumstances in a laboratory that they are subjected to in a building. To complete such laboratory test would take ten or twenty years. When bricks are sent to our testing laboratory, a report is wanted in a few days usually.

President Wilson: The Professor realizes, of course, that a brick submerged in water is subjected to a great deal more absorption than a brick laid in a wall with only one edge exposed.

Prof. Maurer: That is undoubtedly true.

A Member: I want to say here, that I have been a builder all my life, and a brickmaker but a short time. The real test of brick is when they go into a building and the way they stand in a wall, but I will venture to say that where the brick absorbs more moisture, you will find the brick crumbling out from the action of the frost and weather, and it seems to me that you want a brick that will stand that test when it is exposed to the weather, and I was wondering if the Professor, in his laboratory, could get that sort of a test.

Prof. Maurer: That requires time and the only tests in this direction that we can get in the laboratory are the freezing and absorption tests. A brick that will absorb much water, other things being equal, is not as good as one which will not absorb as much. I think it is another common notion among engineers, and possibly among brickmakers, that a brick which weakens much if frozen a number of times, is not as good as one which weakens less, other things being equal. I do not mean to say at all, that these absorption and freezing tests are in any way the same as the test to which a

brick is subjected in a building, but I believe they furnish some information on the weathering capacity of the brick when put into a building.

Mr. Kennedy: When the brick break out in water-soaked basements and near the ground, I would like to ask if it is not because the brick is soft? My experience has been that the water and frost did not cause it to crumble, where if the brick were soft and had not been sufficiently burned, the weather would have the effect on them of which Mr. Hinkley speaks. If you have a kiln that is open in the winter, you will notice before spring that those near the top will commence to go to pieces and crumble. Take one of the soft brick from the top of the pile and you will want a shovel to take it up with. Mr. President, I think that where these defective brick will not stand the test, the fact is that they were not sufficiently burned, and if fully burned or hard burned, they will stand any test which is required of them for practical use.

Mr. Hooker: Do you know these brick that you reported upon from the State of New York, the clay brick, were all soft mud brick?

Prof. Maurer: They were soft mud brick.

Mr. Kennedy: That puts our brick in a bad light and I am not satisfied, and I think that they ought to send a couple of Wisconsin brickmakers. I'll bet you, we could have picked out samples that would have come up to that test, and I think when brick is to be tested, they ought not to allow a man's competitor to pick out his samples, and I think we would get better brick.

Mr. Crabtree: As near as I can make out from what little I heard, the fact is, that taking into consideration the fact that these tests in New York were made on brick thoroughly dried and then compared with the tests of strength made by Prof. Ries, of Wisconsin brick, the dried brick stood up better than the wet brick. I would like to have someone figure this out. I think it would bring Wisconsin brick pretty near up to the New York standard. I would like to have the figures which Prof. Maurer has given repeated.

Prof. Maurer: Here is the general statement from New York with reference to sand-lime brick:

"It was found that bricks dried to a constant weight before testing, developed an increase in strength over the same brick in the normal condition of from 20 to 50 per cent. on an average."

As to clay brick, five brick of a certain particular variety were tested in the normal condition and five after dried to a constant weight. Those that had been dried were 45 per cent. stronger in compression and 18 per cent. stronger in cross bending, than the normal brick. I do not know that these are the correct percentages to apply to the Wisconsin tests as allowances for moisture.

Mr. Kennedy: Is not the absorption test, after all, the fairer test to apply to a brick? Brick are prepared for the construction of buildings, generally for foundation walls. Now the brick that are on the outside are the only brick that are subjected to this absorption test. Certainly the inside material of the wall is not subjected to the absorption test or the frost test. I would suggest, that if we have got somebody in this association that is good with a lead pencil, they get to work and give us their figures right here and now. I run up against this proposition up in our country. A gentleman came to me and said he thought he would put in sand-lime brick for the outside of their church. "Your brick," he said, "will do for the inside." "I like your nerve," I said. Here are the figures. Whose are they? I don't know, but here are the figures. I have been up against law suits time and again, and I tell you that when our competitor gets his turn, he is going to make the most of it. Now if the sand-lime brick men have got this statement, and it is right, we will take it, but if there is any chance for us to prove in any way that our brick are as good or better—and I think they are (Cries of Hear! Hear!)—I think we ought to be entitled to show it, and in this test that the Professor claims was made, we don't know whether our brick were dried or not, but I presume those men in New York had theirs dried. Now, then, I think that our brick ought to be dried and if the

Professor says he is satisfied it is safe to figure 50 per cent. stronger, that should be put down and printed.

A Member: About ten years ago I got a job of a school house in our town. Our contract called for backing-up brick and it was faced with Milwaukee Hydraulic brick. My competitor had the superintendent of the building as his particular friend and he visited the job every day and found all sorts of fault with our brick. A few days after the job started, my men said to me, "They are kicking terribly and won't take the brick." I said, "Never mind. We will take them the brick just the same. We know what the contract calls for and we know what we are delivering." The next day the superintendent of the job drove out to the yard. He made a big kick and said the brick would not bear the pressure. Remember, he was working for a competitor all this time, and had, perhaps, about as much knowledge of brick as a good many of the men have who have made those tests. I assured him that they would bear the test and they were backing-up brick and that they would bear the weight. As we sat there, a load of green brick was brought in. He said, "Now if you would give me that kind of brick we could use them. These are uniform, and we can use them." So you see how much he knew about brick. He didn't know a hard brick from a soft brick, but I meet every day, men who tell me how I ought to sell brick, and men in the cement block business will undertake to tell me that block will last longer than our brick, but I can point out building of brick that have been built sixty or seventy years. This is what we are up against—somebody testing our brick that don't know the first elements of brick. They could not tell you whether it was a pallet brick, or a yard brick. They have made a study of brick as far as they can analyze them, but there is no actual way known to test a brick, but the man that makes them and handles them every day knows whether he has got a hard brick or a soft brick, and that schoolhouse experience of mine is pretty nearly what you are up against.

Prof. Maurer: But the man who has to use this brick sometimes asks a third party to make a test, because he don't trust the brickmaker and he cannot judge for himself. The third party makes such tests as he can for the information of the user. He cannot make a test such as nature makes on the brick, but he makes tests which are the result of experience in a number of laboratories. That is the position of the man in the laboratory. I want to say further, with regard to this comparison of Wisconsin brick and New York brick that I have made, that I have attempted to be fair in the matter. I think I emphasized the fact that the conditions of the tests were not absolutely the same—that must not be forgotten. In the absorption test, however, the conditions in New York and Wisconsin were practically the same. Now I have a comparison to make on sand-lime brick. Down in New York extensive tests have been made on sand-lime brick. Here is a report on these tests; it includes tests on seven varieties or makes. I have gone over the figures and applied the New York specifications to those seven varieties and find that not one of them came up to the specifications. I say this, of course, for the encouragement of Mr. Kennedy.

Mr. Kennedy: I am much obliged to you for your attention. (Applause.)

President Wilson: Did you make a statement in your original discussion that the Wisconsin stand 100 per cent. as compared to the New York specifications?

Prof. Maurer: All Wisconsin stiff mud brick tested by Prof. Ries came up to the New York standard on the transverse test. As to sand-lime brick judged by the New York standard, I may quote also, "After the adoption of the specifications for tests of sand-lime brick by the Bureau of Buildings of New York City and the subsequent endorsement of the same by the Bureau of Philadelphia, a number of tests were undertaken for different manufacturers in an effort to pass the requirements. At present three companies have received approval of their product."* (In New York, December, 1905.)

Mr. Craney: I would like to ask the Professor if he could

from Prof. Woollen, in Engineering News, June 14, 1906.

tell us which will absorb the most moisture, a soft or stiff mud brick.

Prof. Maurer: No, I can not.

Mr. Craney: Any brickmaker can tell you that a molded soft mud brick will take the most moisture, and a stiff mud brick, on account of its density, will take the least moisture of any. I think my great fight would be on the testor. I would insist on having a practical brick manufacturer to test my brick, and I would not feel like accepting a test from any other. I would fight before I would let anybody else test them.

A Member: Up in our country you would be fighting all the time.

In this connection it may be stated that the opinion expressed by Mr. Craney in regard to absorption is the common one, but actual tests made upon Wisconsin brick do not support his statement. The percentage of absorption in the different Wisconsin bricks tested by Prof. Ries is classified as follows:

Kind.	Minimum.	Maximum.	Average.
Soft mud	5.80	28.20	18.60
Stiff mud	27.60	34.30	20.26
Dry press	12.90	33.35	21.47

See also same statement in the annual proceedings, 1906, page 44, and in Wisconsin Survey Bulletin XV., page 184.

S. WEIDMAN.

Mr. Kennedy: No, there is an easier way to reach the



G. W. Kennedy, Manitowoc, Wis.

purchaser. If you tell them about your brick and tell them right, you usually have got them, but it has been my experience that nine out of ten don't know anything of the practical points of a good brick, and if I were to have a test made, I would insist upon having a practical brickmaker, and I would not ask my competitor, because I have found that even men who manufacture brick sometimes prevaricate a little.

I have never seen the contractor or the engineer on a job that could not pick out the hard brick from the soft brick, but I would like to relate that I was shipping brick to a church down in Montello. I shipped over the W. C. Railway and two cars got into a mix-up and got badly broken up. (I'm Irish descent, so the Irish needn't take exception to this.) The priest in charge down there was Father Tully, a young man just out of college, and when he saw those brick come in there all broken up, he wired me to come up at once, and the contractor, too, and he had wired the car-service man to be there. When I got there, he said he would not accept the brick—that he knew I was shipping other brick—good brick—to other people and he was getting all the poor ones. I saw that I had to do something, and do it quick, so I said, "Why, man, if I could not ship all my poor brick to a poor Irish priest, where could I ship them?" It was well for me that I was pretty good sized. He was pretty mad, but pretty soon he cooled down and I explained to him

about the wreck and I said to him that this was the hard brick and this was the soft brick. "Oh, ho!" said he, "So ye are shipping me two kinds of brick. Then I have nothing to say." "Of course," I said, "You are getting two kinds of brick. Can't you pick them out?" "No," said he. "Well, then," said I, "You are not fit to hold your job."

Then turning to his man, he says, "This man tells me he is shipping me two kinds of brick." "Why of course he is," he said. "And can ye pick them out?" "Sure," said the man. "That is for the outside and that for the inside. Why the hard brick wont absorb so much water and wont freeze and crumble out." "Oh, well, then, it is all right, Mr. Kennedy. Come in and have some—." (Laughter.)

Mr. Hooker: I understand the manufacturing of brick in the State of New York is where the brick come out on the flat side; and furthermore, I understand that they are most of them soft mud brick, which naturally would come out on the flat side, but in the State of Wisconsin there are a number of them that come out on the edge. Those that come out on the flat side are so much stronger. The stiff mud brick manufactured in Wisconsin come out on the edge side, and as I understand it, those that come out on the edge side, stand a stronger test.

Mr. Potts: I think a great deal depends on the nature of the clay. Take those that come from Hammond, the clay contains a great deal of quick-sand, and those are not as strong as those that come from further up the river, where there is a blue clay and a yellow clay, which they mix with it. So I think the material has altogether the whole thing to do with the strength that you will get.

Mr. Hinckley: I hope that our friend over there will not take offense at our remarks. I have been very much entertained and very much obliged to him for coming here and describing his method of making brick, and while we have our own ideas, we are, perhaps, in a certain way, competitors with the sand-lime brick, and I hope he will not take any offense at our rather free criticism of his methods. There was one question I thought I would ask, which my friend, Mr. Hilker, got along toward in his remarks, and that is how many bricks come from a machine in a certain length of time and what is the waste of each machine, and the returns from the brick. The question is, if you make one hundred thousand bricks, whether you sell ninety thousand or eighty-five thousand, what proportion are saleable as they come from the machine?

Mr. Smythe: All that are not saleable are the bats and these, as I said, are not many.

Mr. Hinckley: Is it less than 5 per cent.?

Mr. Smythe: I would not say over 1 per cent. The number of bats is very small indeed, and I am not at all offended and am glad to hear the matter discussed freely.

Mr. Kennedy: I don't know as I want to apologize, because I don't know as I said anything I did not mean, but if a man is in the sand-lime brick business, he will not take offense as anything like that.

Mr. Smythe: I want to say that the sand-lime brick man has his troubles as well as the clay brick men.

President Wilson: I may say, and I believe I can say with full confidence that the paper of Prof. Maurer has brought out about as lively a discussion as we could possibly have expected. It has been very interesting, and brought out many points that have heretofore been in the dark. I know that Mr. Smythe is too broad-minded to be sensitive upon any discussion we may have had in the comparison of clay brick with sand-lime brick.

If there is nothing further on this subject, we will pass to the next paper on the program, Mr. Oscar Zimbal, of Sheboygan, on "Practical Method of Drying Brick on Medium Sized Yards." (Applause.)

PRACTICAL METHOD OF DRYING BRICK ON MEDIUM SIZED YARDS.

BY OSCAR ZIMBAL, SHEBOYGAN, WIS.

In speaking of one method as being practical, or more so, than another, we naturally mean the comparative cheapness with which the desired results can be obtained under the existing conditions. A method might be indispensable for a yard with a capacity of one hundred thousand brick a day, which would be a detriment to a yard with a twenty or thirty thousand capacity.

I contend, that on a properly arranged yard, using the open air drying system, ten million brick or less can be manufactured a season cheaper and with much less worry than with any mechanical dryer. The first essential point in constructing an open air drying system is to dispense with all labor possible, used in handling our ware on the yard. The next is protection from rain storms. Whenever you hear of such and such a party losing so many thousand brick, spoiled by rain or storms, you generally find this same party trying to cover up a row of brick stacked ten high, with a twelve-inch board.

No doubt there are several good methods for handling brick on an open yard, but the one I shall describe, and with which we have had the most experience, is what is called the elevating car system, used for handling stiff mud brick. With this system about three to four hundred brick are loaded on a pallet at the machine, the car is lowered, placed under the pallet, then raised and taken to the drying racks, on which they are left to dry, then taken in the same manner to the kilns. This system requires two elevating and lowering cars, two transfer cars, and two men to take 40,000 brick from the machine to the setters. The cost of the drying racks, including 12 pound T rail, and sheds for covering will be about \$7.00 or \$8.00 per thousand, and your yard capacity should be not less than ten times your daily capacity, more if you are using a tender clay.

In constructing the tracks, pallets and racks, there is practically only one way to do it. The main feature being to have them strong and rigid enough to carry the loads required of them. In devising some means for covering your brick, there is a good opportunity to exercise your own ideas.

For a tender clay which is liable to crack when exposed to the sun and wind, permanent sheds about 12 feet wide, covering two tracks, answer the purpose well. For an easy drying clay, some device that can be uncovered and the brick exposed to the sun and wind is preferable, and saves room and time.

Now, the writer does not claim that the above described method or any other is the ideal system without any disadvantages, but I do believe that it is as good as any for a small or moderate sized yard, or it can be used to good advantage in conjunction with an artificial dryer on a larger yard.

Discussion.

President Wilson: Has anyone any question to ask on this paper? Mr. Kennedy, have you any comment to make on it?

Mr. Kennedy: I got through with all my troubles about 4 o'clock in the morning. It took about fifteen months to get rid of them. So I have nothing to say.

President Wilson: I would like to ask Mr. Farnham if he has had any experience with dryers.

Mr. Farnham: We use in stiff mud brick, the fan dryer. That is the only system that we have used in our neighborhood. Of course, I have been around some and seen what others have, but we have used nothing but the open air dryer. I think that you have called on the wrong one.

Mr. Kennedy: I would suggest that you call on Mr. Potts.

President Wilson: I am sure, Mr. Kennedy, that I could call on any of the machine men and they would give us lots of information. Gentlemen, this completes our program as originally laid out for the first afternoon, unless there is something further to come before this meeting, we will adjourn until tomorrow.

Adjourned.

Thursday Afternoon Session.

President Wilson: The convention will please come to order. Mr. Watrous, of Milwaukee, wants to have permission to say a few words, and if there are no objections, we will let Mr. Watrous have the floor.

Mr. Watrous: I suppose, really, I should have been here yesterday to get before you an invitation to hold your next convention in Milwaukee, but I understand your good Secretary has introduced some correspondence we have had and that the subject is before your committee.

I really think I am entitled to wear a badge of charter member of this organization, because I was here when you were born. I was the new secretary of the Citizens' Business League of Milwaukee, and when I went back to Milwaukee and told them that you were coming there, I felt that I had landed your convention by my own personal efforts, seconded, of course, by the Milwaukee representatives of the brick manufacturing and brick jobbing business, and I want to say I am still secretary of that organization and that we still have good representative brick manufacturers and brick men in Milwaukee, and our organization is anxious to have you

I wont detain you but a minute, but I have here a letter from our Mayor, which I will read.

February 27th, 1907.

Wisconsin Clayworkers' Association in Convention, Madison, Wis.:

Gentlemen:—As Mayor of Milwaukee, it affords me much pleasure to extend to you a hearty invitation to hold your convention for 1908 in this city. We take particular pride in welcoming to Milwaukee our various State organizations. You cannot come to see us too often. There is no end to our hospitality and it will be our great pleasure to greet you whenever you visit this city.

(Signed.)

SHERBURN M. BECKER, Mayor.

In a State like Wisconsin, with the variety of material and the variety of manufacture which that material affords, you ought to have a large, healthy, active association of clayworkers. You have such an association. You are seven years old. It seems to me you ought to have three or four times as many as you have here.

Of course, down in Milwaukee, we think that it is the easiest place to get to, and there is this to be said about it. Those interested in your work in the southeastern part of the State will, of course, come to Milwaukee, and it is also very easy for those of you living in the more remote parts for the reason that you are able to take a sleeper and get into Milwaukee at a seasonable hour.

Of course our hotel facilities speak for themselves. There is just one thing I want to speak of, and that is this: All the hotels make a specialty of handling convention business. There are in them very pleasant convention halls, which are very gladly tendered visitors. If you had three or four hundred delegates at the convention, that would not be too large to be accommodated in one of these halls. Where you have your sessions right in the same building with your accommodations, it means that your sessions are going to be more faithfully attended and that you are going to derive more beneficial results from the discussion of subjects which may be put before your convention.

You know the Milwaukee brick manufacturers well enough to know that you will be well received and cordially entertained and I sincerely trust that when your committee, to whom the subject is referred, reports, they will report unanimously in favor of Milwaukee for 1908, and that you will endorse that report.

I don't know whether I am exactly permitted to mention railroad rates. There is an association which represents jobbing interests, which is sometimes able to get some rates for conventions, and I have no doubt, but that if you decide to go there and so arrange your dates that you can take advantage of these rates, it would be a matter of no small importance, particularly for those of you who come from up near Minneapolis, or up in the northern part of the State, and I assure you that I am glad to see the Wisconsin Clayworkers' Association in good healthy existence and I hope that it will have a still greater growth, and—I am going to stop right now, thanking you again. (Applause.)

President Wilson: I may say to Mr. Watrous in behalf of the clayworkers, that I feel confident that all these matters will be taken into consideration by the committee and the members will decide and act on the report of the committee.

Before proceeding with the program, I want to ask Mr. Kennedy if he has any information that the Committee on Railway Rates will be able to report.

Mr. Kennedy: Mr. President, I don't think there is any possibility of any report this afternoon. I called up the Chicago office about 2 o'clock and learned that the gentleman who has that in charge is still out of the city. I will write him tonight and ask him to telegraph his answer in the morning, and if I get it, I will report at once.

President Wilson: In keeping with my agreement, I called for the mail—and did not get it.

Mr. Kennedy: You are the third person that has called for it.

President Wilson: Mr. Bright has been unavoidably detained at home. He, however, has sent to the Secretary, his

paper on "Drain Tile in Wisconsin," and the Secretary will present it to you in the absence of Mr. Bright.

Secretary Hamilton: I will read the letter received from Mr. Bright, which is dated at Black River Falls, Wis., February 27th, 1907:

"FRIEND HAMILTON:—Enclosed herewith, please find my paper on "Drain Tile." I have to get ready to sit on a jury here and have some other matters to attend to, which makes it impossible for me to be with you. I hope you will receive my paper in time, but am afraid it wont strike you very favorably. Please let me know if you receive it. Hoping you will all have a good time, I am,

(Signed.)

Yours truly,

BEN H. BRIGHT."

I have asked Mr. Weidman to read Mr. Bright's paper.

DRAIN TILE.

B. H. BRIGHT, BLACK RIVER FALLS, WIS.

To write a paper on drain tile reminds me a great deal of a story. There was once a "bully" who made a daring challenge in a certain bar room where several other fellows of his type had congregated. With blood in his eye, he remarked that he could whip any man in town, then of the county and then of the State, but no one seemed to entertain his challenge. Finally he declared he could whip any man in the United States, when a "six-foot Westerner," who never takes bluffs, stepped up and handed him out a straight punch which put Mr. "Bully" out of business. After regaining consciousness and sizing up the situation, Mr. "Bully" said of himself, that he was all right, but his mistake was made in taking in too much territory. So it is with me and this subject,



B. H. Bright, Black River Falls, Wis.

I may be all right, but I am taking in too much territory, in fact, territory that could be divided and sub-divided in many ways. Lengthy papers could be given on subjects pertaining to tile as follows: "Mining the Clay," "The Manufacturing of Drain Tile," "The Burning of Drain Tile," "The Marketing of Drain Tile," "The Laying of Drain Tile," and "The Benefit of Tile Drainage." However, as our worthy Secretary considers me capable of handling this subject collectively, I feel highly elated over the fact and will endeavor to treat the various steps in tile making as best I can and as my limited experience will allow.

The process of mining, grinding and pugging the clay for this particular product is precisely the same as that for stiff mud brick. We have only made the three, four and six inch tile, and as they are made, they are taken from the cutting table and are then set on ends on the floor in dry sheds. This method of drying, however, is not satisfactory if they were to be made on a large scale, for they dry slowly, and they require too much shed room. If the time is limited for their drying, they should be turned for the reason that the top ends dry so much faster than the ends nearest the floor. We have never had any experience burning an entire kiln of tile, although I understand this can be done. We use the lower half of the kiln for brick and the upper half for the tile, the latter being set on ends so as to allow a good draft (our kilns being down draft) and with three or four inch tile placed inside of the six inch. As the soft tile and broken tile are both useless, it is one disadvantage a tile manufacturer has compared with the brick manufacturer, for the latter can dispose of their soft product and also brick that are somewhat broken, at a little reduction in the price, and they can be used to a good advantage for inside work. There is but one loss from the tile that has become broken in the shed and that is in the making, for the material can be used over again, but if broken tile are allowed to go in the kiln or broken in any way after the burning, a great loss is sustained, that is, the greater the percentage of these broken tile turned out the less will be the profit on the manufacturer's business. Therefore, one should guard against any but perfect tile being set in the kiln, and

great care should be taken to see that the tile are sufficiently burned.

Summarizing this as a whole thus far, I would say, the mixing of the clays, their tempering, pressing, handling, drying; setting in kiln, water smoking, the raising of heat, the highest degree of heat necessary to secure the best results, the length of time to cool the kiln and the exposure of the tile to air rushing into the kiln, are all important factors in whole or in part which go towards the making of good tile. After the kiln is opened the tile are ready for the market, and the price they will bring depends on the location of the plant, demand for the tile and their quality. The average price of them at factory, figuring each at twelve inches long, in this State, is as follows: 3-inch, \$12.00; 4-inch, \$16.00; 5-inch, \$22.00; 6-inch, \$30.00; and 8-inch, \$35.00 per thousand.

We will now leave the factory and take up the uses of tile and the benefits derived from them. In the cultivation of retentive soils, drainage is the key of all improvements. Farmers frequently desire an improvement in methods and in general management of their lands without being sufficiently informed regarding the specific changes that will be necessary to bring it about or clear in their minds as to the profits that would accrue should such changes be made. When a farmer finds his land too wet for cultivation, he admits the necessity of drainage for the time being, but often hopes that the following season will be more favorable, which hope is frequently realized, and so takes the loss as one of the contingencies of the industry. He waits in the spring for slow natural drainage and evaporation to relieve his land of the surplus water and permit the sun to dry and warm the soil sufficiently for the reception and germination of the seed, when, by the aid of drainage, the seeding could be done a week or ten days earlier. The injury resulting to crops growing upon land imperfectly drained, when the season is not the most favorable, is frequently taken as unavoidable—one of the vicissitudes of farming rather than a loss to be prevented by the use of well located and constructed drains.

Facts which are easily discerned by the casual observer have pressed the subject of drainage home to both practical farmers and non-resident land owners in a most emphatic way. Those who have gone further into the subject of soil improvement by drainage have discovered greater advantages and more surprising benefits than were formerly thought possible. It is conceded to be a necessary accompaniment of scientific agriculture and our most progressive farmers have taken advantage of it to a greater extent than is generally supposed. It is an improvement applicable to all land not possessing natural drainage, and hence is required for the attainment of the best results from some of our most fertile land. The farmer, when convinced that it will be to his interest to construct some kind of a drainage system for the improvement of his soil, desires to know how to plan and perform the work in an effective way at an expense not exceeding the limit of profitable returns which can reasonably be expected. He will find it an advantage to have an intelligent idea of the theory as well as of the practice of drainage in order that he may adapt his work to the several varieties of soil and conditions with which he has to deal.

There are two kinds of conditions which require drainage; first, land which is wet or marshy, because it is too flat to allow surface drainage; second, land which has sufficient slope to give good surface drainage, but which, on account of the large amount of vegetable matter or humus it contains, and of its impervious clay subsoil, does not have good underdrainage. The lack of drainage in the first case is readily seen and understood, but the importance of drainage in the second case is not generally recognized, although its benefits are as great as in the case of marshes.

The process of artificial drainage is carried on in two ways; the surface drainage and the underdrainage. Surface drainage, as commonly understood, is accomplished by open ditches, while underdrainage is carried on by the use of tile altogether. The open ditches, aside from being used as a main, are not profitable to the farmer for various reasons which I will explain as follows:

- (1) Open ditches require space and take valuable land.
- (2) They are inconvenient, involving a considerable amount of turning in cultivating the land, which is an additional expense.
- (3) Animals are liable to get into them and perish, besides being traps for stock.
- (4) They are troublesome on account of the weeds that will grow along their sides—enough to seed a farm.
- (5) They increase the damaging effects of our floods by not retarding for a time the flow of water.
- (6) They carry the fine soil particles and much of the fertility into the streams and away never to return, and with the surface washing of our cultivated lands does more to lose this fertility than does the crops we grow.

The above reasons, showing the disadvantage of ditches, are, at the same time, points making the use of drain tile preferable.

The following are also facts which go towards proving the advantages of removing water downward through the soil by the use of tile:

- (1) The surface soil is retained instead of the finest and most fertile parts being carried off with every considerable rainfall.
- (2) Any plant food in manure or other fertilizer deposited upon the soil is carried into it with the water as it percolates downward from the surface, and so becomes thoroughly incorporated with the soil.
- (3) Rain water as it passes through the soil serves a most useful purpose by dissolving and preparing crude soil material for the nutrition of plants.
- (4) The soil, having been well prepared, is at all times during the growing season in readiness for the growth of plants, such growth not being hindered by stagnant water or saturation.

(5) The frost goes out earlier in the spring, so that the planting season opens one or two weeks earlier than in the case of soils affected by surface drains only.

(6) Where stiff clays are found, the soil is made more porous, open and friable and roots penetrate more deeply than they do into surface drained soils.

(7) The effects of drought are diminished, as has been found by experience, owing to the enlarged and deepened soil bed and to the more favorable condition of the surface for preventing excessive evaporation of moisture.

(8) It aids in making new soil out of the unprepared elements since it permits a freer entrance of air and atmospheric heat, which disintegrate soil material hitherto unavailable for use of plants.

(9) Stubborn and refractory soils when drained are frequently so changed in texture and mechanical structure that they become easily managed and respond to cultivation with abundant crops.

A drainage system includes both mains and laterals. The laterals are usually three or four inches in diameter and discharge into a main, whose size depends upon the number and length of laterals entering it. In light soil the laterals can be placed at one hundred to one hundred and fifty feet apart satisfactorily, but in clay land they should be placed from sixty to seventy-five feet apart, and in all cases the grade of fall should be at least one inch to every hundred feet, but the greater fall, the better will be the flowage, which in turn gives the best results.

No attempt should be made to make the capacity of the intercepting drains equal to the combined capacity of the laterals where a system of thorough drainage is employed. The size of laterals, where the soils are open and permits the use of drains one hundred or more feet apart, should be four and five inch tile, which in some cases may be diminished to three inches at the upper end. For drains at a less distance apart, three inch tile may be used for laterals. They are usually required to carry only a small part of their full capacity in order to relieve the soil of its surplus water. To do this well, however, they should not be quite full at any time, unless it be when there is more than ordinary rainfall. They do not work under a pressure head, hence their velocity of flow is as great when running half full as when running full. Water in a drain attains its greatest velocity when three-fourths full, and its greatest rate of discharge when nine-tenths full.

Since the work of laying the tile is usually more than one-half the entire expense, and with the cost of laying three inch tile practically the same as that of four inch tile, it is poor policy to put in a small tile where a larger one would do fifty per cent. better work.

It is claimed that there are 2,500,000 acres of low and marsh land in our State which is only partially productive, and in addition to this there are at least 2,000,000 acres of upland clay soil which will require underdrainage, this making a total of four and a half million acres. It is estimated that the thorough drainage of this four and a half million acres would increase its value one hundred million dollars.

In the care of tile drainage of clay land already under cultivation, the increase of yield varies from fifteen to fifty per cent. This is a net profit on the cost of drainage, since there is no increase in expense of cultivation of the land. In fact, it is easier to work drained land than undrained land. Experience shows that drainage usually pays for itself in from two to four years.

The following are a few instances, in this State, where a record has been kept of the expenditures in draining certain lands and the profits realized from same:

(a) *On Broad Marshes.* The experience of Mr. Carl Foll, of Deerfield, illustrates the benefits to be derived from the use of tile on marsh areas. Mr. Foll had about fifteen acres of marsh, seventy per cent. of which was practically useless. Cattle often became mired in an attempt to cross it. At no time of the year was it dry enough to admit of plowing on at least ten acres of the lowest portion, and indeed, plowing would be useless when grass was growing in tufts and bogs upon which water stood almost continually. The soil consists of black muck and peat to a depth varying from five to ten feet, underlaid by a gravelly sub-soil. On about two acres the gravel lay within three feet of the surface and here the underdrainage was sufficient that the land could be used for pasture. After laying the tile in 1901, the first crop planted was corn, which was injured by the spring frosts, but finally ripened well. After the corn had glazed, the crop on a typical square rod was cut and weighed. It was found that the yield was at the rate of twenty-four tons and three hundred pounds of green fodder per acre. The corn when husked from the entire field averaged seventy-five bushels per acre. The first crop was sufficient to pay for the tiling as well as the top dressing of manure, while the improvement was a clear profit. On the following year the yield of green fodder was seventeen tons per acre, and the field was then sown to rye and seeded to timothy and red top, which yielded, in 1905, three tons of hay per acre.

The results of this first experiment in tiling were so satisfactory that Mr. Foll has continued the work until, at present, he has tiled one hundred acres, all of which gives good satisfaction except one field of about ten acres where the outlet is faulty.

Mr. Zabel, a neighbor of Mr. Foll, has put tile on about twenty acres. On about one-half of this, the yield has been increased one hundred per cent., but on the remainder the benefit can not be put at more than fifty per cent. On the latter portion, although the tiles run nearly full after a rain, they do not remove the water fast enough. A four inch tile is too small to carry off the underdrainage from this ten-acre field. The water is removed from the tile in course of time, but is allowed to stand so long

after a severe downpour of rain that the crop is stunted or entirely drowned out.

Mr. Nels Holman, of Deerfield, feels that his experiment in tile draining a marsh for pasture is highly successful. His land was similar to that of Mr. Foll's until 1903, when Mr. Ed. Relchenbach, a drainage engineer and contractor, of Jefferson, planned and put in the system. The land is becoming more firm every year and the grass has begun to grow between the bogs where the water formerly stood continually. At least ten per cent. of the money invested was realized from the tile in benefits for the first year.

The farms of Joseph Winterling, of the Jefferson County Asylum, and of ex-Governor Hoard, were also visited, making a total of about five hundred acres of tiled land investigated, on eighty per cent. of which the money invested in tile yielded fifty per cent. of itself in increased crops each year. Ten per cent. of the land was merely used for pasture, and the annual income from the tile was perhaps ten per cent. of the amount invested. Only in one instance was tile found that did not work successfully, and, in that case, the cause was a defective outlet and the back-water of the river, rather than any fault of the tile itself.

(b) *Pot Holes and Ravines.* The strongest testimonial of the benefits derived from the drainage of such locations is that the practice has spread and gained favor in communities where it has been tried. About fifteen years ago Mr. Glessig and Mr. Wiegenm, prominent farmers living near Cleveland, Manitowoc county, became interested in tile and took a trip to Jefferson, Wisconsin, to study tile and tile problems. They returned home determined to lay some tile as an experiment. Today, of the fourteen farms abutting the road extending for seven miles west of Cleveland, twelve have tile in greater or less quantities.

Comparatively speaking, Wisconsin farmers are very ignorant on the drain tile proposition. Of all the farmers that have been to our factory after drain tile, after inquiring into his history, invariably I find he has just moved in from Illinois, and it is safe to say that 90 per cent. of our sales have been to Illinois farmers.

I have heard some of our oldest farmers in this section, while at the factory after brick and noticing a pile of drain tile, ask what they are used for.

Considerable more could be written on the laying of drain tile, as it is taught in the agriculture course at Madison, and it is very interesting indeed. Also I might write several pages on the laws governing drainage which all should know, but time will not permit. (Applause.)

Discussion.

President Wilson: Gentlemen, I believe you will all agree with me in saying that I am very sorry that Mr. Bright is not here to discuss the paper, or to help discuss it, as it is very interesting and it contains many very valuable suggestions. Has any one any questions to ask or anything to say upon this very able paper of Mr. Bright's?

Mr. Hinkley: It would seem that the people who need educating are the farmers. I was wondering if some of the newspapers of the State would not be glad to print that article. I think it is a remarkably good one.

President Wilson: If there is nothing further on the drain tile matter, we will pass to the next number on our program, "The Manufacture of Hollow Building Blocks and the Probable Future of the Industry in Wisconsin," by L. T. Crabtree, of Crandon, Wis.:

Mr. Crabtree: I don't know why Brother Hamilton asked me, but anyhow, he did, and, like Brother Kennedy, I have some little Irish in my blood and do not shy at a hard proposition.

THE MANUFACTURE OF HOLLOW BUILDING BLOCKS AND THE PROBABLE FUTURE OF THE INDUSTRY IN WISCONSIN.

L. T. CRABTREE, CRANDON, WIS.

Of all the different lines of industry that go to make up the sum of the world's daily work, that of the brickmaker is, in point of time, the oldest.

How old, how long ago it was that primitive man first learned to pile up pieces of dried clay, one on top of another to make the walls of his rude hut, roofed perhaps with branches of trees and the skins of animals, is a problem whose solution is lost in the mists of the ages. How long ago he learned that clay, if subjected to the action of fire for a considerable length of time, became hard and durable like stone, will also never be known.

Perhaps the walls of the caves in which he and his forefathers had lived for perhaps thousands of years gave him the first idea and the second may have occurred to him when he noticed the effect the fire in his hut had upon the blocks of clay against which it was built.

Later, he probably found that if he gave a square shape to his blocks of clay they would fit together better and make a tighter and better wall. After awhile, a long time probably, he got the two ideas to work together and built his hut of blocks of clay, roughly squared by hand or with rude tools and hardened in the

fire, and the first brick house was constructed; and it took his descendants a long time to take the next step.

To be sure, the use of machinery and improved modern methods of manufacture have improved the shape of the brick, made cleaner cut corners and, by better tempering and burning, made it possible to turn out a better brick considered as merchandise, but the fact remains, however, that in the essential part of the brick-maker's art, there has been no particular change or improvement in the merchandise itself, only in methods of manufacture, for thousands of years.

Bricks of burned clay are found entering into the construction of buildings, palaces and temples, and in the ruins of the most ancient and extinct civilization known to exist in the world today. In Egypt, bricks of clay were used along with stone to build the great temples and pyramids, and recent excavations in the ruined cities in Asla along the Euphrates river, by Dr. Peters, Hilprecht, Rawlinson and others, show that well-made brick of burned clay were used in the construction of buildings erected at least 6,000 years ago. The brick used in building the great palaces and temples of Nippur and other places excavated were evidently formed in moulds and had even parallel sides and sharp clean cut corners. Some of them were sun-dried brick, but the most of them were kiln-burned and well burned at that, and they were made and laid in the walls five or six thousand years ago.

Even at that remote period the clayworker knew how to put a glaze on his work and he modeled in clay fine figures of men and animals and hardened them by burning similar to our modern terra cotta. During all the centuries that have elapsed since that time until the present generation, the clayworker has been molding bricks, burning them, and making them into solid brick walls. The enormous increase in the price of lumber in the last few years has set men of inventive turn of mind to devising new kinds of building material and new ways of using old kinds as, witness the recent attempt to make brick from the slag of blast furnaces, and brick made of sand and lime, hollow clay brick; also the much



Treasurer Oscar Zimbal, Sheboygan, Wis.

advertised cement blocks, or rather cement block machines. Any one who has paid much attention to the advertising pages of the magazines, trade journals and newspapers for the last year or two, or longer, will likely come to the conclusion that the principal reason for the arrival of the cement block industry in our midst is due to the absolute necessity of finding or making a market for their wares that the very enterprising gentlemen who make the cement block machines find themselves "up against." And they are selling them; and, brethren, unless all signs fall, in this country of ours in the next few years, there is going to be an enormous increase in the production of scrap iron.

The most, if not all of our members know enough in a general way about hollow building blocks, hollow building tile, and machine made terra cotta, as the blocks are variously called, so that any particular preamble or introduction is unnecessary. The blocks, as usually made, are vitrified and glazed with a salt glaze and are of different sizes, depending sometimes upon the demands of the market and sometimes upon the fancy of the manufacturer.

A block measuring $8\frac{1}{4} \times 8\frac{1}{4} \times 16\frac{1}{2}$ is the size of most used in Ohio and Pennsylvania. Blocks of this size are usually made with walls one inch thick when burned with one chamber, although double chambered blocks are used there to some extent. In Indiana and points farther west, a web block of this size with four chambers is used more than the single chambered block and, in this case, the walls are made somewhat thinner, about three-fourths of an inch. Another size that is used is a two-chambered block measuring approximately $4 \times 8 \times 12$ inches when burned. It is claimed for this size that they make a neater looking wall and are easier to handle in the process of manufacture and in their use in building.

The above are the sizes most used for the exterior walls of buildings, but there are other sizes and forms used for other parts of the building that the up to date block manufacturer turns out

suitable for almost any part of almost any kind of a building, and one who does not know what the block manufacturers have been doing for the past few years will be very much surprised to learn how near a good auger machine and a few dies combined with brains will come to making nearly everything, except the hardware and glassware, that goes into the construction of anything from a business block to a fine residence. There are two other sizes measuring 4x8x16 and 4x4x12 that are sometimes used to line the interior walls of buildings in which the larger blocks are used for the exterior walls. As far as my observation goes, however, the lining blocks are not very much used. In buildings of the ordinary heights, two or three stories, the walls, if built of the eight-inch vitrified blocks, are as strong or even stronger than they would be if built of brick as ordinarily constructed, and if the right kind of mortar is used, no moisture is likely to penetrate through the joints to the inside of the walls. Probably the best kind of mortar for laying up block walls is one composed of equal parts of sand, lime, and Portland cement. Mortar colors can be mixed with it if desired, to color it to harmonize with the color of the blocks. We would expect that, during long continued spells of wet weather, the moisture would, at times, work through the mortar joints the same as it does through brick walls, but in practice it hardly ever does. It is likely that the large dead air spaces inside the block walls, become heated by the exterior heat in summer and the interior heat in winter and this, acting through the walls of the blocks, keeps the thin sheets of mortar in the joints dried out so that no moisture can work through them. For the same reason, the large dead air spaces in the walls of the house built of hollow blocks, the house so constructed will be warm in winter and cool in summer. The above will apply to the blocks as usually used in the construction of the main walls of buildings, and when we have got so far, we have just got started on the list of hollow building material that some of the factories are turning out at their regular output.

I have before me a price list of hollow building material made by one of the large clay product companies in central Ohio. Some of the different articles listed are as follows: Of the plain hollow construction, there are ten different sizes and kinds, corners for bay windows four different kinds, window and door caps three styles, beveled and closed window sills three, mouldings, brackets and water tables, six different styles, veranda posts one, steps three styles, hollow cellar pavers one, drip stones and gutter tiles one each, chimney caps of different styles six, chimney flue linings three kinds; and some of you will likely be surprised to learn that these are all made on one auger machine, and to change from one ware to another it is only necessary to change the die on the front of the machine.

I saw the most of this work done at the works of the Louisville Brick and Tile Company's plant at Louisville, Ohio. There were two auger machines in use at this plant, but the work could all have been done on either one of them, as they were alike except in size. I cite this particular plant because I examined the work there thoroughly and the superintendent very kindly gave me every facility for learning how the work was done. This clayworking plant was only one of quite a number that I examined and there are hundreds of large plants in the States of Pennsylvania, Ohio, Indiana, Illinois and Iowa that make hollow building blocks their principal product.

As in every line of industry, there is, of course, a block trust, and at the time I was there, the block trust owned fifty mills in Ohio alone. In that State, however, there were more independent block mills than were in the trust.

Eastern and southern Ohio are about the center of the building block business and the magnitude of the business done there would be an eye opener to one going there for the first time, who had no idea as to the large proportions of this new industry. I have made several trips to central and southeastern Ohio in the past two years studying the clayworking industry, and I found the block mills everywhere. In one trip that I was out with a team east of Canton, I visited six of them. It is likely that at the start the men who first started in the block business did pretty crude work. Probably foundation blocks were first made and then, having gotten the idea, they went farther and assayed the walls above the foundation. Then after they had worked out the plain wall block proposition, they tried the other parts of the building and now a good block manufacturer will turn out, in fine durable style, window ledges, window caps and casings, door casings and caps, water tables, cornices, mouldings, door steps, flat hollow tile for the floors of porches, hollow round or fluted columns for porches, flue linings for chimneys, or he will build the entire chimney with his blocks, as well as the roof. He will make flat vitrified clay shingles that look well and will last longer than slate, or he will make fine ornamental tiles of any shape required and, except that for the ornamental tile he will need a press in addition, he makes the whole list on one stiff mud machine by changing only the first dies, and he makes brick on the same machine. Inside the house, with the same outfit, he will make his partition walls of hollow blocks three or four inches thick, all furrowed for plastering and, when a house put up in this way is finished, it is fire proof and the walls thereof will neither decay nor burn down. The foundation walls are also, as you may have surmised, laid up of the large sized glazed blocks through which no moisture can penetrate from the damp earth outside. The supports under his partition walls are also built of the blocks, and when everything is put in that can be made on one machine, there is not much left to do except supply the glass and hardware.

Contrary to what may be in your minds, the above is no pipe dream, as I saw it all in one large house near Canton, Ohio, that was built by a hollow block manufacturer. I was allowed to in-

spect this house from top to bottom, and there are many others in which the hollow block construction enters fully as much. All of the work done was done on one auger machine except that the ornamental tiles on the roof were made at Akron, Ohio. I am quoting Ohio, as it was in that State that I studied the industry. I do not want to be understood as saying that the hollow block men were doing all the building material work in their territory; far from it. There are all kinds of men, and you will find as many different kinds of tastes as men. Some were building of wood, some of stone, some of brick, and the "make a block while you wait" cement block men were also there with their machines. Another purpose for which the hollow blocks are well adapted, is the construction of basement walls for barns. Their glazed, moisture proof walls insure the interior of the basements built of the blocks being always dry. Basement walls built of stone, as usually constructed, are quite likely to be coated with ice during the winter months. Nor is the use of this new building material being confined to the several producing States named. Large quantities of them are, at the present time, being used in our own State. There are several jobbers of the blocks among the building material men and their use is increasing rapidly as they become known. One jobber of building material in Milwaukee told me that last year his firm sold 110 car loads of building blocks in Milwaukee the previous year and they could have sold more but they could not get the goods. The preceding year when they began to handle the blocks, they sold 32 car loads. From 32 to 110 car loads is a pretty good increase in one year. The blocks that this firm sold were made at or near Brazil, Indiana. I have learned from other parties that some of the Iowa blockmakers are selling their blocks in southwestern Wisconsin.

Ornamental blocks are also used quite extensively in place of cut stone and terra cotta in buildings built of brick. If care is taken to select colors that will harmonize, very pretty effects in color with the solid look of brick or stone can be obtained by using pilasters, window caps, and ledges, cornices and other special forms of hollow block construction, either glazed or unglazed, in buildings of which brick is the main building material.

And it is easy to see here, how one of our members, whose main output is brick, can increase the local demand for his brick and enlarge his market, by either adding block making to his line or working with his neighbor who makes the blocks. Go after the business with a full line of building material, plain brick and as much of the ornamental as any house ought to have, and all made of clay.

For the exterior walls, the blocks are nearly always glazed, except that sometimes, to produce some color effect by way of contrast, they are laid in the wall partly glazed and partly unglazed. The glazed blocks are more durable than the unglazed, and they are certainly cleaner, and as the difference in the cost between the two is only the price of a few shovels full of cheap salt to a kiln, the cost is about the same.

Plain faced blocks are used to some extent, but as a rule, some figure is pressed into what is to be the exterior face of the block as laid in the wall. The figures or patterns that are used in the most of the block, are different patterns of what are called "rock faced," or imitations of cut stone, and they are pressed into the soft clay as it comes through the die, by figured rolls attached to the face of the machine.

The cost of a building constructed of the hollow blocks will be less than either brick or stone, or lumber for the same work, at present prices of lumber.

An important point to be considered in favor of glazed block construction, is that walls built of them will retain their new and bright appearance for years, as their glazed, glass like faces are entirely impervious to any and all kinds of weather, and they never look stained or dirty, and any dirt or dust that may adhere to them is washed off by the first shower.

For some reason, possibly due to the lack of suitable clay for the work, the clayworkers of Wisconsin seem never to have gone into the manufacture of the blocks. There may be a few who have tried it, but as far as I have been able to learn, there is not now a block manufacturer in the State. If there are any such we would like to hear from them and have them tell us their experience with Wisconsin clay in block making.

In order to make a good merchantable block, it is necessary to have a clay that will vitrify and take a good salt glaze, but as a clay that will vitrify will nearly always take a salt glaze, it will only be necessary to speak of the vitrifying quality. A good vitrifying clay must possess certain specific properties. It must contain large enough proportions of the two refractory clay elements, silica and alumina, combined with large enough proportions of the fluxes, so that in the burning, the silica and alumina will act as a sort of frame work to hold the ware in shape for some time after the fluxes are in a state of fusion. In order to accomplish this result, there must be a range of nearly 300 degrees in temperature between the melting point of the fluxes and that of the silica and alumina.

In order for clay to stand up to vitrification, it is necessary that the silicate of alumina should constitute between 70 and 80 per cent. of the whole body of the clay.

The usual fluxes are iron, magnesia, lime, potash and soda. If the silica and alumina constitute too small a part of clay, the material for the frame work is lacking, and at the melting point of the fluxes the ware collapses or melts and runs together. I am not familiar enough with the general clay situation in Wisconsin to be able to say what our members may be able to do in the block manufacturing business, as suitable clay is necessary,

and the past geological history of our State is rather against our clayworkers in that respect.

Our brothers in the business in the States to the South of us, have a great advantage over us in that regard, as they have great deposits of the finest kinds of clay for the purpose, in the fire clay found under the coal veins, and the great inexhaustible beds of shale, which have been lying there undisturbed for perhaps millions of years.

In other States like Ohio and Indiana, where the manufacture of high grade clay ware is one of the greatest industries of the State, regular prospecting in search of clay beds is carried on on a large scale by deep borings, and clay is often mined from deep mines. In many cases, it is almost equal to coal mining in the extent of the operations.

In order to go into the manufacture of hollow blocks, a stiff mud outfit is, of course, necessary. Down draft kilns, preferably of the round topped style, are also necessary. Rectangular kilns are probably as good for vitrifying work, but the round topped are the best for glazing, as it is found in practice that the gases are better confined and condensed upon the wares. There is no question, I think, that there are clays in certain parts of the State that will vitrify and glaze, if properly treated in the manufacture, and there are doubtless many more that are not suitable for the work, as taken from the bank, that can be made so by the simple process of weathering.

If the clay be taken from the bank and piled upon the ground, or upon platforms, and left there for several months, subject to the rain and snow, the freezing and thawing of our very changeable climate, much of the fluxing ingredients will leach, or wash out of it, and the silicate of alumina will remain, and a clay with a very low melting or fusing point may, in this way, often be made quite refractory.

Another way is to mix high grade clay with the impure clay to effect the desired results, and that can be done quite successfully in many cases. There are a number of clay shipping firms in the fire clay and shale belt, who will furnish you with clay by the car load, of almost any required composition, to mix with your low grade clays to accomplish almost any results you may desire. I do not wish to be understood as trying to give the impression that hollow blocks will ever take the place of common bricks of clay. They will continue to hold the place that they have held from so long ago, that "the memory of man runneth not to the contrary," as the chief building material. There is a compact, solid look, about a well built brick wall, combined with its well known durability, that appeals to any one who is building for permanency. But this very quality makes it hard to produce any very striking color, or architectural effects, using brick alone; hence, the almost universal use of cut stone, or hand made terra cotta, in brick building, to produce the ornamental effects. These, however, are expensive, and hollow clay work, glazed or unglazed, can be made that will work in with brick to give almost any kind of ornamental or color effect required, and at much less cost than either stone or terra cotta. Is it not better to do this, when it can be done, by the brickmaker, or his brother clayworker, than to allow a large part of the cost of buildings to go to the terra cotta, or cut stone men? It can be done, and it is being done, in many places today. On this account the development of the hollow block business in this State will help the brick business.

Any one at all conversant with the condition of the lumber business now and for some years back, cannot help but see that the general use of lumber, for building purposes, can last but a few year longer. It has almost become a luxury now. Within a few years, not more than six or seven, the price of hemlock, the most commonly used lumber for building purposes, has advanced upwards of 300 per cent. and the pine and basswood are already out of reach for that purpose, except in the low grades. In a few years more and they will all be practically exhausted in Wisconsin.

There will be left large areas of timber land on the Pacific and Gulf coasts, but this is all being gathered in by rich lumbermen and syndicates, and I have never heard of any very pronounced philanthropists among these gentlemen. They will own the last and only source of supply, and will ask the highest possible price for what they will condescend to sell to a lumber hungry nation. When that time comes, and it is not far away, people will have to use something else than lumber for common building material. Nothing fills all requirements like burned clay, and nothing has been so long and favorably known. Bricks and hollow blocks, working together and supplementing each other, will take care of all specifications, both for the staple and the ornamental, and they also have the merit of being the cheapest. We should get ready for this, for if we are ready with the goods, we will get the business. (Applause.)

Discussion.

Mr. Kennedy: Mr. President, I would like to ask to have the stenographer make a record of the fact that the writer of that paper claimed some relationship to the Irish, the same as I do. I thought he looked like a Norwegian, but it is a mistake. (Laughter.)

President Wilson: I don't think there will be any objection to making this correction. Gentlemen: Did the paper by Mr. Crabtree develop anything that suggests questions from any of the members? What has been your experience, Mr. Craney, in the hollow block business as to warping?

Mr. Craney: I don't find that they warp any at all. In some cases they probably do, but I think likely they will act much the same as drain tile, but that is a thing I have never seen anything of.

President Wilson: The reason I asked the question was that seven or eight years ago we had some experiences with them in three or four foundations and have not used them very extensively since. We found that the contractor had a great deal of trouble in getting a straight wall. I did not know whether the experience was general, or whether we had been shipped a poor quality.

Mr. Crabtree: That has not been my experience at all.

President Wilson: What was your suggestion, Mr. Stoll?

Mr. Stoll: When the fire strikes one of the blocks, it will pull it toward the fire. This will occur only in a few around the fireplace, the rest of them will remain straight as a drain tile. My attention has been called to the fact, that the man who sets them and the man who takes them away from the machine where the blocks are not perfectly dry, is responsible, because, when the mud is soft they very easily get out of shape, and it is for that reason very necessary to have a good man as a setter. I think that most of the misshapen blocks come from careless handling. They require skilled handling from the time they come from the machine until burned.

Mr. H. de Joannis: There is present a man who goes about seeking whom he may devour, who lives in a State



G. C. Stoll, Wheaton, Ill.

where there is a great deal of hollow building block used. I refer to Mr. Ulmer Smith, of Iowa. You know how the hollow blocks are laid up. Tell us if there are any warping troubles in Iowa.

Mr. Smith: The average clay man has no more difficulty in manufacturing the building block than the drain tile, and as far as laying up walls—in warehouses or work of that kind, we find they are used quite extensively for outside walls—we have no such trouble as warping. With us, they are used for the outside, and in a good many places they will use those blocks on the inside. They make a very cheap and durable wall. At least, they think the walls are better. Take in parts of Minnesota and South Dakota, a great many of the public buildings there the specifications call for hollow construction on the inside, on account of the dryness of the walls, and I think it is probably 40 per cent. cheaper than the solid brick would be to put into the wall. I think, as Mr. Stoll says, a few around the fire will warp.

Mr. Stoll: I would like to ask Mr. Smith, don't they usually make the blocks 4x8x12?

Mr. Smith: The blocks used in Des Moines are 8x8x16 with four holes; in Mason City they make them 5x8x12, and then you get down further in the State, at my home, they are 4x5x15. The object of making them 5 inches is so that they will build up with two rows of common brick. These three sizes are used extensively in Iowa.

Mr. Stoll: I would like to ascertain the price of the 8x16x8 blocks in Ohio.

Mr. Crabtree: I have a price list that I got from one of those people and I intended to bring it with me, but I have forgotten it. Their price was a little higher, I think. If I am not mistaken, it was nine cents for the plain and ten and one-half cents for the rock faced.

Mr. Stoll: I was going to say that down in Brazil, Ind., they sell the 8x8x16 blocks at seven cents. It takes sixty-five blocks to lay as much wall as a thousand brick. They would be \$4.55, and it takes less mortar, but 65 blocks at nine cents would be \$5.85. A good many of the factories here sell brick for about \$6. That would be about equal to hollow blocks at nine cents. At seven cents, hollow blocks would have much the advantage. They would anyhow on account of the consideration of labor.

Mr. Crabtree: I first thought my price list was for the dealers, but afterwards I concluded that it was the retail price, I mean the price where a man came after a load, as they do there all the time, from all over the country.

President Wilson: You made some hollow blocks this year, did you not?

Mr. Crabtree: No, I have not yet, but I intend to do so, and may have something to tell you at the next convention.

This is the price list of the National Fire Brick Co., and the prices quoted go to the trade and contractors:

8x8x16 blocks, Buff	7¾
Glazed	8¼
Rockfaced	8¾
4x8x12 blocks, Buff	5
Glazed	5½
Rockfaced	6

President Wilson: Has any other member any question to ask Mr. Crabtree? If not, we will proceed with the program and take up the next number, which is, "The Use of Coke as a Fuel in the Brick Industry," by a representative of Pickands, Brown & Co., Milwaukee, Wis., Mr. Geo. A. T. Long:

THE USE OF COKE AS A FUEL IN THE BRICK INDUSTRY.

BY GEO. A. T. LONG, MILWAUKEE, WIS.

Mr. President and Gentlemen of the Convention: I have just gotten out a few of the points on the coke question, which I will read here and will be glad to explain anything to you afterwards.

We have given the matter of the use of coke in manufacturing brick considerable attention, and from our investigation, we believe that it is the most economical and satisfactory fuel for the purpose for which it is used, that it is now possible to secure. In burning brick, as we understand the process, at the start it is necessary to drive the water smoke off and gradually bring the temperature up to a certain point before beginning with the heavy coal fires, and it is in this initial stage of the work that the coke is used, and for this purpose it makes an ideal fuel, as it is smokeless and does not stop up the flues or discolor or destroy the brick by the openings from the fire.

At Detroit, Michigan, there are several brick plants that run the year round, and after experimenting with oil, wood, coal and coke, they have demonstrated that Solvay coke gives better satisfaction and costs considerably less than oil or wood, and does not clog up the flues or discolor the brick, as the coal does, and it has been adopted almost exclusively by the plants there for the purpose of drying and heating the brick. Previous to the adoption of coke they always used wood, but the high price of wood at the present time makes it out of the question to use this, and the cost of oil is 30 per cent. higher than coke. At the Detroit kilns they fire with coke for about 48 hours at the beginning, and then change to soft coal. The reason for this, I understand, is that the coal gives a quicker and more penetrating heat, owing to the flame that comes from it, and the brick heat much faster from the use of the coal fire than from the coke, which gives very little flame.

The man in charge of the Clippert plant at Detroit, told me that they had tried all kinds of experiments with different fuels, and had finally changed all their kilns so as to burn coke and coal, and that they have had no trouble since doing this. They have been using Solvay coke now for three years. While coming through Detroit from Toronto, Mr. Clippert took me out and showed me through his plant. He said that after starting the fire, he only required one man, and got a uniform heat, and it took at least four men to fire the kilns with coal.

One point about the coke is that in driving off the water smoke, the high carbon has a tendency to form a gas, which it distributes without discoloration, but it is not sufficient to finish the brick.

The coke contains from 88 to 92 per cent. fixed carbon. I thank you all, and any time we will be pleased to give you any information that we can. Thanking you again. (Applause.)

Discussion.

Mr. Sanborn: I would like to ask the gentleman what kind of a grate he uses.

Mr. Long: Just the ordinary grate, the same as we use for ordinary coal. We use the smaller coals—nut or pea. The fire box is built outside the kiln.

Mr. Vogt: I have had some experience with the use of coke and we found it very satisfactory and cheap, that is, especially for drying the brick. We had a direct heat and dried 800,000 bricks a day, and the coke cost only 12½ cents, where in the steam dryer it cost us 35 cents and we were smoking the brick also with coke, but I think coke would come into more general use if the price was not shoved up. The price of coke has gone up with the coal and wood.

Mr. Long: I might say in reply to you, that the price today is about \$1 per ton less than it is produced for at the mine—that is the coke that can be used for the burning of brick, nut-size, because it holds its heat so much longer. I think the price today is \$4.50 as against \$6.00 on the regular coke at the mine. So that our price, if I am not mistaken, when contract is made with the brick manufacturers will be \$3.50 per ton for the next twelve months, for their supply.

A Member: I would like to ask the gentleman what is the price of coke as compared with the price of hemlock slabs. How many tons would fire a thousand brick, and how many cords of slabs.

Mr. Long: I will say this, that the man in charge of a plant, told me the other day that he used to use wood and that he found that a ton of coke would go as far as two cords of hardwood.

President Wilson: I would suggest that you ask Mr. Vogt that question.

A Member: Will Mr. Vogt explain the number of tons of coke used and soft coal in burning a certain number of brick and the number of cords of wood in burning the same number of brick?

Mr. Vogt: I only know from our books that the cost of drying the brick in the direct heat with coke, the price being \$3.50, was only 12½ cents, and before, when we used coal, it was 25 cents, and in the steam dryer it was 35 cents. We dry about 100,000 brick a day on the average and so it can be figured out pretty closely how many tons of coke could be used at 12½ cents per thousand, or \$3.50 per ton.

President Wilson: Is there any one present who has made a comparison along that line other than Mr. Vogt? I think that drying with coke is a rather new thing and very few of us have had any experience, except Mr. Vogt.

Mr. Vogt: The drying process has to be watched very carefully and it takes from eight to ten days, and we figure that with the watersmoking when we use coke, the cost would not exceed 25 to 30 cents. What do you use for it?

A Member: I use wood and coke together.

A Member: What kind of wood do you use, slab wood or hard?

A Member: Both kinds, just as we happen to get it. Hard wood would be cheaper, I think.

Mr. Vogt: I think hardwood is much cheaper than slabs.

Mr. Hilker: We are operating at Racine, three different yards, and for the last two years we have been using coke for watersmoking our brick. In the two yards we use about three tons of coke for 24 hours in a kiln of 230,000 brick. In one of our yards we watersmoke our brick about three weeks. We use on the average, three tons of coke for every 24 hours and get out 230,000 brick, and we find it much cheaper and much better than wood because it is a dry heat. Most of us brick manufacturers find a great fault with firing brick with coal is that when we watersmoke, it clogs up the kiln, but we have never had this experience with coke.

Mr. President: Anyone else anything to offer on the subject of coke? Then we will listen to Mr. E. R. Frazier, of Chicago, on the subject of "Some Things to be Considered in Selecting Machinery for Clayworking Plants":

SOME THINGS TO BE CONSIDERED IN SELECTING MACHINERY FOR CLAYWORKING PLANTS.

BY E. R. FRAZIER, CHICAGO, ILL.

If you are astonished at the seeming nerve on my part, in attempting to say anything on this subject, and yet having the heart willing to pity and to sympathize with me, permit me to whisper where the blame lies. It is with our worthy Secretary, who in-

sisted that, not only should I say something, but that something must flow from the topic "Some of the Things to be Considered in Selecting Machinery and Equipment for Clayworking Plants."

Well, the first reading it seemed easy. Visions of "Chambers'" products filled the air, but suddenly I got a rap from a roving inquisitor, in a question to the effect, "Say, don't you think the man who has had experience in operating, in developing, in other words, the practical running of clayworking plants, and he having the broader, the wider, and the deeper experience, is not he the man and he alone, the one qualified to indicate the things to be considered?"

Recovering myself, the point and force of the query was acknowledged, but at the same time there came up this thought: What a book it would make, startling in every detail, were one written, containing the history of the trade as found in the log books of manufacturers, in which are recorded the efforts and labors exerted to embody in designs the ideas of the clayworker.

Now that I seem to have some justification, or ground, for this effort on my part, I must also congratulate you that the wording of the topic is such that I am not called upon to give you *all* the things to be considered, and fortunately, I think, for you; for, if I had been asked to tell "*all the things to be considered*," etc., I had not hesitated an instant, and taking up the subject, firing away at it, keep it up until "Gabriel blew his horn," or until the crack of doom. The topic is worded, however, considerably for you, and kindly for me. And its "something to be considered" shall be construed to mean one, or perhaps two, of the things, etc.

The selection of machinery and equipment for any plant is always a difficult matter, yet I should be justified, from the way so many go about it, thinking it a simple, every day matter, indeed, involving nothing.

But we know, we, each of us, know, from experience, and much of that experience dearly bought, that there are many things, peculiar and different things, involved in selecting the proper machinery and equipment for a clayworking plant.

As I have already intimated, we are conscious of and recognize the fact, that the practical workers in clay industries, the handlers of the working tools, must give to the manufacturer out of their "time tried" and "fire tested" experience, that wisdom and understanding which shall enable the manufacturer to provide for and cover the things to be considered under each and every condition that may arise.

A stranger to the business, looking over the advertisements in the industrial publications, noting the seeming endless variety of machinery advertised to attract buyers in the market for manufacturing clay products, might be excused if he concluded that the variety would lead to confusion inevitably, and his sympathies would go out to the prospective buyer. The fact is, however, that the variety shown simply indicates that each particular type and construction shown has succeeded in securing the best results under certain conditions, and it follows that each and every type is the best adapted to like conditions, and where these conditions exist this is one of the things to be considered, and the qualified type and construction accordingly selected.

We are familiar with the seeing of the machinery, or equipment lying about, out of service, and it is frequently discussed. After criticisms, more or less bitter, almost invariably the remark is made: "I should have known better, in fact, I had some doubts," etc., etc., implying that if one or more things had been considered, the annoyance, saying nothing of the expense, had been avoided.

A man has a piece of ground which he has been told is rich in clay or marl, and he becomes enthusiastic at once for "his yard." Samples are sent to the clayworking machinery manufacturer and matters are driven to install the working plant as soon as possible. Result: Let the scrap pile tell the story. There may have been a time when to do differently was impossible, but that was a long time ago. It is forgotten that one of the most ancient, if not the most ancient of industries, was that of clayworking. Leaving the past out of consideration and dealing with the present, we find on every hand skilled men, experts in clay, capable of analyzing and determining the sample submitted to them, who will tell its special use, as well as its several uses, and more, the exact treatment the material shall have, and as an essential that type and construction of the machinery and equipment to be adopted if the best products the material will yield are to be secured.

I believe that I have indicated a most important, if not the chief thing to be considered in the selection of machinery and equipment for a clayworking plant. In other words, look to the material you would work with; better throw hundreds of dollars away in fully determining its value, and in advance know this, and go no further with it, if it falls below the standard. On the other hand, a full knowledge of the material obtained upon patient investigation and analysis, invariably determines in advance the possibilities of what the material can do, and these known in advance enables the "broad plan" of the business to follow, and I know many successful yards whose history and causes of success lie in the method I have outlined.

I have a good opinion of human nature, notwithstanding its weaknesses, and its being full of contradictions. I have just said something everybody knows, and yet it is a fact, that the simpler the thing, the less it is understood. Pick up any single thing, a thing so simple a child, we say, understands it, and ask a question about it and what is the result? You are led to exclaim, "Familiarity breeds not contempt, as Shakespeare put it, but ignorance."

What a clay is, if it is to be worked, should be known to the

last analysis. If it be worth being worked, the best methods of its working must be determined, and these suggests the machinery and equipment. And as I have said, there are to be found types and constructions that will meet the various conditions, and of course these should be selected. Everybody knows this, but what is the frequent practice? Let me quote what a friend gave me recently, of a conversation he heard: There seemed to be a hearty agreement that a certain proposal submitted and under consideration covered the conditions, and the equipment, if installed, would make an ideal plant, and the consulting engineer from the engineering view, pronounced it as the type that should be selected, *but* the price. There was no question about the price being fair for what would be furnished, *but* there was present the same character everywhere met with, who was ready with his question, "Can't we get something that will answer our purpose for less money?" This character usually is the man with the most money (it is of such money makers are made), and his associates, in every way the better able to judge, and would select the perfect plant, but as human nature is constituted, submit to the man with the money, and the things that should be considered in the selection of machinery is pushed aside, and something else allowed to influence the selection to be made.

Now, I have said but little, but have indicated, I think, some of the things to be considered in the selection of equipment for clayworking plants, and I am glad to be able to say the number is steadily increasing of those who consider the cost as secondary, their first aim being to secure machinery and equipment that in every detail will meet the conditions, fully and beyond all question. And to paraphrase the line of Shakespeare, let me say in conclusion, "Costly thy machinery as thy purse can buy," or in other words, buy the best machinery and equipment always, and no other, and before doing so, fully satisfy yourself that machinery is best adapted to your requirements and buy no other. (Applause.)



E. R. Frazier, Chicago, Ill.

Discussion.

President Wilson: I can hardly imagine that any one would ask Mr. Frazier what is the best machinery, but Mr. Frazier knows, and probably some of the rest of you do. Is there any question that occurs to any?

Mr. Vogt: I don't know that I can say anything that will interest you on the subject of machinery, but I think the experience of a great many brickmakers is illustrated by the story of the man who asked which was the best hotel in the town and received the reply, "If you stay at one you will wish you had stayed at the other." (Laughter.) I think the brickmakers want to know which type of machine will answer the purpose best for their clay. If they would spend \$100 and send sufficient clay to be tested they would probably get more satisfactory results, than by buying a machine and after finding that it is not adapted to their clay, changing it, or buying another machine. I think that is one great mistake that is made.

Mr. Kennedy: I think there is no brickmaker but has stayed at both hotels, judging from the looks of their yards. I would like to call on Mr. Wachter for his experience.

Mr. Wachter: As far as machinery is concerned, I have had all kinds. If the gentleman will examine those three bricks that I brought here, I think that they can probably tell which machine makes the best brick.

Mr. Crabtree: I have been taking this all in. Of course, I don't know anything about it, but I am reminded of an old saying, which I will change just a little, "Experience is a dear school, but brickmakers will learn in no other."

President Wilson: If there is nothing further to be said on this subject, we will pass to the next number on the program, "Odds and Ends," by Mr. Harry de Joannis:

President Wilson then introduced Mr. Harry de Joannis, who read an interesting paper, entitled "Odds and Ends." Among a number of suggestions, was that of the possibility of improving the value of clay ware where naturally it burns an undesirable color, by the application of a color slip in the process of manufacture. The belief was expressed that the process might be used successfully in the future.

Discussion.

Mr. Kennedy: I would ask Mr. Joannis if he has found out what they put in the brick to make the color. Has there been anything done along that line, and how is it applied?

Mr. H. de Joannis: The practice of putting a coloring ingredient into the clay itself to produce a color has so far proved to be too expensive so far as I know, and I have made a number of inquiries of those people who supply coloring ingredients and got no answer that showed any possibility of success because of the variable action of the coloring material under fire. The fire test has so far been too severe and the cost of the coloring material has been too high. The coloration to which I referred, however, is by applying a clay coloring slip upon the surface or stream of clay as it emerges from the machine. There was exhibited at Philadelphia a brick machine to which was attached one of these coloring attachments, and they had a number of samples showing the different colorings which had been attained at a very low cost. There are three or four plants that are using this system at this time and it appears that you can so adapt this slip that it will fit the body of your clay, and that is the thing that I referred to—the possibility of applying to the issuing clay stream a body on one face of the brick which will, under fire, produce a different color from the body beneath it.

Mr. Crabtree: I would like to ask if there are dealers in slips. I have seen them used, but I do not know where they can be bought.

Mr. H. de Joannis: The process is not sufficiently common today for anybody to have gotten into the market with slips which will suit each particular clay, but that does not do away with the fact that any chemist familiar with the clay business could, without any particular trouble, fit to the green product the kind of slip which could be used for that purpose. It is a question of cost and whether the increase of price that you would get would warrant you in engaging in it commercially.

A Member: Will you please tell us just what the process is?

Mr. H. de Joannis: I will just describe it briefly. The proposition simply is this: It is a box which is fitted right over the mouth of the die. It fits tightly above the stream of clay as it issues and pours upon its surface this coloring stream, which is nothing else but a clay with the coloring ingredient which, when fired, will produce a certain color. The stream simply flows upon the surface of the clay and the cutting takes place in exactly the same way, only you must exercise just a little more care so that there will be no cracking.

A Member: Would it be possible on a small scale to get the same effect as through the machine?

Mr. H. de Joannis: There would be only this difference: The handling of each individual brick would increase your labor cost over this other process. I have no idea how costly that is, and I am not here to advertise it.

President Wilson: Is there anything further to be said on this subject?

Report of Committee on Railroad Rates.

Mr. Kennedy: I understand that some of the members will leave tonight and not be able to attend tomorrow and I feel that I ought to make a short statement of which this

committee (the Railroad Committee) has done. Well, we haven't done much, and for that I am sorry, but we have tried.

At our last convention the committee was appointed and \$100 was appropriated to pay for the lawyers that we would have to hire to carry on this investigation. Mr. Burnham, of Milwaukee, was one of the committee, Mr. Hamilton, of Grand Rapids, was another, and I was the third. We met at Milwaukee and Mr. Burnham has a son, a young man, that is an attorney, and we employed him to look up the situation and see what we could do and how to do it. He took up the matter, looking into it at some length, came to Madison, made a list of the freight rates, and took the necessary steps to call for a hearing before the railroad rate commission. About this time he accepted a position as attorney for some railroad that is owned largely by the Burnham Brothers and Burnham relatives, and they notified him that in order to retain his position with the railroad company, it would be necessary for him to resign the position he had accepted for the Clayworkers' Association to fight the railroads. So he sent in his bill of about \$86. What was the amount, Mr. Zimbal?

Treasurer Zimbal: \$85.71.

Mr. Kennedy: Then you see it was up to us to get another attorney. We had already called for a hearing and the date was already set, and I took up the matter with the balance of the committee and with the President of our Association, and they all seemed satisfied that it would not be wise to proceed before the Railroad Rate Commission without an attorney, and we employed Mr. Haugan, of Manitowoc, to appear for us. I asked Mr. Haugan what the probable cost would be and he said it would be about \$60. He came to Madison with us on January 10th and appeared for us, and, as I stated yesterday, the railroad companies asked to have a stay of proceedings until they submitted a schedule of rates. Now, I don't feel that the committee ought to be obliged to stand their railroad fare and hotel bills while they are working for the interest of the Wisconsin Clayworkers' Association. I think it is not fair to ask any member to pay his hotel bill and his railroad fare, and give his time besides, for the benefit of the Association of Wisconsin, and I would like to call the attention of the Association to the fact that Mr. Haugan's bill will have to be paid when this thing comes to be settled, and if it comes to a hearing before the Railroad Rate Commission, I have no doubt that expense may be more than \$60. My experience with the railroad companies is that when they fight they fight hard, and fight good and long, and I want to get an expression from the members as to how they feel about it. If they feel that it is so much of an honor for a man to act on this committee that he should stand his own expenses I believe in passing the honor around. I have gone into this fight with a good deal of vim and I would like to see it through, but I don't feel that our company or myself ought to stand the expense of fighting it out alone. I think it ought to be paid for out of the treasury, and I think that if the treasury gets low, it should be fattened up a little.

Mr. Sanborn: I think the Association ought to back this committee. We certainly ought to pay their expenses and we should also pay for their attorneys. It is for the benefit of the Association and for the benefit of the brickmakers throughout the State, and they should stand back of these men ready to help out.

Mr. Kennedy: I would say in this connection that it is hard to know just what the expense is going to be. For instance, yesterday I supposed that report would be here as it was promised. The report did not arrive. I did not want to come up before this convention and say that I had not tried to get an answer, so it was up to me to telephone to Chicago to the men that had it in charge. I could not tell the lady operator that she should charge it to the clayworkers in convention. No, sir! It was up to me to dig down in my jeans and pay \$1.75, if you please, and such expenses as that I feel the Association should stand.

President Wilson: Does this convention want to accept this as the committee's report, or is this solely to get an expression from the members?

Mr. Kennedy: We haven't any word yet, but we want an expression of opinion.

President Wilson: Expression on the subject will be in order, because Mr. Kennedy may possibly have information tomorrow so as to be able to report something definite.

Mr. Craney: It never entered my mind that this committee paid their own expenses, and I think it no more than fair and honorable that we pay all of these expenses, for they are working for the benefit of this Association. I would propose that we raise on our dues per capita. It is a very small matter to each individual and each individual will get the benefit, besides, if he doesn't, every clayworker has been in the position that he did not receive benefit from his outlay, and one more experience would not break him.

Mr. H. de Joannis: My sympathy is \$5.00.

Mr. Kennedy: That reminds me of a story: Two men met at a country store and had the following conversation:

"Poor Mrs. Smith! She's a poor widow woman that sold milk. She's lost her cow!"

"Yes, and it is too bad. I'm awfully sorry for her."

"I'm sorry \$1.00. How much are you sorry? Let's buy her a new cow."

Mr. Crabtree: I can sympathize with Mr. Kennedy. I went up against a similar proposition on a sidetrack, and I was never able to get anything—and I wrote all kinds of letters and made several trips—except just about a year after I started out (I was there last Monday) they intimated to me through the Assistant General Freight Agent, that if I would build it, pay for it, and make everything all right with the section men, they would haul cars over it. (Laughter.) Now, I can tell Brother Kennedy that he will not hear from them tomorrow, and whatever we have to do, we had better do it. Now, the brother has intimated that it is unjust for us to expect the committee will throw in their services and also pay their expenses, and the question is, what are we going to do about it. If we want anything better than we have it, we can work together for it better than we can work alone, and it takes money to do that, and Mr. Kennedy has pretty well expressed the situation in saying it will be a hard fight. The question is, how will we raise money to fight further? My belief is that we can do it in no better way than simply by raising our membership fees and on our yearly dues. In that way we will all be sure to pay and get money enough for what we need. I don't put that as a motion, that is simply a suggestion.

Mr. H. de Joannis: I will tell you how I feel about this proposition. It is not a question of raising our annual dues, it is a question of raising money. Our annual dues are next year. We will get a report tomorrow and we will know how we stand and how much money we have on hand. As far as I know, that money will be considerably below the expenses of the committee. Consequently, we are up against this proposition: We have that lawyer's bill to meet and we have the other expenses that may be incurred in assisting the lawyer to manufacture his bill, and it is a question of paying the expenses. There are thirty-five men here, we will say, and \$35 is a drop in the bucket, and then raise as much more as we need. I would suggest that we adopt Mr. Crabtree's suggestion so far as raising the annual dues. I think the dues too low, that is to say, when we have work of this character to do. I believe \$2.00 is as low as consistently can be asked of any one man's plant as a representative of his share of interest in the work in the State of Wisconsin. Your interest in your industry in the State is worth a great sight more than \$1 a year—\$2 a year is a low fee—but I would suggest that in addition to that we appoint a committee, I have not given it a name, of which I would like to be one, and that is not egotism; it is simply because I would like to put my hand to it. I would like to draft a letter to every clayworker in the State to the tune of \$2 a piece to secure the funds for prosecuting this fight. I believe that this delay in the answer of the railroad company to Mr. Kennedy is premeditated. I don't believe it is a case of sickness, or absence from the city. They know that we meet in convention here and if they can keep us guessing right now, it will lay over another year. If we have got them nervous enough to want to delay the

hearing before the rate commission, why not go the whole mark and keep them nervous? I think we should not disregard your motion to increase the annual dues so as to insure us an increase of funds for the future, but should also take such action as is necessary to appeal to the clayworkers of the State by a letter which will embody Mr. Kennedy's report and will present in a clear way what we are trying to do, and I believe such a committee would get the money. We are too small a body of men at present, and the clayworkers of the State have a right to share the burden.

Mr. Kennedy: There is this feeling among the clayworkers of Wisconsin. I have been with the clayworkers for five conventions. In this fight that we have had with the railroads, I have had a good many encouraging words, among them some from a representative of the Fond du Lac Pressed Brick Company. "I understand you are fighting for better rates for the Wisconsin clayworkers, and are insisting that the railroads stop discriminating against Wisconsin," said he. "If you need any help, let me know and we are ready to assist you." Now, that is what we want. We want something like an equalization. Now, we will say the output of Burnham Bros. in Milwaukee is, possibly, something near 20,000,000. It is not fair to suppose the Burnham Bros. will pay the same as Mr. Wachter, who possibly makes 800,000 a year. Now, if there is an assessment brought in, let those men contribute what they feel they ought to contribute. There ought to be some way of their arriving at some figure. There



A. W. Hilker, Racine, Wis.

are men in the brick business in this State that will sit back in their chairs and smoke their pipes who will gladly benefit by this fight and who will not respond to all the letters you will send them from now till kingdom come. If you make an assessment, use what you have to and pay back to those men pro rata what it has not been necessary to use. If you have not got men on that committee that you can trust, I move you appoint another committee.

Mr. Vogt: I think that the subscription plan is a good one. Let the committee send to every clayworker in Wisconsin a subscription card, leaving it optional with him to subscribe what he sees fit, and I think we can raise more money than by making an assessment of two or three or more dollars, because I am inclined to think that the large manufacturer will naturally offer to pay more than by an assessment.

Mr. Kennedy: A German has a right to speak first and an Irishman has a right to talk until he is understood.

President Wilson: You have the floor, Mr. Kennedy.

Mr. Kennedy: I think that this committee should be given the power by this Association at this meeting to settle with the railroad companies if they can get a concession from the railroads that is better or as good as they would get from the Railroad Rate Commission, for two reasons:

1st. If it goes before the Railroad Rate Commission, we

can not expect an answer inside of six months, and it would cost a whole lot of money, too.

2d. If they do make a rate to our interest, they will give the railroad companies at least six months more to clean up their contracts and we want this rate this year.

In conversation, one of the railroad men of Chicago, within the last week, said that when he got back to Chicago after the meeting we had in Milwaukee, he met very strong opposition to raising the Chicago rates from the Chicago brick manufacturers. One of the firms had fifteen million brick contracted for, and if he had to pay the advanced rate, it would mean a loss to his firm of \$6,000 or more, this year. If that is allowed to go in that way, when will they get through with their contracts? Not while we live, to say the least. They ought to come to some conclusion and set a date when the rate is to go into effect. We can not expect the railroad company to raise the rate, but the longer we put this off, the longer time they will continue to ship brick on the present rate. Now, some of you may think this committee is asking for too much power. I have given this matter a good deal of thought and we have been appointed at four different conventions. Now, that is what I think about it.

Mr. H. de Joannis: I believe that we should raise the money, and I don't care how you do it, any way to raise \$500 from the clayworkers of Wisconsin. The railroads would soon come to know about that \$500 and will begin to sit up and take notice.

Mr. Crabtree: Are there any standing committees in this Association?

President Wilson: Only the Executive Committee.

Mr. Crabtree: I move that another standing committee be appointed to consist of three members to be appointed by the chair, and that the committee be requested to report at the commencement of the session tomorrow morning the probable amount they will have to raise for this purpose and methods of raising it, and I would also request that Brother de Joannis be made chairman of that committee.

A Member: I second the motion.

President Wilson: Gentlemen: You have heard the motion made and seconded. All those in favor of the motion will signify the same in the usual manner. The motion is carried.

At this point in the proceedings, a gentleman asked permission to address the convention. He said if he must appear upon the records, it must be solely as "The old man with the clay pipe." He spoke in a rousing manner at some length concerning the discrimination by the railroads against the Wisconsin clayworking industry in favor of Chicago and points taking Chicago rates. It was afterwards learned that the gentleman was Mr. Steele, of the Jefferson Brick and Tile Company.

Mr. Hinkley: I want to make a motion at this time, because it is getting late and I may not be here tomorrow, and I move that this committee which was appointed last year be continued for another year with authority to go ahead with the railroad companies, and be instructed not to make any settlement with the railroad companies that will be to the disadvantage of any clayworker in the State.

President Wilson: I don't like to entertain the motion because the committee has not made its report, and I don't like to disregard it, because I know you will not be here tomorrow.

Mr. Craney: I rise to a point of order. Is there not a motion before the house?

President Wilson: No, the motion has been disposed of.

Mr. H. de Joannis: I think, President Wilson, it would be quite in order to entertain Mr. Hinkley's motion and let it stand before the house to be presented at the proper time tomorrow.

Mr. Hinkley: The motion was that this present committee be continued for another year and, as I understand it, the other committee will provide the funds for it. The motion as I gave it first was that this committee be authorized to act for the Association, but that it be instructed not to in any way sacrifice any interest of any member of this Association, or of any brickmaker in the State. I am making that motion for the reason that the committee will be in better shape to talk to the Commission.

Mr. Kennedy: Do I understand that we are to accept nothing from them, and go before the Railroad Commission?

Mr. Hinkley: Not to accept any settlement that is to the detriment of any member.

Mr. Vogt: I think the clause that Mr. Hinkley has put into his resolution would render the continuance of the committee useless. No committee of however many members can know whether every member of the Wisconsin Clayworkers' Association is benefited. Whether they lower or raise the distance tariff, no committee can determine whether it would be beneficial to every member, but an advance in rates from Chicago to Wisconsin points would benefit every brickmaker and I think that if the committee is to be continued, it ought to have full authority to act if they think that the proposition made by the railroad is the best that could be obtained from the Rate Commission.

Mr. H. de Joannis: - Mr. Hinkley has made a motion before the house which is entitled to our consideration as he won't be here tomorrow, and the motion, as I understand it now is, that it should be submitted to the house to be dealt with by the house as the house sees fit, and I second Mr. Hinkley's motion.

Mr. Hinkley: Mr. President, I was trying to simplify this matter. I understand this committee really had no authority to act. As I remember it, it was appointed to "confer" with the railroad officials and to "report." The motion that I made is intended to give them authority to act for the Association and I simply want to get it in shape so that the railroads will know just exactly what we have done.

President Wilson: The President will appoint as a committee to consider this and report on it tomorrow, Messrs. Joannis, Craney and Sanborn.

It is now getting late and I want to call your attention to the fact that the Secretary would like to have you all register. The banquet is on for 6:30 at Keeley's, and some of the members, perhaps, have not secured tickets from the Secretary. It has been thought best that everybody should pay for their own entertainment, and arrangements have been made at the Capitol House so there will be no charge made there for your supper.

Motion for adjournment was here made and carried.

Friday Morning Session.

President Wilson: The convention will please come to order. Before proceeding with the regular program I want to call attention to the sample brick that was referred to in the correspondence which the Secretary read yesterday from the American Refractory Company by Mr. Hoggart, of Baraboo, and the finished product made from the various clays. I may say that we wanted this gentleman to write us a paper on the manufacture of these brick, but not being able to be at the meeting, he did not want to send a paper, so we asked him to send us samples and this is what he sent. The first number to be taken up this morning is a paper on "Brick and Concrete Construction," by D. W. Mead, Professor of Hydraulic Engineering, University of Wisconsin.

BRICK AND CONCRETE CONSTRUCTION.

BY D. W. MEAD, PROFESSOR OF HYDRAULIC ENGINEERING, UNIVERSITY OF WISCONSIN.

The last twenty years have witnessed a considerable change in the character of the materials used for engineering construction. In speaking of engineering construction, I wish to differentiate between ordinary building construction and the class of construction to which I refer, which consists principally of the heavier mason-working work and other more massive lines of construction, than obtained in ordinary building practice.

Twenty years ago, the ordinary foundation was composed of rough rubble work, filled with mortar or cement. The finer classes of masonry work were built of cut stone, where the character of the work would permit of the expenditure of the large amount of money entailed by work of that character. Brick work occupied a middle ground, where a more satisfactory class of work was needed than that afforded by the rubble, and where a less expensive class of work was needed than was afforded by cut stone work. Brick also yielded itself to certain classes of construction, such as the thin walls, sewer work, arched bridges, groined arches, culverts, and circular reservoirs. Since that time a change has taken place in the material, we are now using concrete where we used brick before. We are also using a composite construction which we call re-inforced concrete, the value of

which is fully recognized, and perhaps the ideas that obtain concerning it are being carried in many cases to an extreme. I think, as a matter of fact, in re-inforced concrete construction, the extremes that are being reached are already approaching a dangerous limit, and that on account of defects in both design and construction, serious results are bound to occur. Re-inforced concrete is a very valuable material for building construction and is bound to have a marked effect on all lines of engineering design. Each of these materials has a value of its own and is particularly applicable to positions where these values are best utilized.

The speaker would state that he has had a considerable experience with brick, both as an engineer, a contractor, and a brick manufacturer. In one or the other of these positions he has used a great many millions of brick and believes he recognizes fully the advantages of brick as a material. Twenty years ago, many engineering structures were largely built of brick, and brick is now being largely replaced by concrete work. The reason for this is important and I wish to call your attention, as briefly as possible, to the basis on which the writer, in his own practice, has felt obliged to substitute concrete for brick in this class of construction.

As I have said, each of these materials has particular qualifications of its own and yields to certain lines of construction in a greater degree than any other material. Its use is subject to certain conditions which modify or control its usefulness.

Brick, as a rule, must be, save in exceptional cases and under exceptional conditions, obtained from some established yard and must be transported to the site where the material is to be used. Often this necessitates more than one transfer. Very commonly, the brick for important structures must be placed in cars by teaming from the yards and transported for a considerable distance to the neighborhood of the site of the structure, and these handlings are a very serious matter. Concrete materials, on the other hand, submit to much rougher usage, with the exception of cement. Sand, gravel and stone can be handled much more cheaply and more readily, and the materials can often be obtained in the immediate vicinity of the structure itself. They can be dumped into bins, and from the bins they can be run by gravity into the mixers and the mixture can again be conveyed to the position of the work, and there be placed in position with the minimum amount of cheap labor.

I believe that labor is one of the most serious controlling features that has to do with the change that has taken place in the use of material for engineering structure. The laying of brick is, as you know, monopolized by so-called skilled labor, by the brick layers. In most communities they are organized into unions that practically control the exercise of the trade. As a general rule, these men are experienced in laying brick in the walls of buildings, and the laying of brick in a wall is very different from laying it in an engineering structure. In such work we need a strong bond between the brick. We need the full benefit of the construction and the joints must be thoroughly well filled and the brick must be fully bedded, and it is very difficult to get a brick layer to do this properly. Of course, there are brick layers who have done engineering work and who will do this kind of work properly, but if you are obliged to do a small amount of work, you are usually obliged to take what you can get, and it is almost, or quite impossible, to secure the accomplishment of the work in the way that it should be done.

I have had numerous experiences that would illustrate this, but I call to mind one in which I had selected brick as the foundation for a pumping engine, that was to be installed in an Illinois city. It was a very heavy machine, weighing about 100 tons, and subject to more or less jarring of the foundation. It was, therefore, essential that the foundation should be solidly constructed, in order to stand the weight and vibration. We were obliged in that city to get the ordinary house bricklayers, men able in their line, but when I tried to secure the class of work necessary for this class of construction, I found it almost impossible. I found the men putting the brick in as the ordinary brick is laid, and I insisted upon the work being done in the way that it must be done, in order to give the best results. Some of the men would attempt to follow my instructions for a short time, but would soon lapse back into their old methods from which they could not be easily converted. In some cases, they evidently regarded my direction as an insult. I was obviously not a bricklayer. What did I know about laying brick? And one man, at least, refused to do further work rather than carry out the instructions which I gave him.

Another instance was at Ft. Worth, Texas, a tunnel 170 feet below the surface. The joints had to be well filled because many tons of pressure would be put upon the work. I spent six weeks there, and in order to see that the work was properly done, I worked in the tunnel, laying some of the brick myself. It was only with the greatest difficulty that I secured proper work. I had to build a bulkhead from above to retain the water from below. I selected in that case, concrete for the material, using ordinary labor that I could pick up in Ft. Worth to put the work in. We were able to place the concrete over the form on the bottom and to ram it down. It was made quite dry, so dry that when taking it in your hand and pressing it, it would scarcely hold together. By use of compressed air, we operated an air drill or a tamper and so consolidated the concrete that the water would flush to the surface, showing that the material was thoroughly consolidated. It was some months before it was actually put in service, but never a drop came through the bulkhead. Now it would have been impossible in that case to have used brick and secured with the men we had, a character of work that would stand that particular service.

In some cases, where forms are very extensive and where you can secure good and experienced bricklayers, brick yields itself very readily to our purpose. In sewer work I have paid men, who knew how to lay sewer brick, \$9 and \$10 a day for eight hours of service, and they were men who were more economical and better than the ordinary brickmasons who were laying brick at \$2.50 per day. The brick were well and rapidly laid and the joints were well filled and these men would lay six or seven thousand brick in a day. They went in, not in a very picturesque form, but were put in for strength and accomplished the results desired.

Now, of course, as a matter of fact, we have the same difficulties with labor when using concrete, but we are able to overcome them very largely. If you have to mix concrete by hand, you may depend on it, the men will slight their work. It is a back-breaking job at the best, and the men will do as little as they possibly can, but with a machine mixer, where the concrete is turned over and over again until it becomes homogeneous, the difficulty of securing the correct mixing is obviated. Of course, we can transport the material to the mixed by hand labor. Again, there is trouble when it comes to the tamper. There is no more unsatisfactory work than tamping concrete. It is both monotonous and fatiguing, and a man will neglect it where he possibly can, but we can now use a pneumatic tamper and by simply pressing a trigger, the hammer strikes the concrete a rapid blow. It ceases to be a laborious affair; the man is operating a machine and he takes a certain pride in it, and the results are very much better.

By this means, we are able to obviate very many of the difficulties of labor, which have previously been vital questions in securing good concrete work. It is my belief, these questions of labor are seriously affecting the character of the materials which are being used in construction.

However, there is another point to be considered in regard to the use of brick. As a general proposition, where the market is



Albert Potts, Indianapolis, Ind.

brick, the supply of brick is somewhat limited and the consequence is there is more or less difficulty in getting brick. This is especially true in new localities, or where an unusual demand for brick takes place; for instance, in the early days in the season of brick pavements, where we used three million brick in a single job. At such times it is impossible to have them turned out as rapidly as needed, while concrete could be readily obtained.

Another difficulty, is that with the labor in the brick yard itself. In the larger cities especially, this is a very vital question and very often we are held back because we cannot secure brick on account of labor difficulties in the yard. We are able to avoid these difficulties in the yard with the concrete. I prefer to employ an inexperienced hand with the concrete, for a skilled laborer may have had experience that is bad, at least, from my point of view.

In certain classes of work, brick can never be replaced. It has its marked advantages, and even in the face of the great labor problems, which we meet in its application, it presents advantages which will make it of value and use in engineering construction always. Most of the concrete buildings that have been erected are unsightly and never will, in my judgment, replace brick.

As long as the present labor difficulties obtain, as long as men simply labor in their particular trade, not because they would rather do that than anything else, but simply to get a livelihood, so long concrete is bound to replace brick in the class of engineering construction to which I refer.

I will occupy no more of your time this morning, and thank you for your attention. (Applause.)

Discussion.

President Wilson: I feel that the gentlemen of the convention will heartily agree with me in saying that Prof.

Mead's remarks have been of great value and interest to us. Has any member of the convention any questions to ask Prof. Mead?

Mr. Crabtree: We are to judge from your experience that the principal reason why cement work and concrete work are taking the place of brick construction is the trouble with labor, and if men would do what they are paid to do, especially in skilled labor, the amount of cement used would be much less than it is now.

Prof. Mead: That, I believe, is very largely true. Of course, I may have emphasized this matter unduly, but I believe that the matter of labor which I have mentioned is one of the very important ones and has very largely influenced the selection of concrete. I know that it has in my own experience. Of course, concrete yields to certain forms and permits of certain economies that have a marked influence. I do not believe that if we could instantly eradicate this question of labor, we would do away entirely with the use of concrete, but I think it would make a decided difference, and I know that I would use in my personal practice brick in a great many places where I find it impossible to use it now because of the difficulty in securing satisfactory labor.

Mr. H. de Joannis: I would like to ask Prof. Mead if he does not consider that the superiority of concrete to brick for certain constructional work is to be found where the matrix of the earth surrounds the body of the work, assuring its stability and protection from weather ravages? In superstructural work, is it not true that in the absence of such support and protection, there is greater liability of collapse or depreciation on the part of the concrete? Will not brick always have the preference in all external work that extends above the ground level?

Prof. Mead: Well, I think that could be answered in the positive and negative. If the concrete is made as it should be made for exposed positions, I think, as far as strength is concerned, it has all the necessary elements. As far as beauty is concerned, brick is much to be preferred. In a great many cases where the work is let by contract where the consistency of the concrete has to be carefully attended to, perhaps the proper consistency can not be obtained without difficulty. Then, I think we can depend further upon the results of brick than upon concrete.

There are a great many honest contractors in this world, I am thankful to say, but there are also men who do not take the interest in their work beyond securing the largest number of dollars. I think there is perhaps no particular difference in honest work, but if there is dishonest work done, you could perhaps secure better work with brick, not considering the cost. Supervision is necessary to prevent dishonesty in the laborer himself. I did contract work for a good many years, and one of the greatest difficulties I had was that many times the laborer would try to do something smart—to do the work a little quicker and a little cheaper than it should be done. In one case where I had a number of new men on the work, some of the men inquired about the work and wanted to know if Mr. Mead wanted that work done as he had said, or as cheaply as they (the masons) knew how. He was advised by the timekeeper that if he expected to hold his job he had better carry out my instructions. This is another element that the contractor has to fight against, and there is many a job that has failed, not because the contractor desired to do poor work, but because his men slighted the work when he knew nothing about it, and all those elements enter into the question of design and the question of construction.

Mr. Joannis: What I wanted to get at was this: In both materials the crushing strength is so great that we can eliminate that altogether from the discussion. Where we have two building materials, brick and concrete of any particular construction that you like to mention, I want to know if it is a fact that there is any difficulty in obtaining in the course of construction a continuous bond in the walls of that building as the work proceeds. I mean to say, today they raise one story, tomorrow they proceed with the next. Is it possible to effect a bond which, under continuous action of 7, 8, 9 or 10 years, will not yield to disintegration? We all know that brick is a unit of such a character that the bond between the work done today and the next bond is a bond by itself,

whereas, in the concrete wall you have a large mass of concrete, and the next day you start another bond. Like in asphalt pavements, where one can frequently see where the day's labor ends. I would like to ask whether there is any likelihood of failure of concrete construction in that regard?

Prof. Mead: That is a very serious factor. As a general rule, the point at which the day's work ends should be determined, and there a great deal of care should be exercised. I built some years ago a dam something over 13 feet in height—built of concrete. I designed and supervised in a general way the construction of the plant. The superintendent interested in the property was on the work. We were doing the work by the day, and I had a man in charge who was supervising the work who was a good man, but he had little peculiarities of his own which finally cropped out and lost him his job. Now, the lower portion of the dam was put in clear across the river, and when it came to adding the dam above, I had the work that was done very carefully cleaned off, and every care was taken to remove the dirt and get the surface in such a condition that it would admit of a satisfactory bond. Well, we laid the lower dam clear across the river and about 25 per cent. of the upper dam, and then the superintendent of the property went ahead with the work. He felt that money was being used and that we were doing things not necessary—that this careful cleaning of the concrete and the care taken in making the joints was unnecessary, and was a theoretic consideration, not necessary to be carried out—and the balance of the dam, I afterwards learned, was built without those precautions being taken. Now, the result has been that up to the point where the original foreman was discharged, the dam has always been tight, and the balance of the dam leaks, and it means expensive repairs to put it in proper shape.

It is true that these difficulties arise—difficulties in bonding—and the results are not wholly satisfactory, but if properly attended to they can be obviated. It means intelligent design, intelligent supervision, and intelligent construction. It is impossible in a general way to say that one material is superior to another, because it depends entirely upon the particular conditions, and it is not only a question of the class of material, but it is a question of the particular location, a question of labor, a question of the contractor and a question of the supervisor; and all these must be taken into consideration.

President Wilson: I may say, in regard to the next number on our program, that the committee was assured of a paper by Prof. Buckley and we expected to have him here to deliver it and to lead in its discussion. Not having the title of his paper, we christened it "Brickettes." The Secretary has the paper and, of course, you gentlemen can tell whether the paper follows the subject.

The Secretary here read the following letter from Prof. E. R. Buckley, State Geologist, Rollo, Mo.:

ROLLO, Mo., February, 1907.

Members of the Wisconsin Clayworkers' Association, Madison, Wis.:

Dear friends: The accompanying paper is an abstract from a report which I have in preparation on the "General Geology of Missouri." It contains nothing new, being simply a compilation of expert opinions on the kinds of clays suitable for the manufacture of the various clay wares.

During the last four years I have made no investigations of clays or of processes of manufacturing clay wares, for which reason I can not contribute anything from my own experience. I regret this fact exceedingly, but must abide by conditions as they are.

This is the seventh annual convention of the Wisconsin clayworkers, and I rejoice with you in a knowledge of the fact that each year brings new strength to one of the most important American industries. Every brick that you manufacture helps to raise our civilization up to a higher plain and serves to perpetuate it beyond the life of our own generation.

Legislative and other matters have, at the last moment, compelled me to be absent from your convention, much to my disappointment. May you have a most profitable and enjoyable session—one that you will long remember.

Very respectfully yours,

(Signed)

E. R. BUCKLEY.

Prof. Buckley's paper was a valuable contribution and will be published in full subsequently in the proceedings of the Association.

President Wilson: The Secretary has a paper by Mr. George J. Schwarz, of Milwaukee, and while we are waiting for the committees to report, the Secretary will read it.

SELLING BRICK.

BY GEORGE J. SCHWARZ, MILWAUKEE, WIS.

Selling brick I have always considered a hard job, but writing a paper on the sale of brick is really the toughest customer I ever struck.

All of you being brick manufacturers and also salesmen, makes it just so much harder, inasmuch as you are fully aware as to the methods employed, and on this score I can not enlighten you. I feel so much that this is true, I can imagine some of you smiling inwardly, saying to yourselves, "He is no salesman." However, there always must be someone to do things, so I'll be the goat.

It is upon the change of time that I would like to talk more than about the sale of brick. Up to the year 1880, the face brick business and the selling thereof was practically easy, inasmuch as up to that time there were only two shades of brick, viz., red and buff. I am talking now of the middle west. Most all of the finer grades of the red pressed brick were gotten either from Trenton, New Jersey, Baltimore or Philadelphia, and the price paid for same in this territory was from \$45 to \$60 per thousand. To those of you who are manufacturing a red pressed brick, this must seem like a fable, and too good to be true, as the price that prevails on red pressed brick in this territory at this time is less than one-half that which was paid at that time.

At about this period a concern was organized and incorporated for \$500,000 in the city of Chicago, their intention being to import their fire clays and manganese, mixing same with what local clays and brick clays they would need to produce not only red brick, but brick of other colors. The first color they produced that was new, so far as face brick was concerned, was a brown, which they promptly called Obsidian. The name was given this brick, it is more than likely, to make the brick more handsome; any other reason for this name for a brown brick we have never been able to discover. This brown brick produced such a great demand that every western manufacturer, who in the meantime had become aware that he must hump, within a short period of time, made a brown brick, and from that time on fire clays, manganese and mixtures were used, until today we are exhibiting 115 different shades of face brick, all of which have more or less of a call.

The architect will tell you that certain styles of architecture will only permit of certain colors of brick, which is absolutely true, but there being so many different styles of architecture has made it possible for all of the shades to have a call on the market. A further change which I wish to make a point of at this time, is that in the olden days it was essential that all brick be made uniform in color as well as size. It being so particular at that time that all pressed brick were gauged at the building into sometimes as many as five different sizes and were laid up only by mechanics who were brought on from Philadelphia and other places in the east. Every brick in those days would have to be the exact shade of the other. This is changed, inasmuch as today a variation is in demand, and a uniform color in brick, particularly so the "mottled brick," is a thing of the past, all architects demanding a variation in the shades of brick, and indeed, it would be hard at this time to find a town so small that could not boast of mechanics capable of laying up pressed brick work. The variation in shade is so strongly advocated at this time, that a good many architects in using a red brick will specify that no less than three different shades must be used, and promiscuously distributed in the fronts of the building.

The molded brick problem has always been a money loser for the manufacturer, inasmuch as he was required to carry an enormous stock of each and every kind of molded brick that his plant would produce. We have in mind one concern who makes and carries in stock 400 different shapes of molded brick. You can imagine how large a stock they are required to carry when you stop to think that they attempt to carry all of these 400 different shapes in about thirty different colors and shades. We have never yet found a manufacturer who would not have been better off financially if there were no such thing as molded or shaped brick. The competition, however, and possibly the salesmen, being anxious to give the architect and owner what they desire, is possibly the cause for the manufacturer to increase the stock of different shapes from time to time, as wants make their demand.

There has been innumerable times when architects were planning for large buildings and could not find just exactly the shape they wanted, either for a frieze, jamb or belt courses, when the manufacturer would not gladly make any shape of molded brick that this architect desired in order that he might find a market for his plain face brick; and, of course, the manufacturer would figure that it being a new molded brick, he could add same to his catalogue, and there might be sufficient subsequent calls for these brick to warrant him making molds and keep this said additional molded brick in stock. As said before, the entire matter of molded brick is a very handsome thing for the architect and owner, but not so profitable for the maker.

The essential points about a salesman for brick are: Never to sell what he knows the yard has not in stock, nor to promise deliveries at such time when he knows it is impossible for shipments

to be made, or for cars to arrive at their destination, and it is good stock in trade to add this: Advise an architect that certain things can not be done, rather than to sell him or intimate to him that things can be done when he knows it is an impossibility.

It is human nature for every salesman to get as much money for his wares as it is possible for him to get, however, he must be the judge, he being on the ground and knowing how strong his competition is, as to how much it is advisable to cut the price without suffering a loss to himself, or contracting a loss for the maker of the brick. I believe that competition has done wonderful things, but the over anxiety to sell brick has caused a great many hardships, and in some cases ruin. If a salesman would consider that the manufacturer must have a fair margin as well as he, and then make his bid accordingly, even though his competitor take the work at a lower price, he would have the satisfaction of knowing at the end of the year that he did not demoralize prices, and that, so far as he himself is concerned, and the firm he represents, have made a profit, whereas, possibly the competitor who has undersold him has nothing to show on his books for the trouble, anxiety and worry for the year's business.

Paving brick differ from face brick, inasmuch as the face brick and its color is largely a matter of taste, whereas, paving brick is almost exclusively a matter of quality. A paving brick, whether made of fire clay or shale, and where used for municipal purposes, are subjected by the engineer to a certain test, both as to the abrasion and absorption. If the paving brick falls beyond a stipulated test, that particular brick will not be acceptable for the work. I know of no paving brick manufactured in the State of Wisconsin, but would urge all manufacturers at any time that they find shale that can be advantageously handled to immediately embark in the paving brick business, as every year the demand grows larger, and it is only a question of a very short time when the demand will exceed the output three to one. In the past year there have been five new plants started in the middle west, and we



S. Weidman, Madison, Wis.

believe that before the middle of the summer all of these plants will have sold out their product for the entire season.

For the information of those present, I would say that the paving brick, block size, meaning the size $2\frac{1}{2} \times 8\frac{1}{2} \times 3 \times 9$, sell for \$13.00 to \$15.00 per thousand, f. o. b. plant, at this time. When one considers that it is only a rough material, and that the rejections are only such that would be caused by a poor or soft brick, the paving brick proposition is far better financially than the face brick proposition.

Owing to the fact that I have been absent from the city most of the time for the past two weeks, and my time has been taken up by my own business, I regret that I could not have given this paper more thought and study, and would ask and beg of you to accept my little offering, such as it is. (Applause.)

President Wilson: We will now listen to the report of the Railroad Rate Committee.

Report of Committee on Railroad Rates.

Mr. Kennedy: I have received no word from the railroad officials and sincerely regret that I must make this announcement. I felt confident all along that I should have some definite information before our convention would be called, and I had every assurance that it would be taken care of in some way.

Mr. Whittet: I regret I have not been in as close touch with this matter as I would like to be. I would like to ask how far the matter was carried with the Railroad Rate Commission?

Mr. Kennedy: At the last convention at Menomonie, there was a committee appointed to consist of Mr. Hamilton, Mr. Burnham and myself, and we employed Mr. Burnham's son, a young attorney of Milwaukee, to look into the situation and see what could be done. After looking up what we wanted, we called for a hearing before the Railroad Rate Commission and it was set for January 10th. We appeared here and, instead of having the hearing, the representatives of the railroad asked that they be given ten days, admitting that they were discriminating against Wisconsin in favor of Chicago, and said at that time they would submit a new schedule of rates to us and if it was not satisfactory, we were to have a meeting with them in Milwaukee and talk it over and then we could continue our hearing before the Railroad Rate Commission. We had a meeting in Milwaukee, and at that meeting this proposition was submitted: To raise Chicago and points taking Chicago rates 40 cents per thousand, or 1 cent per cwt. They made a new scale of rates for Wisconsin, but did not lower Wisconsin rates, and in some instances they were raised, and to this we would not submit. We insisted that they put those points north of Chicago, Glenview, Mayfair, Webster, etc., on the Chicago rate and raise that to 4 cents. That would raise their brick rate 60 cents per thousand and from all points in Wisconsin.

Mr. Whittet: Then the matter never really has come before the Railroad Rate Commission of this State?

Mr. Kennedy: Yes, they were notified that we would try to settle it without having it tried before them. We thought it prudent to try to adjust this matter if possible without the assistance of the Railroad Rate Commission. For one reason, it would be a long, expensive fight. The railroad companies would show that they were entitled to better rates on account of empty cars going north and west and claim they could afford to haul them for less money and that there were so few brick shipped in Wisconsin, they were not entitled to the same rate on account of the small per cent. of business. For another reason, we would not expect to get a decision inside of six months and the railroad companies would be given at least four or six months before our new rate would go into effect, and that would mean the loss of this year's business.

President Wilson: Gentlemen: What will we do with the report of the committee?

Mr. Frazier: I move that the report of this committee be accepted and placed on file.

Mr. Sanborn: I second that and would have the committee continued and patted on the back.

Mr. Vogt: Has the committee received any further power?

President Wilson: Not yet, but there is a motion before the house to be disposed of which, I think, will give them all the power they want. Any further remarks? If not, all those in favor of the motion will signify it by saying aye. The ayes have it.

Mr. Hinkley's motion of yesterday was that the committee be continued for another year and given power to act and accept a proposition from the railroad companies if, in their opinion, it was to the advantage of the brickmakers of Wisconsin, and not to accept any proposition from the railroad companies that would be detrimental to any brick manufacturer in Wisconsin.

Mr. Vogt: Mr. President, as I said yesterday, that power of attorney, or authority to act, would amount to nothing because no committee could possibly know whether or not any member of this Association would be affected in a manner detrimental to him. It is an impossibility for any committee to decide for them and they must be given absolute power or they will have no power.

A Member: If I understand it rightly, Mr. Hinkley's intention was that the committee be given power to act and be instructed not to accept anything that would not be an advantage to the brickmakers of Wisconsin.

Mr. Kennedy: If we could get the rates raised from Chicago into Wisconsin, it certainly would be of benefit to the brick men of Wisconsin. I talked with Mr. Hinkley about this and he said he put that clause in to relieve us from bearing the burden of the whole trouble before the railroad people,

that it gave us a loophole to get out of. If we were not satisfied, we could say that our instructions from the Association were not to accept any arrangement by which any brickmaker would suffer.

Mr. Vogt: I think that in the wording of Mr. Hinkley's motion he did not say they were not to accept anything that was not a benefit to every brickmaker in Wisconsin. I think he said that they were not to accept anything that would be detrimental to any brickmaker in Wisconsin.

Mr. Joannis: I contend that both the spirit and the wording of Mr. Hinkley's motion is good because any movement that secured a raising of the rates to points in Wisconsin would certainly be a benefit to every brickmaker in Wisconsin even though he suffered a loss of a few dollars and cents at the time, and the roads would know we were on earth.

Mr. Sanborn: I don't see why this can not be left to the committee. Why not leave it in their hands and go ahead?

Mr. Kennedy: Mr. Joannis has raised a point that I think is worth considering. We must get a standing and be recognized by the railroad companies as an Association and they must listen to our little story. In 1887 and 1888, up in Hurley and Ironwood, just as soon as you struck town you had to get your standing. If you could put up a pretty good fight, you were considered a good fellow. If you would take anything sooner than scrap, you would probably get a good deal to take. We may not be as big as the lumbermen, but we must get our standing. You have put on this committee a man who will fight (that's me), a good solid business man (that's Burnham), and Mr. Hamilton, who knows a good show when he sees it.

Mr. Whittet: I believe that you are on the right track. I found that there are wheels within wheels, and if you want quick action, it is hard to get. The railroad companies are afraid of legislation and I found in my own little matter—I bought a quantity of lumber and I wanted a joint rate between the Northern and St. Paul companies. I at first gave the two roads the opportunity to make this rate and they refused. I then went to Senator Whitehead, who was instrumental in the formation of the railway rate commission, and when they found he was interested, and a man who might somehow affect rate legislation, I very soon got the rate I wanted, and I would suggest that if the railway committee could get hold of some such man as Senator Whitehead, who, by the way, is a lawyer, things would go more quickly with them.

Mr. Crabtree: I think that any of us who have had anything to do with the railroads know that the men employed by them don't hold their jobs on account of their good looks; they are certainly as sharp as they make them. In order to negotiate with them, we must send a committee, not only who are competent, but who have full power to meet them on every tack—and they will make every tack they can—and we should have a resolution authorizing this committee to conclude any arrangement they possibly can, without having any string tied to them.

Mr. Kennedy: Yes, and the railroad companies will know just what you have done here today and I think that resolution should be simplified as much as possible, and the committee given authority to close a deal for the best interests of the clayworkers according to their views.

Mr. H. de Joannis: I move the adoption of the resolution.

Mr. Frazier: I second that motion.

President Wilson: The committee then is to proceed with power to act.

Mr. Craney: Would it not be well to eliminate that string to that resolution before we adopt it? I don't think it is advisable to have any string on this committee. I think that we have confidence enough in the judgment of the committee that they will use their best efforts to further the interests of the brickmakers of Wisconsin, and I think it will be advisable to eliminate every string.

Mr. Vogt: We either have to vote the resolution as it stands or vote it down and then introduce another one.

Mr. Joannis: Let us vote it down, then, and give our committee full power to act as it pleases in our behalf.

President Wilson: If there is nothing further to be said upon this subject we will take a vote. The motion before the

house is Mr. Hinkley's motion of yesterday. All those in favor of the motion say aye. Motion is lost.

Mr. Craney: I move that this committee be given power to act as seems in their best judgment for the benefit of the brickmakers of Wisconsin.

Mr. H. de Joannis: I second the motion.

President Wilson: Are there any remarks? If not, all those in favor of the motion say aye. The ayes have it.

Mr. Kennedy: Has the Association authorized the payment of the expense accounts?

Mr. Joannis: Mr. President, this is covered by a resolution to that effect.

President Wilson: We had on the program "Questions for General Discussions," but it seems to me that we have had our program pretty well filled with general discussions and I don't know of anything we have not touched upon, and I think the report of the Committee on Resolutions will be in order at this time.

Report of Committee on Resolutions.

WHEREAS, The seventh annual meeting of the Wisconsin Clayworkers' Association has proved to be a most enjoyable and profitable one,

WHEREAS, Its success was greatly assisted by the support of the University faculty,

WHEREAS, The present injustice of railroad rate distribution and discrimination still exists and the work of the committee on railway rates has been actively carried on, but is not yet terminated, therefore, be it

Resolved, That the Association express its sincere approving recognition of the faithful and whole-hearted work of its officers during the past year, President Wilson, Vice-President Guenther, Secretary Hamilton and Treasurer Zimbal.

Resolved, That this Association convey to the University of Wisconsin its thanks for the support received since the Association's birth, and especially recognizes the value of the labors of S. Weidman and Dean Birge, E. R. Maurer, D. W. Mead and A. Peabody.

Resolved, That this Association expresses its appreciation of the courtesies and comforts extended to it by the local business and municipal citizens of Madison, mentioning especially in this connection Hon. J. C. Schubert, Mayor of Madison, Messrs. Smythe, of the Wisconsin Brick Company, Lieutenant Governor Connor, Rev. Gilmore, Froelich and his violinist friend, and the personnel of the Capital House.

Resolved, That this Association declares its absolute satisfaction with the splendid and untiring work of its committee on railway rates, G. W. Kennedy, J. G. Hamilton and Chas. Burnham, and, furthermore, that this Association will bear its committees' expenses on its behalf and will sustain by its moral, collective and financial support the work of this committee until a satisfactory adjustment of rates has been secured.

Resolved, That in the future the program and announcement of conventions shall be issued to the clayworkers of the State at least two months before the date assigned for the meeting.

(Signed.)

HARRY DE JOANNIS, *Chairman*,
A. W. HILKER,
J. B. THERIAULT.

Motion being made by Mr. Craney that the report of this committee be adopted, and such motion having been seconded by a member, it was put to vote by the chair and carried.

Report of the Secretary.

Gentlemen: Inasmuch as the Treasurer's report includes a great deal of my own, there is very little I have to say in the way of a report. It might interest you, however, to know that we took in seventeen new members at Menomonie last year, and that we now have a total of seventy-two members in good standing in the Association. It is to be expected that a few will drop out each year, of course, but the largest part of the present membership have belonged to and worked with the Association from the start, and they will doubtless continue to do so. I think that we can safely figure on enough new members coming in each year to take the place of any that may drop out and with an average membership of seventy or seventy-five, we ought, I think, to have no fear for the future of the Association.

The revenue secured from the convention report considerably more than pays for its printing and distribution. Last year we received from the advertising space \$85, and from the clayworking magazines for a copy of the proceedings \$30, making a total of \$115. The printing and distributing cost about \$65, which left a net profit of \$50, so it would seem that it would be advisable to continue to get out a printed report the same as we have been doing.

I wish to thank the members of the Association for the very courteous manner in which they have come to my assistance when called upon for any information or advice, and especially do I wish to thank our Honorable President and also Brother Weidman for their splendid work in securing several of the strong numbers on the program, for it is due to their efforts particularly that this meeting has been such a grand success.

Mr. Kennedy: I move that the report of the Secretary be adopted. This motion was seconded by Mr. Frazier and carried.

Mr. Sanborn: I would move that when our proceedings are published, a copy of them be sent to all the brick men of the State who contribute to the expense of this appeal against the railroads.

President Wilson: Will you just withdraw that for the time being?

Mr. Sanborn: I will do so.

President Wilson: We will next have the report of the Treasurer.

Treasurer's Report.

Balance in treasury last year.....	\$163.04
Received from dues.....	8.00
Received Kenfield Publishing Co.....	18.00
Received CLAY-WORKER	18.00
Received Clay Record.....	10.00
Received advertising space.....	85.00
Received interest fees and dues at Madison...	44.00
	\$346.04

Disbursements.

Paid Mr. Buri, stenographer.....	\$ 25.00
Paid Flint & Morgan, printing.....	2.45
Paid C. L. Burnham, attorney.....	85.71
Paid T. A. Randall & Co., reports.....	60.00
Stamps and envelopes	18.01
Circular letters	5.75
Letterheads	3.00
Express	.95
Balance	\$145.17

Respectfully submitted,

OSCAR ZIMBAL, Treasurer.

President Wilson: What will you do with this report?

Mr. Frazier: I move its adoption.

Mr. Joannis: Second the motion.

President Wilson: Are there any remarks?

Mr. Craney: I don't whether it is necessary or not, but it is customary in almost all Associations to appoint a committee to audit the accounts of the treasurer. Now, I am not expressing the least particle of lack of confidence in the Treasurer, but as a matter of fact it is a business proposition, and I think if it has not been done previously, there should be an auditing committee appointed, if not at this, at the next regular meeting to check the bills and receipts of the Treasurer.

President Wilson: If there is nothing further to be said, all those in favor of adopting the report of the Treasurer will signify it by saying aye. Carried.

President Wilson: I wish to say in explanation, Mr. Craney, that I think it will be well enough for the Secretary in the future to turn any bills over to the Treasurer to pay them, and in that way it will keep the accounts of the Association in a little better businesslike way. It is merely a suggestion. I don't think it needs any motion to cover, but in the matter of auditing the Treasurer's accounts, if it is so desired, a motion will be entertained now.

Mr. H. de Joannis: Many associations nowadays appoint at the meeting three scrutineers, who put their O. K. on the accounts of the Treasurer and he knows that he is absolutely clear. That is done regularly at the American Ceramic Society.

President Wilson: The matter of unfinished business comes up at this time, but before taking up any unfinished business, I think the Committee on Ways and Means for Providing Funds for the Railroad Committee might report here.

Report of the Ways and Means Committee.

WHEREAS, This committee finds that a satisfactory solution of the railroad rate difficulties will not be reached unless a more aggressive attitude is taken by the clayworkers of this Association and the State, and,

WHEREAS, The railroads have demonstrated to our satisfaction that they have no intention of taking action in the matter and are perfectly willing to leave present conditions alone, therefore, be it

Resolved, That this committee be empowered to act in cooperation with the Secretary of this Association, and draw up and send out a special letter of appeal to every clayworker in the State, in the name of this Association, for the purpose of securing moral and financial backing of sufficient strength to attain the end in view, and, furthermore, to take such other steps for the giving of fullest publicity to these matters as may be found desirable.

(Signed.)

HARRY DE JOANNIS,
W. J. CRANEY,
F. L. SANBORN.

President Wilson: Gentlemen what will be done with the report of the committee?

Mr. Crabtree: I move that it be adopted.

Mr. Hooker: I second the motion.

President Wilson: Are there any remarks? If not, all those in favor of the motion say aye. The motion is carried.

President Wilson: I think it would be in order here to authorize the payment of the bills of the railroad committee.

Mr. Joannis: I move that we pay all the bills that are owing up to our limit.

Mr. Sanborn: I second the motion.

President Wilson: It is moved that the necessary traveling expenses of the committee on this railroad rate matter be paid by the Association. Are there any remarks? I may say for the benefit of the gentlemen that it is presumed that the amount of these bills will be chargeable to the appropriation as suggested by the committee. We want to keep this item of expense entirely separate from the ordinary expenses of the session, and there will be money enough to pay all these bills now which can be replaced when we have more in.

All those in favor of the motion as put, please say aye. The motion is carried.

President Wilson: In this connection and under the item of bills, I wish to present a little item of some small bills that the Executive Committee has contracted for on account of the present session, which amount to \$10. I think it well enough to present these items to the convention instead of paying them in the usual course.

Mr. Kennedy: I move that an order be drawn on the Treasurer for the amount.

Mr. Joannis: Second the motion.

The motion was put by the President and carried.

President Wilson: I believe the committees have all reported with the exception of the Committee on Nominations and Place for the next Meeting. I want to ask if there are any other committees to report before we take up this matter? If there is no objection, the committee on Nominations of Officers and Place of Meeting will now be given attention.

Mr. S. Weidman: The committee has deliberated a long time and we have a brief report to submit:

OFFICERS ELECTED.

For President, A. W. Hilker, Racine.

Vice-President, F. Vogt, Milwaukee.

Secretary, Oscar Wilson, Menomonie.

Treasurer, Oscar Zimbal, Sheboygan.

For the next place of meeting, Milwaukee.

Date of meeting is to be decided later by the Executive Committee.

(Signed)

S. WEIDMAN,
L. T. CRABTREE,
F. VOGT.

Secretary Hamilton: I move the report of the committee be adopted.

Motion was seconded by a member.

President Wilson: Before adopting the report of the committee, I feel that a little statement on my part would be in order, and I want to say that when the committee asked my permission to put my name on their program for Secretary, I didn't really feel that I ought to be asked to serve as

Secretary, especially for the ensuing year, inasmuch as we have had a very efficient Secretary, and I don't like to refuse to do anything that the convention might ask of me. I feel that I have put in considerable work for the benefit of the Association, and I appreciate highly the honor and confidence that has been extended to me, but I would much prefer to have our present Secretary retained, or in fact, anyone else than to take it myself, and it will require more or less of a sacrifice on my part to even attempt it, and I want you to take this into consideration in adopting this report.

Secretary Hamilton: The present Secretary is not in line for re-election.

Mr. Kennedy: I don't believe in riding a free horse to death. Mr. Wilson almost insisted that some one else be elected President, and now you ask him to serve as Secretary for the third time. It don't look hardly right and fair, and I think as long as Mr. Wilson feels that way, his feelings ought to be considered. Because he has done his work well is no sign we should insist on his doing all the work. My father used to say he had the best matched team in the world; one horse was willing to do all the work, and the other was willing that he should. I am not so much of a judge of the looks of men as I am of horses, but I would pick Mr. Whittet out as a good man for Secretary.

Mr. Whittet: Mr. President, I beg to thank the gentleman, but under no circumstances could I accept the position.

Mr. Vogt: The Committee on Nominations is very well aware that the office of Secretary is a very important one. In fact, the Secretary has to do all the work, and on him depends a good deal the number present, and he probably can induce a larger number of members to be present at our next meeting from up in his part of the State and the people in the southeastern part of the State will attend the Milwaukee convention because it is near by. Mr. Wilson has such a large acquaintance and has been able to get up such a good program that I think we should make him accept the nomination.

Mr. Crabtree: It seems to me, too, that I have a little explanation to make. It seems that the Secretary has to do practically all the work in connection with the getting together of the Association and his work continues all through the year and he gets no pay for it, and he is out more or less of necessity for the work he does, and it looks to me and others as though we could not ask our present Secretary to carry the burden, doing all the work indefinitely.

Mr. Covey: I move you that the report of this committee, including all of its provisions, which includes the nomination of these gentlemen as officers and the next place of meeting as Milwaukee, be accepted and adopted.

Mr. Kennedy: I second the motion.

President Wilson: It is moved and seconded that the report of this committee be adopted. All those in favor will say aye. Those opposed, no. (One vote, that of the President, in the negative.)

At the suggestion of Mr. Kennedy, a rising vote of thanks was tendered to the officers.

President Wilson: As the retiring President, I want to thank you for your attention. We now have our new slate made up. They are simply placed in nomination.

Mr. Kennedy: I move that the Secretary cast the ballot of this association for each of these gentlemen named.

Mr. Joannis: I second it.

President Wilson: It is moved that a ballot be cast making the gentlemen named in the report of the Committee, the officers for the ensuing year. Are there any remarks? If not, all those in favor of this motion please say aye. The motion is carried.

President Wilson: Before retiring, I want to say that there was some suggestion made at the hotel about having a committee appointed to assist the Secretary on the program. Now, in view of what has happened, I don't know but that it appeals to me more than it ever did before. Mr. Crabtree has a resolution which he wishes to present.

Mr. Crabtree: I move the adoption of the following resolution:

WHEREAS, Most of the middle West and Northwestern States in Wisconsin's class have attached to their State university, a school of ceramics or departments devoted to the clayworking industry, and in our State, where the brickmaking and clayworking industry is very large, nothing at all is done in this line in our university, and citizens of the State of Wisconsin who have clay that they want tested in order to ascertain its adaptability for use in making brick or other clay wares, are obliged to go out of the State to have the tests made, now, therefore, be it

Resolved, By the Wisconsin Clayworkers' Association, in convention assembled, that the Legislature be petitioned to add to the State University appropriation the sum of fifteen thousand dollars (\$15,000), said sum to be expended in making a start in establishing a clay-testing station or laboratory in the State University; this said sum of \$15,000 to be devoted to buying the necessary outfit in the way of clay-reducing machinery, such as dry or wet pans, or crushers, as may be desired, pug mills and brick machines, soft mud, stiff mud and dry press, and also to build a test kiln of sufficient size to test clay as to its adaptability for the different clay wares; also to employ a competent clay manufacturer and kiln burner for the work.

President Wilson: You have heard the resolution. What is your pleasure?

Mr. Sanborn: I move the adoption of the resolution.

A Member: I second the motion.

President Wilson: All those in favor, say aye. The motion is carried.

Mr. Sanborn: I move that the Secretary be instructed to send copies of the proceeding, when issued, to all brickmakers throughout the State who have subscribed toward the fund to fight the railroads, so they may understand what we have done here.

President Wilson: You have here a motion. Is there a second?

Mr. Kennedy: I second the motion.

President Wilson: All those in favor, say aye. The motion is carried.

Before adjourning, I wish to call to the chair, the President for the ensuing year, Mr. Hilker. (Applause.)

Mr. Hilker: Gentlemen of the Convention: You certainly have taken me by surprise and I think that you have made a great mistake in selecting me as your presiding officer, but I am always willing to help the clayworkers' association along. I feel it is a great responsibility, especially at this time, when we have grave questions to handle in regard to the railroad matter. Now, gentlemen, I think when I say that this session of the clayworkers of the State of Wisconsin has been of great benefit to us, I think I express the sense of the whole association. Now I hope that every one who has attended this meeting will feel that he is appointed as a committee of one to see that we get out every clayworker of the State of Wisconsin at our next meeting, which is to be held at Milwaukee. Gentlemen, I thank you very much for this great honor you have placed upon me.

Mr. Kennedy: I would move that the convention adjourn.

A Member: I second the motion.

President Hilker: All those in favor of that motion, will signify the same by saying aye. The convention is adjourned.

The Register of the Seventh Annual Convention.

G. W. Kennedy, Manitowoc, Wis.
J. W. Hinkley, Green Bay, Wis.
E. R. Frazier, Chicago, Ill.
Oscar Wilson, Menomonie, Wis.
S. Weldman, Madison, Wis.
Julius Froelich, Sheboygan, Wis.
A. O. Wachter, Sheboygan Falls, Wis.
G. C. Stoll, Wheaton, Ill.
Harry de Joannis, Chicago, Ill.
F. Vogt, Milwaukee, Wis.
Ed. Frickle, Manitowoc, Wis.
H. J. Votaw, Plymouth, Ill.
J. B. Theriault, Chippewa Falls, Wis.
W. D. Drowly, Menomonie, Wis.
Chas. H. Burridge, Tecumseh, Mich.
A. W. Hilker, Racine, Wis.
G. V. LaDow, Fredonia, Kansas.
H. M. Farnham, Minneapolis, Minn.
L. F. Crabtree, Crandon, Wis.
W. J. Craney, Kenosha, Wis.
Oscar Zimbal, Sheboygan, Wis.
E. H. Korrer, Fon du Lac, Wis.
F. L. Sanborn, Portage, Wis.
R. B. Watrous, Milwaukee, Wis.
J. E. Randall, Indianapolis, Ind.
Albert Potts, Indianapolis, Ind.

The Social Side at Madison.

Wednesday evening there was quite a large crowd who took in the vaudeville performance at a theatre in Madison, while others contented themselves with playing whist or with button-hole talks at the hotel.

Early Thursday morning, twenty odd clayworkers boarded a car near the hotel, which took them within a half mile of the Wisconsin Brick Company's plant. After a most refreshing walk, the jolly crowd reached the sand-lime brick plant and spent most of the morning there. The entire plant was turned over to the clayworkers for inspection, and two most delightful hours were enjoyed there by the delegates. The equipment and management of this plant was described in Manager E. W. Smythe's paper, read at the Wednesday afternoon session.

From the sand-lime plant, the crowd slowly wended its way in a drizzling rain, along the railroad track, to the agricultural building at the Wisconsin University. Here they were warmly welcomed and piloted through the many different departments, including the stock shed, stables, etc. The cattle, sheep and hogs were the finest the delegates had ever seen and the manner in which they were taken care of caused many exclamations of appreciation by the interested visitors.

From here they went to the dairy department, where they were treated with a dainty dairy lunch. Mr. Kennedy's comical expressions and Irish humor kept the crowd in good spirits until they reached this department, after which the delegates "wore the smile what wont come off" without any outside influences. The trips through the engineering buildings were also much enjoyed.

At 11:30 the delegates were pleasantly entertained in the assembly hall of the Engineering building, with a stereopticon lecture given by Mr. A. Peabody, Architect and Superintendent, University of Wisconsin, on the subject, "Brick and Brick Work in Architecture." This lecture will appear in our April issue.

Immediately after this lecture the delegates were escorted to the testing laboratory, where large machines were being operated in making crushing and breaking tests on different kinds of brick.

A very interesting trip through the State Historical Library, which has one of the finest art exhibits and collections of antique relics of any University in the West, ended the morning's pleasures and all returned to the hotel to satisfy the inner man, preparatory to resuming deliberations.

The Annual Banquet.

Thursday evening, the Wisconsin Clayworkers' Association was treated with an elaborate banquet at Keeley's "Palace of Sweets." Close to fifty men gathered there at 6:30 sharp, and were seated at a table beautifully decorated with ferns and carnations, with numerous red candles. The menu cards were neat and attractive and the service excellent.

THE MENU.

Celery	Grape Fruit	Wafers
	Cream Chicken Soup	
	Imperial Sticks	
Olives		Salted Almonds
Roast Fillet of Beef, Brown Gravy		Green Peas
Mashed Potatoes		
	Roman Punch	
	Combination Salad	St. Estephe
	Cheese Wafers	
	Fresh Strawberry Ice Cream	
	Assorted Cakes	
New York Cheese		Water Crackers
Coffee		Cigars

President Oscar Wilson aptly filled the position of Toastmaster.

The following toasts were made:

Toasts.

Toastmaster, Oscar Wilson, President of the Association
Relation of Clay Products to Other Resources....Prof. E. A. Birge
The Ancient Clayworkers.....Rev. F. A. Gilmore
The Modern Clayworkers.....J. E. Randall
Solo.....Harry de Joannis
Workers In and Out of Clays..Lieutenant Governor W. D. Connor
The Clayworkers' Association.....Major J. W. Hinkley

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



THE EXTRAORDINARY building situation that was predicted for this spring is rapidly developing, although the winter rains have been unusually heavy and prolonged. There has been astonishing progress in building the city during the past two months. The building permits, which fell off a little in December as compared with November, have gradually increased this year, and unless March proves to be a very wet month the quantity of construction work undertaken will be tremendous.

An advance estimate of \$100,000,000 worth of buildings erected in 1907 has been ventured by a collector of statistics, but it is difficult to predict with accuracy in such a matter. If there is no serious and prolonged shortage in building materials and serious labor difficulties in the building trades are avoided, there is no reason why the above figure may not be exceeded even. Practically all of the \$50,000,000 worth of building construction that has been undertaken since the fire of last April is being done with local capital. Now Eastern capital is being attracted by the opportunities for profitable investments in buildings to be erected on advantageous sites that can be purchased or leased at reasonable terms. As a consequence a number of plans are now being ordered for buildings in which outside capitalists are intending to take an interest. A large percentage of the nearly \$200,000,000 of insurance money paid to local business men is gradually going into new buildings.

In view of all this demand it would seem that the brick manufacturers would all be on velvet, but such is not the case. Most of the pressed brick plants that are equipped with dryers have been running as well as shortages of fuel oil, coal and wood have permitted this year, but they are behind with their orders. Prices have advanced but expenses of every kind, including labor, fuel, freight on brick and cartage in the city have increased considerably.

The soft mud brick plants in the Standard Brick Association have been closed down since November, as usual, and the extremely rainy season has detained all of them from making an early start this year and taking a chance in order to secure some of the big orders that are in sight. They usually resume molding brick about April 15, and there seems to be little likelihood that they will begin much earlier this season. The few times that they have attempted early starts they have usually found it disastrous, as millions of brick have been spoiled by rain.

The present difficulties in the way of transportation would probably prevent successful delivery of greater quantities of brick to the builders in the near future anyhow. The San Francisco wharves are so clogged up with lumber and other bulky stuff that the brick men are unable to find a place to lay their bricks after they have brought them to the city in scows or other vessels. There are a few exceptions, but storage space is very hard to find.

The mud brick yards have been burning brick during the rainy season that were made in the fall and stored in sheds. Many of the yards have large quantities of brick on hand, largely sold, which they cannot get transportation for, and hence the owners are not very enthusiastic over rushing the business. At present 500 carloads of brick are on the Southern Pacific railroad in the fifty miles between San Jose and San Francisco, but scarcely any cars are arriving here. Some of the cars were loaded two weeks ago, but the contractors who have bought the brick cannot get them. The Remillard Brick Company's yard at Pleasanton is choked up with burned brick on account of lack of transportation. Its yard at Greenbrae is closed down for lack of wood for fuel. The Sacramento Transportation Company has two kilns burning at Sacramento and has been able to transport some of its brick to San Francisco, where it has handled them at considerable expense for cartage, etc.

Prices of common brick have advanced to \$12.50 a thou-

sand and some are holding for \$1 more. Considerable quantities of brick have been sold at the figure mentioned. However, a large concern that manufactures brick in Sacramento and has 30,000,000 brick sold, got \$10 for the greater portion when the orders were taken. A year ago, common brick were sold as low as \$6, but expenses of production were then much less. Machine cleaned bricks from the ruins in the burned district are now selling at \$9 to \$10 and are in great demand. Sand-lime brick are quoted about the same as common, and there is a fair demand.

A representative of Gladding, McBean & Co. recently said in explaining the situation: "The present shortage is largely due to the fact that we had to shut down last month. We are getting oil now, however, and have just finished two new kilns that will supply 80,000 brick per month each. We hope to get our heads above the flood of orders before long. The demand is tremendous and shows how much is being done to rebuild the city."

W. E. Dennison, manager of the Steiger Terra Cotta and Pottery Company, said recently: "We have orders on hand to run us six months, and cannot agree to deliver brick to new customers in ninety days. The present shortage in pressed brick is due to the overwhelming demand now existing in San Francisco, and to the fact that during January we could get no oil, had to shut down and ran behind."

The Carquinez Brick and Tile Co., which has completed several buildings of its new brick manufactory near Port Costa, Cal., and has much of its modern machinery installed, has been considerably delayed by the tardy deliveries of certain machinery and materials. It is the expectation of the management that the manufacture of a very high grade of common brick will be commenced within the next six weeks. The power house and brick machine house, substantial frame buildings, have been completed and a wharf is being constructed that will give access to deep water on the bay. The plant is located just across the railroad track, but brick can be easily conveyed by endless belt conveyor, or other overhead transportation device, over the railroad right-of-way to the ship's side at the wharf. The sample bricks made from their shale and clay deposits present a fine appearance, being hard and very smooth on the face.

The Los Angeles Pressed Brick Company, which has erected a plant at Point Richmond, Cal., for the manufacture of brick from shale, of which it has large deposits, has received a number of car loads of machinery, which is being installed as rapidly as possible. The management expects to turn out a very superior quality of pressed brick. Being located near the bay, transportation both by water and rail to San Francisco and Oakland will be cheap. An excellent market will undoubtedly be found if the product of the new plant comes up to the expectations.

The Alexander Brick and Terra Cotta Company has filed articles of incorporation with a capital stock of \$200,000. A. G. Hebgren, Robt. Alexander and E. J. Hanson each have subscribed for one share of the stock. The place of business is San Francisco.

The Pacific Coast Supply Company has filed articles of incorporation. It will manufacture brick and building supplies in Melrose. Its capital stock is \$30,000 and the incorporators are W. R. Fontain, L. A. Wooley and R. S. Davis, all of San Francisco; F. J. Jacobs and Charles A. Hughes, both of Oakland, and A. P. Snow and Harry Brown, both of Fruitvale.

The Board of Public Works of Oakland, Cal., has awarded several bids for new sewers, in accordance with the plan of improving the sewer system of the city, for which bonds were voted some time ago. The bids awarded are as follows: Cemetery Creek sewer, to Michael Murphy, \$6,208; Broadway, 42d and Diamond st. sewers, to James Stanley, \$14,462; Fourth avenue sewer, to Cotton Bros. & Co., \$14,892.35. The bids for two sewers in Second street were far in excess of the estimates of City Engineer Turner and were referred to the City Engineer.

SUNSET.

San Francisco, Cal.

The Standard Brick Company, Mountain View, New Jersey, is adding to its present brickyard equipment one of the new Martin compound disintegrators, installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

Written for THE CLAY-WORKER.

CAPITAL FACTS AND FIGURES.

Beautiful spring has come:
Old howling March is here,
To make the welkin hum.
To twist the atmosphere.
The clay man waketh up,
His wheels begin to move,
To fill the business cup.
Along the plastic groove.



ES, THE ETHEREAL wet-nurse, Spring, is here (in name), and it is almost time for the festive bluebird to tune his pipe and welcome the springing grass. All the brick factories in the District of Columbia and vicinity will soon be in motion and there is plenty of work for them ahead. Some of these have been steadily employed, among them the Walker Brick Company—possessing 30 acres of excellent clay land, with an additional 40 acres—which has not only been very busy but has contracts for months to come.

So the brick business outlook is good—good prices and good quantities, and the ability to meet all home demands is not in any way lacking.

With the sweet little note of the little blue bird, the sound of the hammer and trowel are heard; but here these sounds have not waited for the “feathered toot,” for considerable building has been done during winter. The value of such operations during January was over \$1,120,000, and for February, \$820,427. These values of course are found in building and permits, and in this particular it is thought that March will make a fine showing.

Among permits issued in February, were forty-one for brick dwellings, to cost in aggregate \$240,600, and four for apartment houses to cost together \$140,000. The report of the District of Columbia Building Inspector for last year gives the number of new brick dwellings as 1,056; brick additions and repairs, 1,263; stores, 58; and store and dwelling, store and ware house, office buildings, warehouses, club houses, stables and other brick structures, as 144. Of course, there were many buildings of other material than brick erected in the District of Columbia last year, but brick and tile played an important part in a large percentage of these. The whole value of building operations in time mentioned was \$12,101,876.

One would naturally think that the presence of such a great number of government clerks and other government workers in the District of Columbia, would add largely to the number of homes here. In many cases this is good reasoning, for to considerable extent the clerk is a house owner, but to greater extent, a renter and roomer. If we take into consideration the number of government employes in Washington and the aggregate amount of money received by them for services rendered, it is easily seen that if each worker would save a part of his, or her, earnings, the owning of a home would be certainly possible.

The latest estimate by the Civil Service Commission concerning government employes in Washington makes the number 25,903, and the number of all such workers, here and elsewhere, is put at 300,615.

When Uncle Sam goes into his pockets to pay the government employes in Washington he pulls out for this purpose something over \$26,536,700. Now it is very evident from this fact that such a large annual distribution of cash in the District of Columbia should be of great service, in part, in making dwellings abundant here. This cash certainly helps the business (merchant and others) man here, and if it were to cease coming forth the Capital City would soon be an unimportant town.

Uncle Sam is a first class distributor of the people's wealth and the District clayworker often finds in him a generous helper in the way of brick business. He is also a tile and cement buyer, as may be seen in much wall and floor space in government buildings. The use of floor, wall and ceiling tile

has been for sometime on the increase here and this is apparent now in all large structural (building) operations. Undoubtedly this is along the fireproof and hygienic line, and in the matter of protective material strength it can be well recommended. But the good old red—or other color—brick that shows its strong face to the world—and backs up things—is the great gun that holds the fort. And here we will say to Mr. United States: “Don't forget this ‘brick fact’ Sammy.”

In the matter of spending money on public buildings in Washington our Sammy is not a forgetter, for if his department and other structures in the District of Columbia were gathered in street squares, a fair size town would thus be made. With the money expended in making these buildings and improvements in connection, a handsome town of moderate sized structures could be built. From recent and unpublished figures, I found that for government buildings in Washington and outside in the District of Columbia (including a few school houses and hospitals) and expenses in connection—something more than \$67,343,294 has been spent.

This speaks well for congressional generosity, and now the Senate has opened wider the lavish hand. This august body of law-makers passed a bill appropriating \$10,000,000 for the purchase of all property located between Pennsylvania avenue and the Mall, and extending from Third street N. W. to Fifteenth street, N. W. The distance thus covered is about one mile in length; taking in with width, over fifteen squares. The bill concerning this interest has not yet received the completed attention of Congress, but there is not much doubt of its success. The latter means a big step toward making Washington still more beautiful in public buildings fronting on Pennsylvania avenue and in more charming parks.

Washington, March 15, 1907.

NICODEMUS.

DISASTROUS FIRE LAYS WASTE THE MAJOR PART OF THE PLANT OF THE OHIO CERAMIC ENGINEERING COMPANY.

On the night of February 12, from some unknown cause, fire broke out and destroyed the new factory building of the Ohio Ceramic Engineering Company on Berea Road and Lake Shore & Michigan Southern railroad, Cleveland, Ohio. As will be seen by the photograph on page 620, the main part of the factory was licked up by the flames, leaving only the damaged walls and the more or less damaged tools. Fortunately, the office building, a substantial brick structure, the power house and the paint shed were left, as they were separate detached buildings.

With characteristic energy, Mr. Frank H. Robinson, the president, and his associates, immediately ordered new tools and a gasoline engine and set them to work in temporary quarters and soon repaired the damaged tools sufficiently to enable them to get to work on rush orders. Temporary buildings were erected, and within four days after the fire, they were again turning out cars. They put temporary roofs over the tools for their car department, and on March 6, again turned on power in their machinery department, which, by working a double shift, enables them to turn out as much product as before the fire.

The work of rebuilding the factory is already on the way, and this time they will build a fire proof structure. It will be considerably larger than the burned factory, one addition giving them 4,500 square feet more of floor space than they had before, so that, as is often the case, the fire, in the long run, may prove a blessing in disguise. They are now taking good care of their regular customers and filling all orders for cars, etc., promptly.

PURINGTON PAVING BRICK SELECTED FOR MINNEAPOLIS STREETS.

The Purington Brick Company, of Galesburg, Ill., has just been awarded a contract for all the brick paving blocks which the city of Minneapolis will use during the present year. There were four firms competing, and while some of them offered lower prices than the Purington, the quality of the Galesburg brick carried away the prize.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

CONVENTION ECHOES.

A New Member From Colorado.

Editor THE CLAY-WORKER:

As a newly initiated member of the National Brick Manufacturers' Association, I wish, through the columns of your paper to thank the members of the above Association, especially the St. Louis clayworkers, for their kindness and hospitality during the late convention held at St. Louis. Everything came off as per schedule without a hitch. The trips around the different plants were instructive and profitable to any one interested in the clay business, and the banquet was something never to be forgotten. The St. Louis people certainly did themselves proud, as they always do. Our trip to Alton was very interesting. I would say one of the liveliest debates of the convention was held on top of the Youngren kiln, between Mr. Yates and Mr. Haigh on continuous versus other style kilns. There being no regularly organized meeting, no decision was handed down. The Youngren continuous kiln is certainly a good one, judging from the quality of the brick in the burnt off chambers.

This was the first convention of the kind I ever attended, but knowing now what I have missed in previous years, I hope it won't be the last.

Yours very respectfully,

JAMES KNOX.

Wants to "Play a Return Engagement."

Dear Secretary—It was my intention to have written you before now, but this is as far as I have got towards home since leaving St. Louis.

I want to add my little say so of appreciation to our St. Louis brickmakers at the way they entertained us at the last convention. It has often been said that the last was the best and truthfully so, but I say, I doubt if the last convention will ever be beaten in our day, when one takes everything into consideration. Don't think for a minute that I mean that the N. B. M. A. meetings will get less instructive or interesting if you are spared as its Secretary, but the entertainment given us by the St. Louis brickmakers has set such a high water mark that, like our 21st birthday, am afraid it will only come once, and for one I am glad we went to St. Louis at this time, and will say to the St. Louis brickmakers, you will take some beating.

Never in the history of the Association, I believe, have the hearts of our bravest leaders been moved as they were this time, and who would say that they were not the braver for so being moved, and never was the buttonholer more busy getting in his work of the unpublished proceedings of three conventions and which, in a measure, are as important to the individual brickmaker as any other part of the convention work.

It was a long, tedious, miserable ride from Catskill to St. Louis, owing to the heavy snow that fell, but the benefits a brickmaker gets from these meetings pay him well for all his trouble.

There was one story that Dr. Converse told that I have not got over yet. I don't think the results will prove at all serious; if they do, I shall want the Doctor's prescription for it. From the opening prayer to the move to adjourn, I never heard a word of dissatisfaction from any one, and I want to say again to that grand old man Ittner and his St. Louis

helpers that they have given us the best yet, and my sincere wish is that they will have continued prosperity and ask us to come back soon.

Philadelphia, Pa.

H. HAIGH.

An Old Member's First Convention.

Dear Randall:

I do not break into print very often, but I feel that I am justified in making the attempt at this time, based upon my impressions of the convention held at St. Louis, especially as it was my first experience at a convention of the N. B. M. A. I have been a member of the association for years, and I thought that I had a pretty fair acquaintance with brickmakers in general, especially in the Middle West, but I am forced to admit that I was not "deuce high" in my general knowledge. It is incredible to me that the industry has reached its present proportions and I believe its growth is largely responsible to the yearly gatherings, the discussions and interchange of opinions both during the actual business of the convention and the social part, and I must say that "shop talk" out of the assembly rooms was not the least interesting feature. I also believe that the association has done an untold good in broadening the ideas of the clayworkers, and it is my belief, based on actual experience, that it is not necessary to use a club to get next to a manufacturer in my own line. The brickmaker is always looking for information, and his labors are reduced to the minimum when he is fortified by the fact that he can fraternalize with a fellow craftsman and date his acquaintance as due to a convention. Not only do we have our associates, but we seem to have reached a point where men prominent in matters state, civic and judicial, recognize the craft and lend us a helping hand, not because we need it in our business, but because the association, by its push and personality, has gained a position in the industrial world that is only its due, and I believe the quality is recognized.

I do not feel that we have reached the limit of perfection, by any means, but I feel that we are better qualified today than ever to make a name for the clayworkers of the country. Yours truly,

E. C. KIMBELL.

Chicago, Ill.

The Progress of the N. B. M. A.

My Dear Randall—It must be apparent to you that letter writing is rapidly becoming one of the lost arts to me. If you had not been here with me it might seem necessary to explain why, but no one knows better than yourself what a time consumer this place is, especially during the season when the fish are biting. I have, however, taken time to read the Convention number of the CLAY-WORKER, and I could not help several pangs of regret that I could not have been with you. As I look back over the twenty-one years of work performed by the National Association of Brick Manufacturers, I am torn by conflicting emotions. While there are quite a good many of the old wheel horses still wearing the association harness, I am compelled to admit that the loads they draw are light as compared to those taken to the conventions of the present day by their successor. I almost feel competent to make such comparisons by reason of my absence from three successive gatherings. Hard as it is to admit that the work of the N. B. M. A. of ten or twelve years ago could be improved upon, I am forced to concede that, taken as a whole, they were not in it for a moment when placed along side the record of the convention just held in St. Louis. The papers read and the discussions following them are of a higher order than in the old days, and need no other argument to prove that the brickmakers of the United States are a better educated and more intelligent class than when the association was founded. I do not mean that there are in the younger membership any men with better minds or any more earnest in their efforts to better existing conditions than the little band who came together in Cincinnati twenty-one years ago, but they have had opportunities and have improved them. After all, I think if a roll call could be had of the charter members of our association, the verdict would be

unanimous that the conditions as outlined above are precisely what they wished and hoped for. It is a wise man that knows his own shortcomings, and it must be conceded that it was this knowledge on the part of such men as Eudaly, Ittner, Gates, Morrison, Adams, Merwin, Milton Blair, and the other noble men, who were the pioneers in the organization, that something was necessary to raise the standard of the clayworker from the low plane of ignorance, and almost superstition, to a level commensurate with its importance to the world. The results, direct and indirect, can scarcely be estimated. They are shown in the improvement in every branch of the business. In the hands of the younger, better educated, more progressive members of the association, we are more than content to leave the future of the organization, and we do so with a feeling of confidence that the trust will be safe in their hands. At different times within my recollection, enterprising publishers of newspapers have issued papers purporting to be a record of happenings long in advance. None of them could have been more astonishing than if you had, in 1886, published your last Convention number, claiming that was the report of a brickmakers convention held in St. Louis, in the year of our Lord, 1907. Of course, you would have put in all about the silver plate, but even that would have been no stranger than the rest. I do not think that either you, or Mrs. Randall, needed anything to keep fresh in your memory the friends who donated it, but all the same I am glad that some one of them was thoughtful enough to start that ball rolling, and I know that once started, it furnished its own momentum. It was the one opportunity of my life to make a speech, and I shall never cease to regret that I was unable to accept Mr. Ittner's invitation to say a few words and "pass" the plate. I am having a splendid time here and enjoying each and every day, but as I read the last CLAY-WORKER, I could not help feeling a great disappointment had come into my life, and that during convention week I was a misfit anywhere else. With love to every member of the N. B. M. A. I am,

Faithfully yours,

D. V. PURINGTON.

Wyndillhurst, Ocean Springs, Miss.

Signs of Progress in the Success of the St. Louis Convention. Editor THE CLAY-WORKER:

Safe at home again within the sound of the old factory. I am much gratified at the result of our St. Louis convention, and think this is the best meeting we have had. Secretary Randall deserves much credit for his twenty-one years hard work and I hope he will live long to enjoy the results of his past efforts, and as there is now a Randall Junior, the old veteran should ease up a little. Our young Randall is a student of Prof. Orton and Prof. Binn's school, and he will, I have no doubt, prove of great value to our beloved Association.

Our brickmakers' association has accomplished great success and, to listen to the papers and discussions is positive proof of our advancement, and all brickmakers should, by all means, attend our conventions, as I am afraid the ones who stay at home will fail to keep step with the march of progress and are not in harmony with the times.

The Ceramic Association is rapidly moving upward and onward. The attendance was large and the best prepared papers ever presented on scientific subjects were brought before the St. Louis convention. This certainly must be gratifying to Prof. Orton to see such results from his past labors.

Professors Orton, Binns, Purdy, Parmelee and Wheeler, all contributed with their scientific papers to the instruction of the Association, and much we all owe to these professional gentlemen for their instructive contributions.

These Ceramic Colleges are becoming of such value to our country that I hope all the clayworkers of this great continent will give them their hearty support to extend these great and valuable institutions of learning.

The young students are fast becoming a factor in the clay-working industries of this country, and I hope all experienced clayworkers will recognize the value of a scientific training and give these young men an opportunity to gain experience which I believe will be the means of uplifting and bettering

the condition of the clay manufacturing business in this country.

In the future I hope to see us achieve the greatness in the clay products, such as we have in the iron industry. Our machine manufacturers have contributed largely to our present success, and all of us should show appreciation for the time and money expended by them to elevate our industry. It is with sorrow I listened to some of our fellow craftsmen endeavoring to picture them as promoters and working injury to our welfare. Such men, probably in the future, will thank the machine men for helping them to solve some of the difficulties of their own clay troubles.

It is one of the greatest pleasures of our lives to meet our old friends once a year at the convention. I was very much interested in watching for the arrival of our esteemed friend, D. V. Purington, and was sorry he could not attend, but I know all were pleased to hear of his improved condition in health, and let us all hope next year to hear his voice in our deliberations.

A large number of our old associates honored us with their presence. Among them were friends Eudaly and Bloomfield and the "Horace Greeley" of the Association, W. D. Gates.

It was very affecting to see the deep feelings of love and gratitude expressed by our old true and loved friends, T. A. Randall and Anthony Ittner. Long may they live to enjoy the pleasures of the tokens of love and respect shown them.

Hoping all of us will have a prosperous year and live to meet again at our convention in 1908.

Yours truly,

ALFRED YATES.

The Strength of Brick—How Authentic Tests May be Secured.

Dear Mr. Randall—Please accept my thanks for copy of February number of THE CLAY-WORKER, which recently came to hand. I am certainly much pleased that my paper on "Tests of Brick and Brick Piers" met with so favorable reception and appeared to furnish information along needed lines, of interest to the members of your association. A large volume of data has been accumulating during the last ten ten or twelve years in the annual reports of the Testing Laboratory at this arsenal, which perchance, have not even yet reached the parties most interested in the subject matter. Waves of popular fancy for the time being not infrequently obscure one class of material, while another obtains prominence. These gushes may be expected to occur from time to time and many such may be recalled in the past. It is doubtful whether the general public can find place for more than one subject at a time, although there may be no limit to extravagance of thought on that particular one which chances to be uppermost. Possibly the good qualities of brick may have been victimized in a degree by a process of substitution.

We have endeavored in the tests at Watertown Arsenal, to demonstrate the physical properties which are possessed by each class of constructive materials, bringing out the entire truth, so far as the tests extended. The excellent qualities of each kind of material are therefore developed by these tests, and if one takes sufficient time to examine the records, there is no doubt that a full and fair understanding will be arrived at, one which will indicate what may be attained in respect to strength and how to attain good results with each class of material. We think we are properly aiding the industrial development of the country in working to bring out the good properties of each and every kind of constructive material.

As to your kind personal references editorially to my part of the work, I will endeavor to make them deserving, but you have placed me somewhat above my own estimate of value; the spirit shown, however, is deeply appreciated.

In reference to the continuation of the arsenal tests on brick and piers constructed therewith, it would afford great satisfaction to demonstrate how even higher results may be reached than those shown in the past. Would it not be desirable to have a class, or kind of brick, called pier brick, which should stand for the kind to be used when great strength and rigidity is essential. A kind which should exemplify maximum properties in clay brick. Associated with this thought,

is that of conducting experiments which would tend to demonstrate the kind of raw material and treatment necessary to bring about maximum results. The St. Louis brick of 38,446 pounds per square inch crushing strength is at present a phenomenal one. May it not be hoped to cause this to become a regular product.

In this connection it may be remarked, that a test of a floor tile in 1895, on material from the American Encaustic Tiling Company's works at Zanesville, Ohio, showed a compressive strength of 61,264 pounds per square inch. This was found when testing a tile on edge, measuring 5.99 inches by 6 inches by .58 inch thick.

Nearly all of the most interesting material heretofore tested has been kindly furnished by Messrs. Fiske & Co., Boston. It is hoped we may obtain additional material and would be pleased to receive aid from others, since we have, perhaps, been a little burdensome to Mr. Fiske at times. In taking up matters connected with my visit to St. Louis, I would like to have the subject of brick entered into more at length, continuing the testing work in this direction, and if agreeable to you, will ask Maj. Hobbs, our commanding officer, if he will kindly open the necessary official correspondence, outlining a plan of tests to which it would be very desirable to have your criticism and suggestions.

It is expected that an exhibit of different classes of constructive materials from this laboratory will be sent to the Jamestown Exposition, making the exhibit a general one by including all classes of constructive material, to the end that visitors may be aided in acquiring a knowledge of the properties of each of the prominent kinds of building material, carrying out in a degree the same plan followed at the St. Louis and Chicago expositions by the testing laboratory.

The grandness of the St. Louis convention still impresses me, and I am very thankful for the opportunity which you afforded me of presenting certain of our results and calling attention to the work of the Watertown Laboratory before so representative a body.

Yours very truly,

JAMES E. HOWARD.

Watertown Arsenal, Mass., March 9, 1907.

Written for THE CLAY-WORKER.

POTTERY NEWS.



IT IS intimated strongly that a new company is to be formed to take over and operate the property of the Bell Pottery Company, located at Columbus, Ohio. The plant has been idle for many months, and was erected by the Bell Brothers, of Findlay, Ohio.

Plans are being perfected to install a continuous kiln system at the potteries at Sebring, Ohio, operated by the Sebring Brothers, formerly in business at East Liverpool, Ohio. Should the kiln now being erected prove satisfactory, the system will be installed at the three other potteries.

The Electric Porcelain Company, of East Liverpool, will make some improvements at their factory for the coming season, among which will be the erection of a large brick office building.

The Patterson yellow ware pottery at Wellsville, Ohio, is planning the building of an addition to the plant to contain three additional kilns.

Kenneth Beatty, a prominent modeler in the Eastern Ohio district, has been selected as general manager and treasurer of the reorganized Globe Pottery Company, at East Liverpool, Ohio. He has assumed charge.

Stockholders and directors of the United States Pottery Company, at Wellsville, Ohio, have elected the following officers: President, John J. Purinton; vice-president, S. M. Ferguson, Sr.; secretary, Timothy B. Ferguson; treasurer, Silas M. Ferguson, Jr. The company has taken over all the business of the old East Liverpool Potteries Company which was

the first attempt ever made to form a pottery trust. The attempt was a failure.

Henry Gallagher, of Perrysville, Ohio, has formed a company with \$25,000 capital stock to erect a pottery at Perrysville for the manufacture of art ware. A new bed of rich ceramic clay has been discovered in Richland County, Ohio. S. Jenks, of Toronto, Ohio, has been engaged to manage the property.

Manufacturing potters who have plants along the Ohio river in the East Liverpool district assert that they have not encroached on the harbor lines when dumping refuse over the river bank. Government officials have conducted a thorough investigation and laborers employed by three concerns have suffered arrest by the Federal authorities.

Arrangements have been completed to start the construction of the plant of the Ceramic Brick Company, at East End, East Liverpool. The firm will manufacture brick by a patent process from the refuse materials of the potteries from the East Liverpool district. John H. McCord, of Wellsville, Ohio, is at the head of the company.

Sewer pipe is to be made in connection with the Davidson Brick Company's plant, which is to be erected at Follansbee, W. Va. J. E. Foster, of Wellsburg, W. Va., has just completed the formation of a company with a capital stock of \$50,000 for this purpose.

The plant of the Cameron Pottery Company, at Cameron, W. Va., has been sold to the Plumbers Supply Company, of Trenton, N. J. The new owners will manufacture a high grade line of sanitary specialties.

Decorators have been put to work at the Newell, W. Va., plant of the Homer Laughlin China Company. Nine out of the thirteen bisque kilns are being worked and twelve out of the seventeen glost kilns are under fire. Half of the twenty-four decorating kilns will be fired at once.

Work remodeling the plant of the Chaseland Pottery, at Columbus, Ohio, which has been recently purchased by the American Mutual Pottery Company, has started. Operations are expected to start about May 1.

The Union pottery plant at Zanesville has been purchased by the Brush Pottery Company, and a full line of stoneware specialties are being manufactured.

The Acme Pottery at Crooksville will be sold soon by an order of the stockholders, who have appointed a committee of three from their number to act as trustees. The date of sale has not been announced.

Fire caused a small loss to the foundry department of the Patterson Foundry and Machine Company recently. The roof caught fire from the hot cupola.

J. Otty Sharp, of the Champion Brick Company, Wellsville, Ohio, has affiliated himself with the Cleveland, Ohio, offices of the Hydraulic Pressed Brick Company, and will have charge of the sales department of the Ohio division.

East Liverpool, Ohio.

O. MEGA.

NEW BRANCH OFFICES OF THE LINK BELT COMPANY.

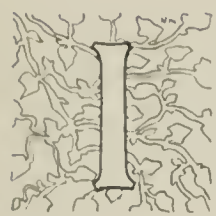
By locating a branch office at 321 Ellicott Square Building, Buffalo, New York, the Link-Belt Company, of Philadelphia, Chicago and Indianapolis, is in a better position to give personal attention to customers of its drive chain department in Buffalo and neighboring territory of New York, Pennsylvania and Ohio. The facilities of the company in the manufacture of the "Renold" silent and other forms of power-transmission chains are tendered through its representative, Mr. H. C. Minier.

No. 440 New York Block, Seattle, Washington, Mr. E. G. Brabrook in charge, is the new branch office of the Link-Belt Company, of Philadelphia, Chicago and Indianapolis. Increasing business from the far east, Washington, Oregon and the surrounding territory, in the conveying machinery manufactured by the company, made personal representation on the Pacific coast desirable. Seattle was selected as the most advantageous location.

The Columbia Clay Company, Vancouver, British Columbia, are installing a new Martin patent compound disintegrator complete, supplied by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



IN SPITE OF the fact that the building department figures for the month of February show a decrease of about thirty per cent. for that month as compared with the second month of 1906, there is every indication that the building season of 1907 will be quite as prosperous as was that of last year.

The records for building permits for the past two weeks have shown a marked increase over past weeks this year and a perceptible advance over records of the same weeks last year. For the week ending Saturday, March 9, 138 permits, representing an estimated cost of \$689,600 in buildings were taken out.

Building Commissioner Bartzen has issued a statement in which he predicts that there will be \$65,000,000 worth of building operations in Chicago during 1907. He bases his figures on estimates which he says have been furnished to him by architects and contractors with plans under immediate consideration for structural improvements to be made within the city limits. The building commissioner made this prediction in a conference with members of the finance committee as the basis of his request for a larger force, which he declares will be necessary to meet the unprecedented activity he anticipates. Proper supervision of this immense industry, the commissioner says, will necessitate a larger force of inspectors and a better equipped office force to pass upon the plans.

There is now no apparent prospect of labor troubles to mar the coming season of building. Among the building trades and building material trades here all is peace and quiet, and a break would be more than unexpected. During last month the return of Cornelius P. Shea into activity among the teamsters' unions here caused some uneasiness, and it is not unlikely there will be some trouble among the teamsters early in the season. While Shea was on trial on the conspiracy charges arising out of the teamsters' strike in 1905, he was fairly quiet, but as soon as he was acquitted by the jury he rushed into his old activities again, and began a campaign to regain control of all the teamsters in Chicago. At present he controls on the south side of the city, while the insurgent organization controls on the north side. In many cases the material dealers find the situation difficult because they are forced to sign exclusive contracts with one or the other of these warring organizations of teamsters. For dealers whose "jobs" are about equally divided between the south and north sides the situation develops into a sort of guessing contest as to whether Shea or Young is going to win out. However, there have been no violent outbreaks, and the fact that plans are being matured at a more than normal rate, indicates that there is little apprehension.

Large mercantile buildings and manufacturing plants, handsome residences and apartment buildings, railroad stations, mammoth up-to-date caravanseries and public buildings, not to speak of many new school buildings and churches, are on the schedules of architects and contractors for erection during the coming year. Some of the projects are too vast to be completed before snow flies again, but the amount that is estimated will run far ahead of that during 1906. The building commissioner's figures are \$1,000,000 ahead of those last year. If the State legislature passes the bills giving greatly increased charter powers to the city of Chicago, and it is believed that the charter will be granted, there will be, it is estimated, \$200,000,000 in public improvements in this city within the next ten years. A beginning of this expenditure will be made this year if all goes well, it is understood, and even the beginning of these public improvements will undoubtedly add to Chicago's attractions as an industrial and commercial center, and that will mean in addition to the erection of the public buildings contemplated, more factories and mercantile buildings of various descriptions.

A new city hall to cost between \$1,500,000 and \$2,000,000 will be started during the year. The plans are even now being discussed, although final decision on the means of financing the project will be deferred until it is seen if the legislature is

going to pass the charter bill increasing the limit of bonded indebtedness by some three score millions. If this is not done the city will have to put up its new home on the installment plan, having fully realized its present limit of indebtedness. The city's building will be of much the same style as the county's building now nearly completed on the lot adjoining and like the latter will be a good thing for the terra cotta people and dealers in interior brick.

Then, there is the vast project of the Northwestern Railroad's terminal station along Canal street. Realty transactions in which the railroad is acquiring much of the property it needs are going forward every day, and some suits in condemnation have been started. Plans for the Otto Young hotel in Michigan avenue, south of the Auditorium Annex a short distance, were somewhat disturbed by the death of Mr. Young early in the winter, but it is said to be certain that these plans will be carried out.

This is one of the encouraging aspects of the present outlook for the clay products man, for clay products are the artistic building material par excellence, and there is a decided tendency toward better quality both in actual construction and in outward appearance among the buildings which are going up nowadays in Chicago. Real estate men are encouraging and perhaps in a measure are responsible for this tendency. It is well known that the alert and enterprising merchant will gladly pay a larger rent for an attractive looking business place than for an indifferent looking one, because he knows that the public is susceptible to bright and modern environment, the real estate man argues, and add that strange to say, many owners and builders lose sight of this fact to say nothing of the lasting effect which first class improvements have upon the value not only of their own ground, but that in the vicinity. In these prosperous times, of course, almost anything will rent, but when the demand slackens there can be no doubt that it is the substantial and respect-inspiring building that gets the desirable tenant. Nor can the builder escape moral responsibility if he erects a structure which is temporary in character and designed with the sole purpose of an immediate big return. His building, especially if in a new locality, may ruinously affect the ground values of several blocks adjoining for years to come. It is very difficult to dispose of old structures, even though they pay good incomes, but that is no excuse for adding to the ugliness already existing. This is essentially the argument of the realty men, but one of the leading material dealers here advanced it to the writer, adding that it would not only help the material trade to advance it, but that it is time anyway to give more attention to artistic effects in architecture.

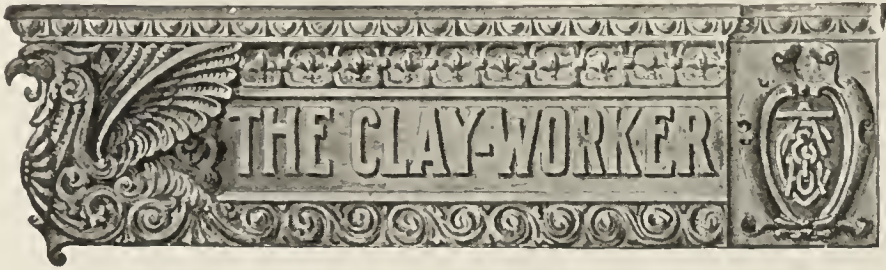
Another movement on foot, which if successful will mean much to the cause of building in Chicago, is the bill being pushed through the state legislature by the building interests of the city to permit the organization of corporations and syndicates for the purpose of buying, holding and selling real property, erecting and managing building enterprises. At present such ownership and operation is contrary to law. While it has been possible to get around the law, it has proved a check on many enterprises, and reports from localities where this restriction does not exist are to the effect that laws such as now proposed for Illinois stimulate building activity.

The Troy Laundry Machinery Company has let contracts for the doubling of the size of its present plant at the northeast corner of LaSalle and East Twenty-third streets. The S. S. Kimbell Company has the contract for the front brick. Continental brick have been specified and 100,000 ordered. This machinery company moved into its present quarters only about a year ago, and the early need for more facilities indicates Chicago's importance as an industrial market.

The S. S. Kimbell Company also have the contract for the front brick to be used in the building being put up by the Heyworths in Michigan avenue near Harrison street. The building, it is understood, is to be used by the International Harvester Company of America. The contract calls for 175,000 continental brick.

SCRIP.

The Shull and Badger Brick Company, Butler, Pennsylvania, is also installing one of the new modern Martin patent compound disintegrators built by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	\$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " " " " " "	10.00
Ten copies, " " " " " "	15.00

Foreign subscriptions 65 cents additional.
Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVII. MARCH, 1907. No 3

CURRENT COMMENT.

Yes, we want machinery that will help make brick at a lower cost, but what we are really honin' for most is something that will lessen the cost of putting brick into the walls.

* * *

The average citizen of this country is said to eat about half his weight in sugar per year—and yet there are lots of us easily soured by just a pinch of adversity or disappointment.

* * *

Along with the fatherly and scientific encouragement Uncle Sam is giving on the subject of land drainage, there should be included a fair measure of information on the subject of drain tile and its benefits.

* * *

One good result of the work at ditch digging in Panama has been to raise the volume of business to over \$14,000,000 of exports from this country to there during last year, against less than a million bought by us from down there.

* * *

While we are figuring on gas producers some one might, as a sort of side issue, invent something that will enable us to apply usefully the gas and hot air the political workers are preparing to turn loose soon on a prospering and patient populace.

* * *

Government reports indicate that the supply of India rubber is inadequate to meet the growing demand. Wonder if some way could be devised to utilize "rubber-necks" to help out the supply. There is some surplus of this class of rubber that could be spared without injury to civilization.

* * *

We take \$6½ per cent. of Cuba's exports, but only furnish in return about 45 1-3 per cent. of her imports. The cor-

recting of this unbalanced condition, it seems to us, might prove a more remunerative effort than expending too much time, diplomacy and money trying to help correct faults in her political system.

* * *

It is some relief to know that more freight was moved during 1906 than ever before, but we can't help but think how much more might have been moved, and how much worry and delay spared if the railroads had only put more effort into pushing transportation and less into fighting among themselves.

* * *

Mr. Alexander Aust, of Piaseczno, Warschau (Russian Poland), Europe, a CLAY-WORKER subscriber, writes that he would like very much to receive catalogues containing sketches or drawings of ornamental brick, such as are used in America. Also, catalogues of American machinery for the manufacture of same.

* * *

And now comes the Jamestown Exposition, which will instruct the mind and delight the eye from April 26 to November 30 next. To we "land lubbers" of the Central West, it will possess charms unequalled by any of the great expositions of recent times, for it will give us an opportunity of seeing something of Uncle Sam's navy. This, with the "Warpath," makes it almost an irresistible attraction. It has been suggested that the N. B. M. A. hold a midyear meeting there about the third week in August, as was done during the St. Louis world's fair. It is a happy thought, and we suggest that the members take due notice and govern themselves accordingly.

PASSING FADS AND FANCIES.

We mortals are strangely inconsistent at times, and seem prone to take up with new and untried things in preference to those which we know from actual experience to be in every way satisfactory. Just why we indulge in unnecessary experiments it is difficult to determine except on the theory that we crave or fancy something new. As a rule, mankind fails to appreciate the things that are thoroughly familiar and hankers for things uncommon or strange, and so we lend an attentive ear to promoters oftentimes when sober reason would dictate the opposite course. This craving for something out of the ordinary has a marked influence in the building world as in other walks of life, and not infrequently builders and architects indulge their fancy for something new, and use materials of questionable character, when instead they might better have used materials just as easily obtained and which these very builders and architects know to be superior in every way.

The whole civilized world knows that burned clay is the best building material man has ever used. None other is so indestructible, so sanitary and so adaptable to every need, and yet this fancy for something new results in the use of other materials of doubtful utility. Just now, the cement promoters are having an inning, and cement products, concrete blocks, etc., are touted as something of remarkable merit. Time will prove to the contrary, and then those who have indulged their fancy for something new will again turn to brick and terra cotta. These are the world's staple building materials and always will be, our friends the cement promoters to the contrary notwithstanding. So firm are we of this faith that we are not in the least disturbed by the exaggerated claims of concrete advocates. Indeed we are not a little amused by the tirade of abuse directed at THE CLAY-WORKER by our contemporary "Concrete," which, in a recent issue, takes exception to the statements of our contributor who, under the head of "Cement Block. Some Reasons Why They Will Never Come Into General Use," tells some plain

truths about concrete building materials. Our contemporary, though, should bear in mind that "billingsgate" is not argument. If the article, to which our contemporary objects so strenuously, contains any misstatements, we will thank our neighbor to cite them, but the use of bad adjectives will avail nothing. Come, let us reason together, but "cut out" the calling of names. It is as useless and inexcusable as "making faces," indulged in at times by little children.

JAMESTOWN AND BRICK.

It looks like one of the most distinguishing features of the exposition of Jamestown, near Norfolk, Va., that is to come off this summer is to be composed of brick. Of course, there will be other things, but none the less one of the distinguishing features as compared to other exposition buildings is the use of brick, which gives promise of more artistic effect to the structures that make up the main part of the building. This fact has been mentioned heretofore in the CLAY-WORKER, but we are reminded of it again while reading about the Tercentennial in that entertaining as well as instructive national weekly, *Colliers*, from which we beg to quote the following:

"From an architectural standpoint the Jamestown Exposition is to be thoroughly American. While we can not yet boast of a national style of architecture, the colonial type is sufficiently individual and distinctive to be claimed and accepted as American. The design of the expositions buildings, the "palaces" of art, commerce, and machinery, is almost consistently colonial. There are no turrets or towers, no domes or minarets, pinnacles, buttresses, and other freaks of fancy; no long stretches of garish white buildings, decked out with wedding cake trimmings, and bespattered with colored lights until they resemble a Christmas tree. On the contrary, all the buildings are low, both in stature and in color tones. Few raise their roofs above the treetops, and most of them being built of Harvard brick, trimmed with terracotta and fitted with such simple ornaments as the long, low roofed balustrade, or bas-relief panels, give a subdued color effect most pleasing to the eye and thoroughly novel to exposition architecture."

This reflects in some measure the pleasing effect we may expect buildings so constructed to have on the American public in general, at least those who give time and thought to analyzing effects, and it is, though given unconsciously, probably a great tribute to brick and one which this product rightly deserves. Reference to the garish white buildings will remind many who are in the habit of attending expositions, of the painful effects of many of the exposition buildings, which have so blinded the eyes with the reflection of sunlight as to cause those industrious venders of smoked glasses to reap quite a harvest. It is a relief to think of going to an exposition that is different and it should be particularly gratifying to all manufacturers of brick and clay products that the Jamestown Tercentennial will be pleasingly different in this respect from others, and that the pleasing part of this difference will come largely through the use of brick.

A BRICKLAYING FEAT.

In the erection of the House of Representatives office building, adjacent to the United States capitol at Washington, an interesting fact has developed in connection with the brick masonry work. The first brick was laid at the site on the afternoon of July 5, 1905, and on July 3, 1906, there had been laid in the walls 11,000,000 bricks. This is believed to be the greatest number of brick laid on any building in one year in the United States, and probably in the world. One of the causes conducing to this record-breaking feat was the remarkably "open" winter of 1905-06. In those winter months

the work continued almost without interruption from either snow or cold, and not more than twelve or fifteen days were lost during the entire winter by reason of weather conditions.

TRADE LITERATURE.

H. Brewer & Co., Tecumseh, Mich., has issued a leaflet devoted exclusively to their No. 34 and 35 pug mills, which they offer to the trade as high grade machines of unusual strength and capacity, a characteristic of Brewer machinery. When writing for this leaflet, please mention THE CLAY-WORKER.

"Coal and Ashes Handling Machinery for Power Plants" is made the subject of a pamphlet recently received from the Jeffrey Mfg. Company, Columbus, Ohio. It is profusely illustrated with half tones showing that class of machinery in actual use at various plants. Write for a copy, mentioning THE CLAY-WORKER.

The "Reliance" Dry Press Brick Machine is handsomely illustrated in a unique poster-pamphlet issued by the Reliance Machine and Tool Works, St. Louis, Mo., in which the peculiar merits of the Reliance machine are set forth most convincingly.

G. E. LUCE ENGINEERING COMPANY.

The above firm makes its initial bow to CLAY-WORKER readers in its ad on page 492 of this issue. The firm offers its service as consulting engineers to the brickmaking trade. Both the senior and junior members of the firm have had many years active experience in constructing and operating clay plants, and solicit correspondence from manufacturers who have troubles to solve. Their permanent address is 601 Plymouth Building, Chicago.

THE SMOKELESS FACTORY.

Perhaps it would be better to say the "stackless" factory, is illustrated on page 590 of this issue, in the ad of Jacob Buhrer, of Constance, Germany. A clay plant without a chimney is somewhat of an innovation, and one that will appeal to many of our readers whose plants are situated within the limit of cities having smoke ordinances. If Mr. Buhrer has solved the smoke nuisance by substituting artificial for natural draft, he will be hailed as a benefactor by many of our

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DRYING AND BURNING reduced to a reliable and economical system. See Parts IV and V of our catalog of Testing and Controlling Apparatus. The Richardson-Lovejoy Engineering Co. (See page 596.)

FOR SALE, WANTED, ETC.

WANTED.

First-class man to take charge of manufacturing end of brick plant, one who is a machinist and a hustler with labor. Good opportunity for right man. Apply at once, with references, stating salary expected. McCoy Brick & Tile Co., 32 d Augusta, Ga.

For Sale, Wanted, Etc., Ads Continued on Pages 570, 571, 572 and 573.

IT IS TIME



FOR BUILDING AND PAVING OPERATIONS TO BEGIN.

The coming season is more promising than any before.
Are you ready to meet the demands your customers will make upon you? If you are not, **IT IS TIME** to look into the matter of your equipment.

We manufacture everything for all Brickmakers from the clay bank to the kilns.



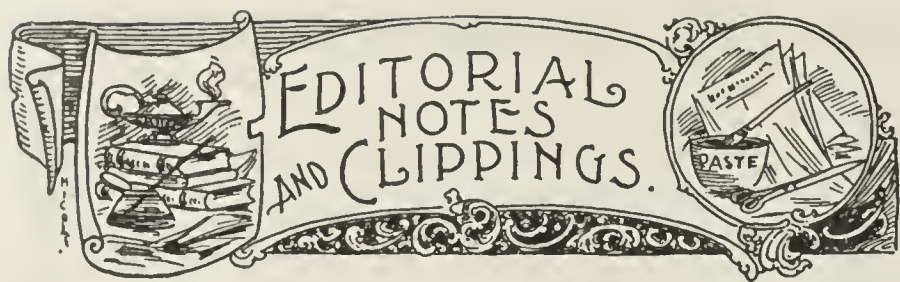
RAYMOND MACHINERY not only looks good, but it is good and it **MAKES GOOD.**

Every machine is covered by the Raymond Guarantee, known and respected in all the world.

Catalog for the asking.

The C. W. Raymond Co.,

Dayton, Ohio, U. S. A.



IT PAYS TO TOOT YOUR OWN TOOTER.

A tutor who tooted a flute
Tried to tutor two tooters to toot;
Said the two to the tutor,
Is it harder to toot
Or to tutor two tutors to toot?

Have you scanned The Stevenson's new bill board on page 618?

The Carrollton (Texas) pressed Brick Company has been incorporated with \$30,000 capital stock.

J. G. Shea, of Danville, Ill., contemplates establishing a brick plant at Jacksonville, Ill., of 25,000 daily capacity.

Alva Pedelty, 709 Grant street, Mason City, Iowa, is in the market for a ditching machine that will work in marshy land.

Mr. H. E. Holdner is at the head of a company that will install a brickmaking plant at Calera, Ala., where there is a large deposit of fine clay.

The Staples Brick Company, of Kingston, N. Y., has recently been organized by S. S. Staples, A. S. Staples and Mary R. Staples. The capital stock is placed at \$60,000.

Burke Brothers are building a plant at Fort Smith, Ark., for the manufacture of paving brick, which they expect to use in paving the streets of Ft. Smith, for which they have the contract.

The Fixico Mining Company, Fixico, Ala., are putting in three of the Martin iron base crushers, furnished by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The American Brick Company, recently incorporated at Columbus, Ohio, with \$100,000 capital stock, will begin work within a few days on its immense plant at Hemlock, Ohio. Sylvanus Jones has been elected president of the company.

Harvey Spencer, the engineer at the Albert Lea (Minn.) Brick and Tile Company's plant, was caught in a shaft coupling and his right leg crushed and broken and his shoulder dislocated before he could be extricated. The leg had to be amputated above the knee.

The Barbourville (Ky.) Brick and Tile Company, composed of local people, is preparing to develop fire clay, which has been discovered in that section in good quantities. The company has begun to expend \$10,000 in improvements and additions to the plant, making an investment of about \$25,000.

The Williamsburg Brick Works, Williamsburg, Virginia, are equipping their new plant with Martin soft mud brick machinery complete, and the Martin patent system of handling and drying soft mud brick, supplied by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The large barn at the plant of the Indiana Brick Company at Anderson, Ind., was struck by lightning during a storm March 12, and set on fire. The building and contents, including a quantity of feed, harness and tools, were destroyed. There were six horses in the barn at the time, five of which were released.

The Guthrie Mountain Portland Cement Company, Mapleton, Kansas, has moved its brick plant to property adjoining the cement plant, and will increase the capacity to 100,000 brick per day. The cement plant has a daily capacity of 2,400 barrels of cement. The new location will be called East Mapleton, and a trolley line will be built from the new town to Mapleton in the spring.

The plant of the Centerville (Iowa) Brick and Construction Company has been sold to the Centerville Brick and Material Company, a newly formed corporation, which will take charge at once and inaugurate the summer's work. The new company is capitalized at \$10,000 and the incorporators are: Frank S. Payne, president; I. L. Funk, vice-president; Geo. M. Barnett, secretary and treasurer; E. E. Heaton, B. S. Staley,

S. A. Martin and J. F. Pabst. Roy L. Peatman will be superintendent.

The Alex Pressed Brick Company has just completed its plant at Alex, Ind. T., and now have same in operation.

F. E. Baker, a brick manufacturer of Chickasha, Okla., is interested in a movement to establish a brick plant at Getebo, Okla.

A new company has been organized at Kingston, Ont., for the purpose of manufacturing brick, to be known as the Perfect Brick and Tile Company. The company is capitalized at \$50,000.

The Stein-Williams Brick Company, composed of Paul Stein and Dr. C. C. Williams, has purchased a site at Niles, Ohio, on which they will erect a pressed brick plant, with a daily capacity of 25,000 brick.

The Delta Brick and Tile Company is the name of a new concern recently incorporated to manufacture brick and tile at Delta, Iowa. The incorporators are J. C. Stoner, K. E. Rhoades, George F. McCarty, H. L. Bell, and C. E. Beman.

The plant of the Mingo Brick and Tile Company, at Williamson, W. Va., which has been in the hands of a receiver for some time, has been purchased by a company composed of G. R. C. Wiles, A. C. Pinson, W. A. Harris, T. B. Jones and E. S. Juhling.

The Holmes Brick Works, Holmes, Pennsylvania, are greatly improving their plant by the addition of the Martin patent rack pipe steam brick system installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Northwestern Terra Cotta Company, Chicago, Ill., sustained a \$500 damage by fire recently, which started in one of the kiln sheds. The flames, which threatened to destroy the entire plant, were extinguished by prompt work on the part of the firemen.

The J. D. Fate Company write that they are having a good sale on their Fate special machine, orders having recently been received for this machine from Des Moines, Iowa, La Prairie Brick Company, La Prairie, Quebec, Canada, and the Logan Brick Mfg. Company, Logan, Ohio.

Geo. H. Kice, a retired brick manufacturer of Louisville, Ky., died at the home of his son in that city recently, of pneumonia. Mr. Kice was sixty-four years of age and was a native of Louisville. For many years he was engaged in the brick business in the firm of Kice & Leiser. He retired a few years ago.

Walter D. Meals has been appointed receiver for the Eggers Brick Company, Cleveland, Ohio. The application for receiver was made by Mr. F. H. Egger, who owns most of the stock in the company, a number of suits which have recently been brought against the concern being given as grounds for the petition for receiver.

The Peterson-Kartschoke Brick Company, Los Angeles, Cal., is making a number of improvement in the factory which will treble its capacity, expending nearly \$100,000. They are putting in a dryer and building a continuous kiln. The company manufactures pressed brick and terra cotta, for which there is a constant demand.

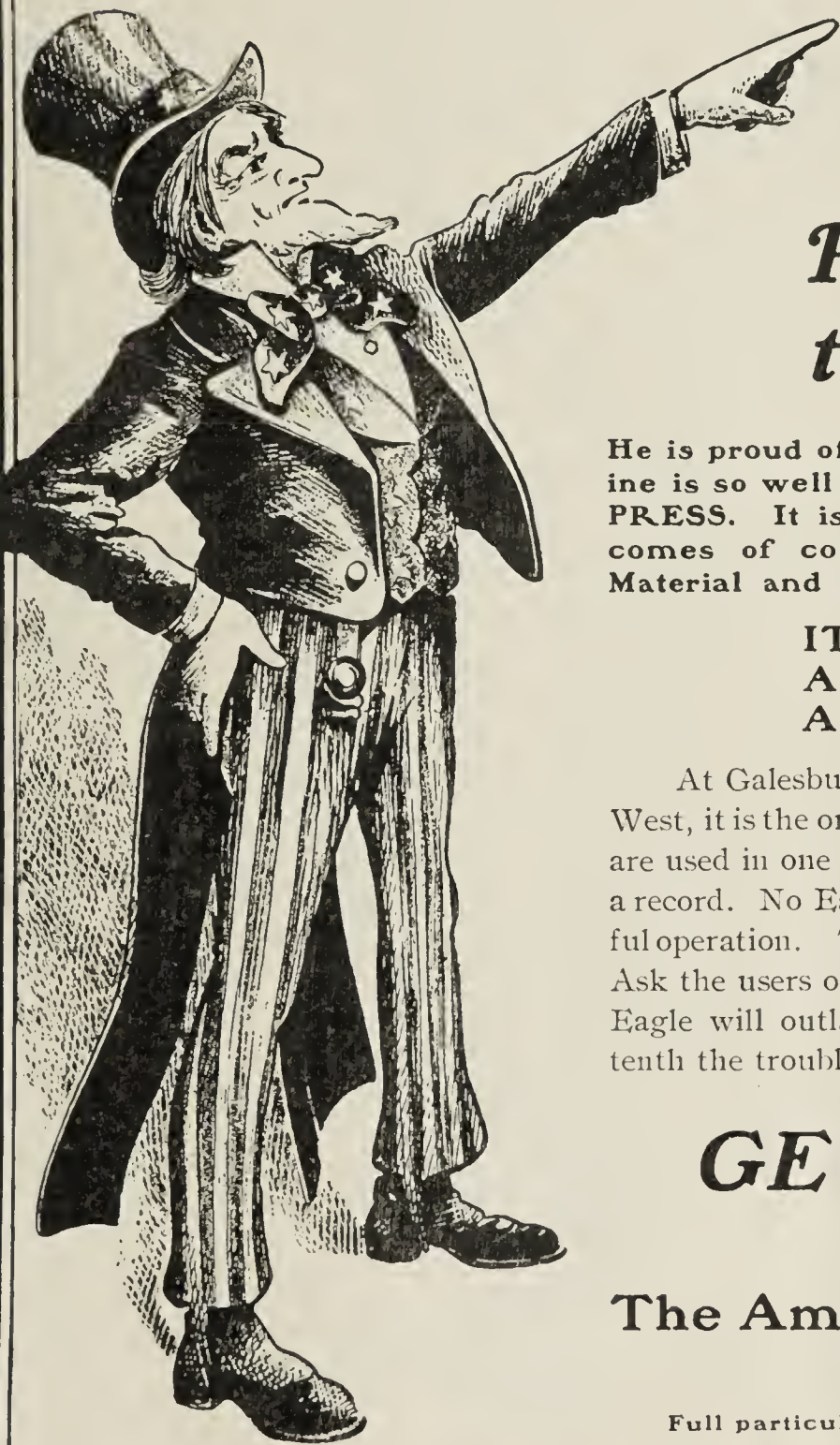
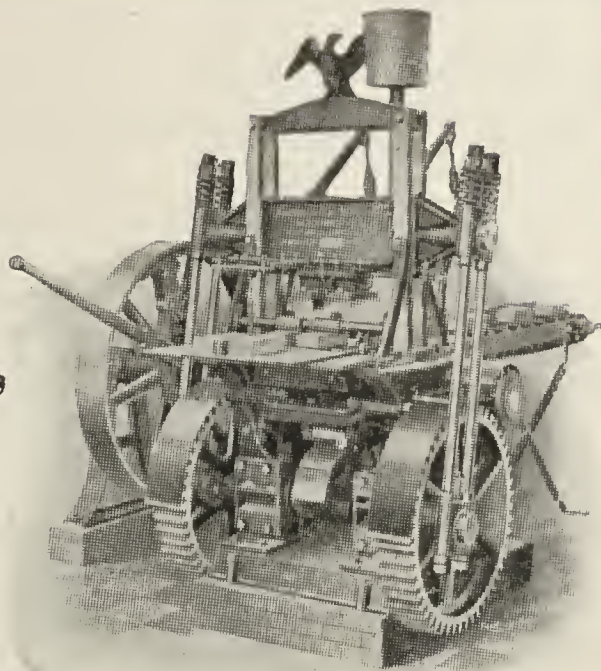
The C. M. Miller Manufacturing and Mining Company, Terre Haute, Indiana, have just equipped their plant with one of the Martin latest improved style "A" steam power brick machines, together with Martin sander and brickyard supplies, furnished by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Marion Brick Company, Indianapolis, Indiana, has purchased a fifty acre farm near Marion, Indiana, on which there is a fine deposit of clay, which will enable them to operate the large brick plant at Marion, which has been idle for some time. The kilns and sheds will be remodeled and a steam dryer and new machinery installed, which will give the plant a capacity of 80,000 brick per day. R. H. Lanyon, of Chicago, is president, D. Lincoln, of Indianapolis, general manager, and F. A. Cole, superintendent.

The Arthur Koppel Company, Machesney Building, Pittsburgh, expects to have its new plant at Koppel, Beaver county, Pa., now in course of construction, ready for operation by April 1. The main buildings, which were erected under the supervision of Dodge & Day, consulting engineers, of Philadelphia, include erecting shop, car shop, switch shop, machine shop, blacksmith shop and power plant. Concrete and steel construction is used throughout. The plant will manufacture rails, portable track, switches and frogs, turntables, contrac-

(Continued on page 560.)

**"GOSH!
There's Two
American Eagles."**



**Uncle Sam
Points with Pride
to the Two Eagles**

He is proud of his Two Eagles, and so are we. No machine is so well known the world over as the EAGLE RE-PRESS. It is a glowing example of the success which comes of combining Correct Principles with Flawless Material and Faultless Workmanship. * * * * *

**IT IS A MEDAL WINNER
A DIPLOMA GETTER
A MONEY MAKER**

At Galesburgh, Illinois, the great paving brick center of the West, it is the only Re-press used. Eighteen of the Eagle Re-presses are used in one Galesburgh factory. No other Re-press has such a record. No Eagles are ever thrown out on account of unsuccessful operation. They are absolutely "Built Right and Run Right." Ask the users of the Eagle for their opinion as to its merits. The Eagle will outlast two presses of other makes and do it with a tenth the trouble and repairs.

GET AN EAGLE

and you'll have a winner.

**The American Clay Machinery Co.
Bucyrus, Ohio, U. S. A.**

Full particulars for the asking.

EDITORIAL NOTES AND CLIPPINGS—Continued.

tors' locomotives, steel and wooden dump cars, platform, charging and dryer cars.

The Stevenson Company has further valuable information for CLAY-WORKER readers on page 618.

Barnum, Minn., wants a brickyard, and the Commercial Club will be glad to correspond with parties looking for a desirable site.

Marita Brick and Tile Company has been incorporated at Everett, Va., with \$20,000 capital stock by W. H. Adkins, W. S. Barnhill, J. G. Barnhill and others.

The Henry Martn Brick Machine Manufacturing Company, of Lancaster, Pennsylvania, are shipping one of their animal power outfits to Champerico, Gautemala.

Fire at the plant of the Bellmark Pottery Company, Trenton, N. J., caused a loss of \$2,500. The flames started in the sagger room and the firemen got the fire under control before much damage had been done.

The Middleton Clayworking Company, Middleton, Nova Scotia, are installing at the present time a Martin disintegrator complete, supplied by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

The Muscatine Clay and Tile Company is the name of a new concern at Muscatine, Iowa. B. F. Greiner is president, J. W. Ellis, secretary, and Fred Garrison, treasurer of the company, which will erect a plant at once for the manufacture of brick and tile.

Collinsville, I. T., wants a good brickmaking plant. They have good shale, splendid water and fuel (either coal or natural gas) supply, and a steady demand for brick. Any one interested can get particulars by addressing J. R. Caudle, Secretary of the Collinsville Commercial Club.

Lorenzo Davis, of Montgomery, Ala., and a number of gentlemen have purchased a large tract of land at Americus, Ga., on which there is a deposit of very fine kaolin, which they will develop. In addition to shipping the kaolin, they will probably erect a pottery on the property.

The lower plant of the Pennsylvania Clay Company, located in Crows Run, Pa., near Conway, was destroyed by fire March 10, entailing a loss of from \$25,000 to \$30,000. About 40 men will be thrown out of employment until the plant is rebuilt, work on which will be begun without delay.

C. E. Poston, of Crawfordsville, Indiana, will build a paving brick plant at Attica, Indiana. Plans for the plant are now being prepared and the work of construction will begin in a short time. The plant, when completed, will be a model in many respects, and will have a capacity of 30,000 brick per day.

Articles of incorporation for the Central Kentucky Brick and Tile Company have been filed. The principal office of the company will be at Lexington, Ky., where a modern plant for the manufacture of brick and tiling will be erected at once. F. H. Hulett, B. S. Kinkead, C. J. Bronston, F. H. Clarke, B. C. Hagerman and M. Wilson are interested in the enterprise.

The Atlanta Brick and Tile Company, which was organized in 1905 and established a plant at Brickston, Ga., will make extensive improvements to its plant. At present the capacity is 25,000 bricks per day, and this will be increased to 70,000 or 80,000. New equipment will be installed, including brick machinery, 250-horse-power engine, two 150-horse-power boilers, steam shovel, patent dryer, etc.

The Fitchburg Brick Company is the name of a concern recently organized to take over the brick plant and clay property of the late E. A. Goodrich, of Fitchburg, Mass. The officers of the company are, Frank H. Foss, president; F. C. Nichols, treasurer, and Robert Marcy, secretary. The company will at once install new machinery and get the plant in condition for the season's run.

An entirely new sewer pipe factory is being built on the space adjacent to the Owensboro (Ky.) Brick and Sewer Pipe Co.'s plant by the company. The old plant, which has been in operation for several years, has been enlarged several times, and it is now to be used exclusively for the manufacture of drain tile. The new building is to be 200 feet long by 60 wide and three stories high. It will be a frame and the upper stories will be used as drying rooms chiefly. In addition to this main building there will be engine and boiler rooms separate from it. The machinery is already on the ground

and will be installed as quickly as the building is ready for it. Mr. Robert Conner is superintendent of the plant.

The Union Brick Company, of Iola, Kansas, will make some experiments in burning brick with oil, and if they prove successful, will adopt that fuel in place of natural gas.

The temporary office of the Arthur Koppel Company, 515 Market street, San Francisco, Cal., has been moved to the new permanent office at 1509-10-11 Chronicle Building, that city, where visiting clayworkers will be very welcome.

Friberg Brothers, contractors, of Portland, Ore., have purchased a forty acre tract of land near that city, on which they will erect a 40,000 daily capacity brick plant. The demand for brick in that section has been greater than the supply for some time.

Mr. P. Lafond, of Sand Point, Idaho, has just installed a Martin all iron and steel style "P" steam power brick machine complete, including sander, etc., purchased from the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

Alexander Kerr, of Spokane, Wash., is organizing a company for the manufacture of brick and fire clay near Northport, Wash. The clay found at that point is said to be free from grit, and it is there in sufficient quantity to enable a plant to operate for years.

John A. Cameron and associates have purchased the machinery of the Lawton (Okla.) Pressed Brick Company and moved it to Comanche, I. T., where a large plant will be installed. Fine shale beds are found in that vicinity and the promoters are preparing to begin opening them at once.

The Mansfield Brick Company has been organized to establish a brick manufacturing plant at Rockmart, Ga. The company owns a large deposit of shale from which pressed and common brick will be made. J. A. Scott, Charles K. Weller, J. E. Brown, Robert H. Brown and others are interested.

C. & A. Potts & Co., Indianapolis, Indiana, announce that they have closed their New York office, which was in charge of Mr. F. W. Richardson, and the latter gentleman has severed his connection with the Potts company. All mail should be addressed to the Indianapolis office.

D. C. Postol and son, C. H. Postol, who for several years conducted a tile business at Morral, Ohio, have dissolved partnership. C. H. Postol will continue the business at Morral while his father will move to Mt. Victory, where he will engage in a similar business.

The Dunning Brick Company, recently incorporated at Aulander, N. C., has about completed the erection of the necessary building and installation of machinery. The company will take over the brickmaking business of J. A. Dunning and will also build a second plant at Cofield, that State. B. G. Williams is president, J. A. Dunning, manager, and W. S. Dunning, secretary-treasurer.

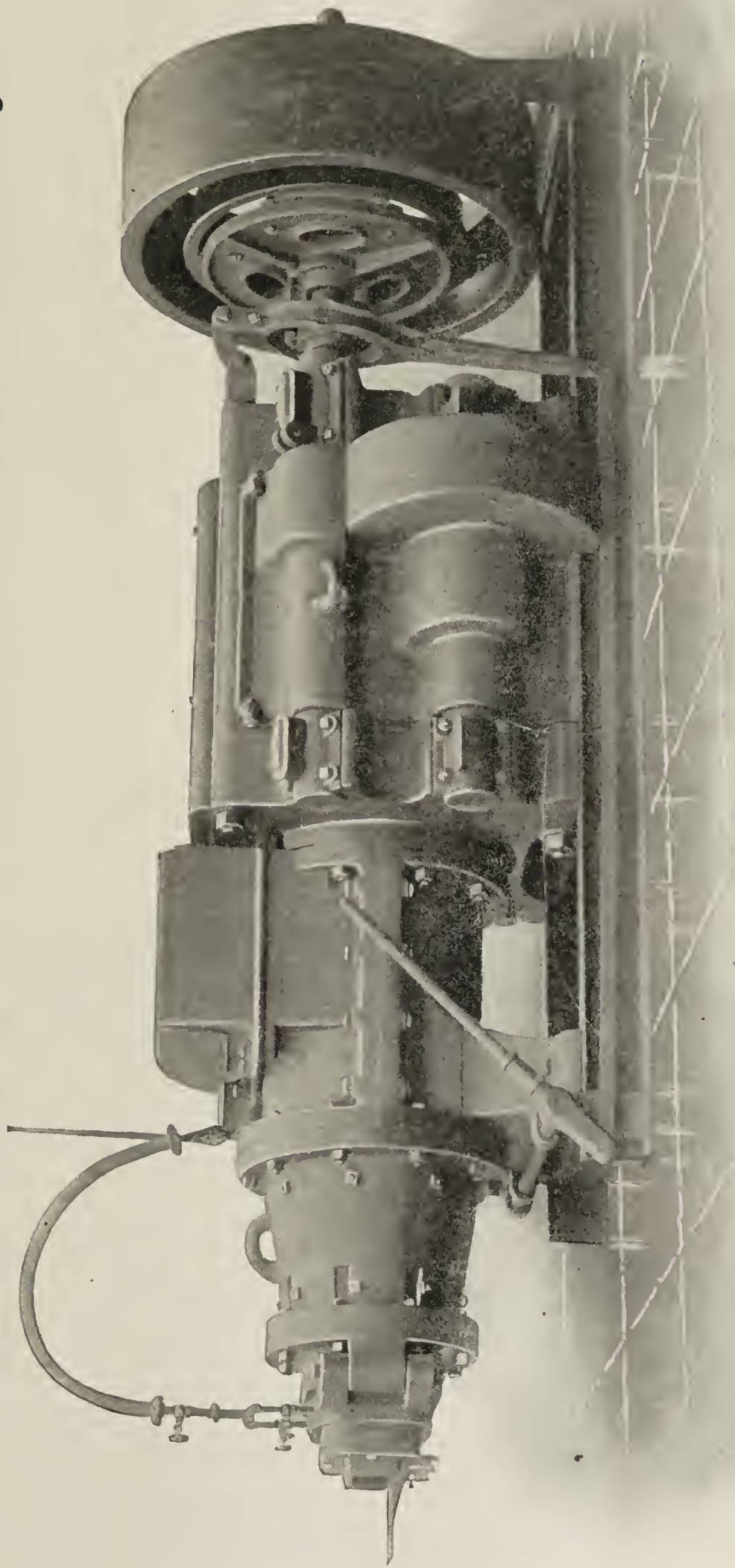
George F. Cotton, who has had practical charge of the Cotton brick plant, Table Rock, Neb., since its erection in 1893, has purchased a half interest in a brick plant at Seward, Neb., to which place he will remove with his family the latter part of the month. He will superintend the business of the plant. Mr. Cotton is a fine business man and a practical brickmaker.

The E. M. Freese Company, of Galion, Ohio, has sold the machinery for manufacturing brick for the tallest stack in the world. The stack will be constructed for a copper and silver smelter at Great Falls, Mont. This stack will be 565 feet high and 60 feet across the base. The magnitude of the work is such that the company will manufacture its own brick on the site of the proposed stack and the Freese brick machinery has been purchased for the purpose.

Just ten hours before it was expected to resume work, after the expenditure of \$10,000 for repairs, fire at the Calder brick works at Emporium, Pa., on Wednesday, March 9, did fully \$10,000 worth of damage. The machine room was destroyed, but by the heroic efforts of Superintendent Walker and his men they succeeded in saving the power house, band house and part of the tipple. Before the fire had hardly subsided, Mr. Walker got in touch with the officers of the company at Detroit, Mich., and left later to meet the company with all plans formulated to repair the damage. The plant had been put in elegant shape by expending an additional \$10,000 sum in enlargement of the works. They have orders on their books for millions of block and will rebuild at once, it requiring

(Continued on page 562.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

EDITORIAL NOTES AND CLIPPINGS—Continued.

about eight weeks to repair the damage. The loss is covered by insurance.

The Hancock Brick and Tile Company, Findlay, Ohio, has recently purchased a Thew automatic shovel, which will greatly facilitate the work of getting in their clay.

The Akron Brick and Tile Company has been incorporated with \$40,000 capital stock, by W. T., C. B., G. S., and Alfred Akers and F. M. Harpharm, all of Akron, Ohio.

James E. Romig is making plans for the establishment of a large building brick plant near Hillside, Pa., where he has a fine tract of clay land. The plant will have a capacity of 40,000 brick per day, and will be modern in every particular.

Mr. James Lochrie, of Toronto, Ontario, is installing a Martin improved style "A" steam power brick machine in combination with a 10-ft. pug mill and mold sander, this being one of the modern improved Martin machines built at Lancaster, Pennsylvania, by the Henry Martin Brick Machine Manufacturing Company.

Workmen at the plant of the American Clay Machinery Company, at Bucyrus, Ohio, were greatly surprised recently while testing a lot of clay from California, when half a dozen mice scampered out of the big chunk from the coast. The clay had been shipped by express from the coast to Bucyrus, for the purpose of being tested. The mice had been spaded up in California with the big lump of clay, and while the clay was being tested at the Bucyrus plant, the young rodents scampered out, to the great surprise of the workmen.

The Western Roofing Tile Company, Coffeyville, Kansas, started up its plant again the latter part of February, after having been shut down two months occasioned by the fire of December 6. Fires, as a rule, are a bad thing, and in this case, the loss was heavy, but the plant is now in so much better shape than before that the fire proved almost a good thing. The rebuilt plant is larger, better and more substantial in every way than before, being practically fireproof. Its capacity is now practically double what it was before the fire.

They have a heavy demand for their product, shipping as far west as Denver and as far east as Boston.

The Alexander Brick and Terra Cotta Company has recently been incorporated at San Francisco, Cal., with \$200,000 capital stock, by A. G. Hebgen, Robert Alexander and Edwin J. Hanson. A plant will be built at once.

Messrs. H. C. Carroll and Sons, Philadelphia, Pa., have received from the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania, two of the modern Martin machines with combination horizontal pug mill. This will be used in combination with their new equipment.

THE A. B. C. ENJOYING PHENOMENAL GROWTH.

To say that the business of a manufacturing concern is prospering and the size of its plant increasing is commonplace. This condition is the rule rather than the exception, and has been for several years. If any attention is to be paid to such statements, it must be based upon the relative growth of concerns in the same line of business.

When a concern, after showing a remarkable growth for a number of years, can report anything like an increase in one year of forty per cent., there must be some peculiar merit to their product and to the manner of doing business.

The American Blower Company, of Detroit, Michigan, is enjoying such a phenomenal growth that it is worthy of special note. Just at present a large addition to their steel plate fan shop is about completed and will be ready for occupancy in another thirty days, and at the same time, the company's architects are at work on a large addition to their power plant and to their engine construction department. This is the way it has been going on for some years. One addition has followed close upon the heels of another until the company now, unfortunately, has no ground left to grow on. But a few years ago the engine department of this company was almost a side line, but now, since putting on the market their new vertical, self-oiling engine, which has met with such exceptional success, the engine department is taking first place and is forcing an entire re-arrangement of the plant.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL.

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION.

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

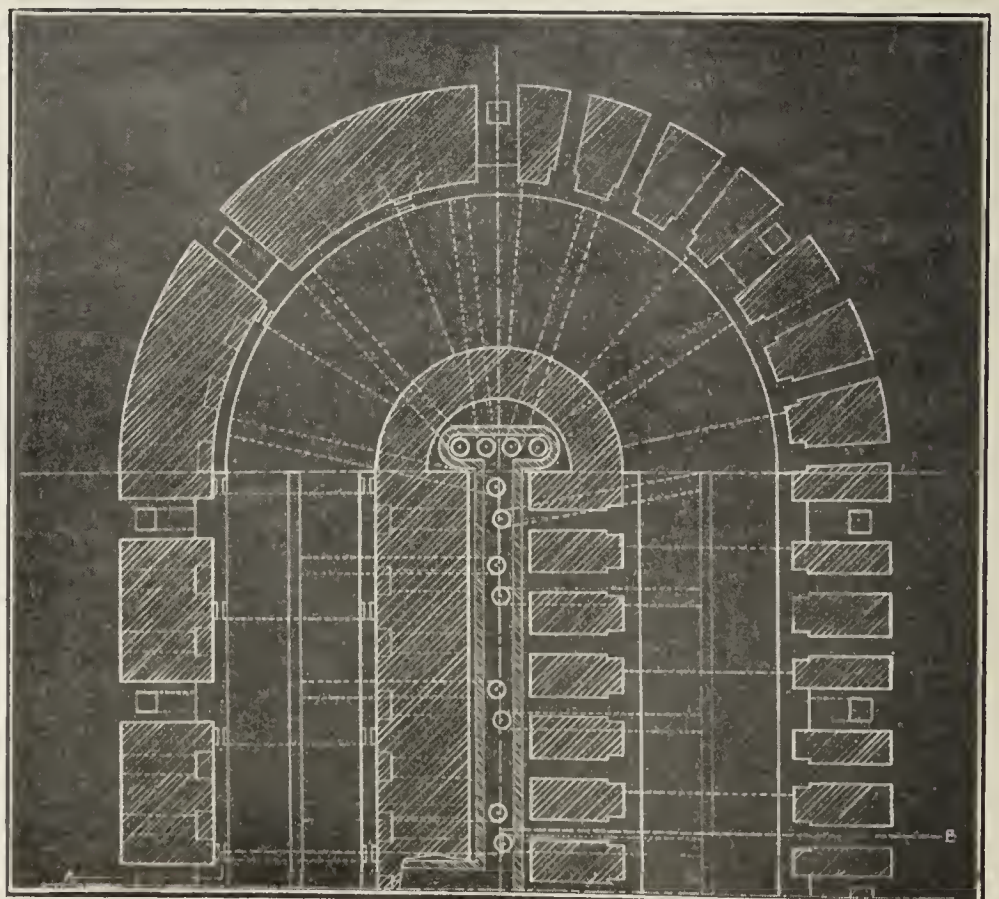
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

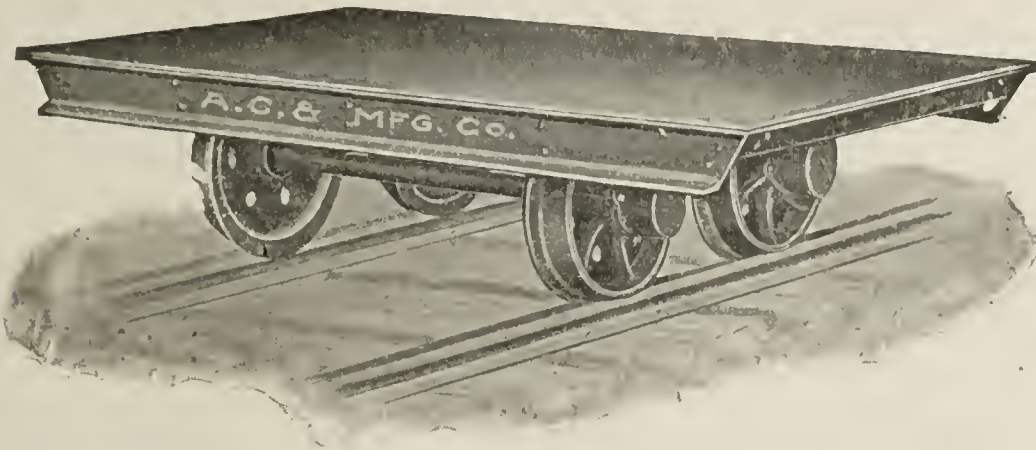
This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



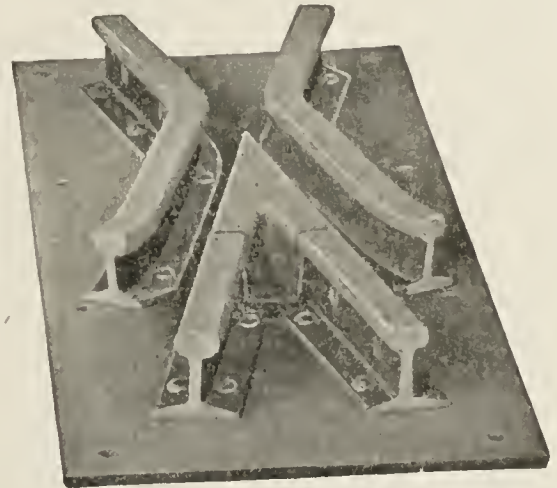
WILLIAM A. BUTLER, Patentee, 34 Parkside Avenue, San Francisco, Cal.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

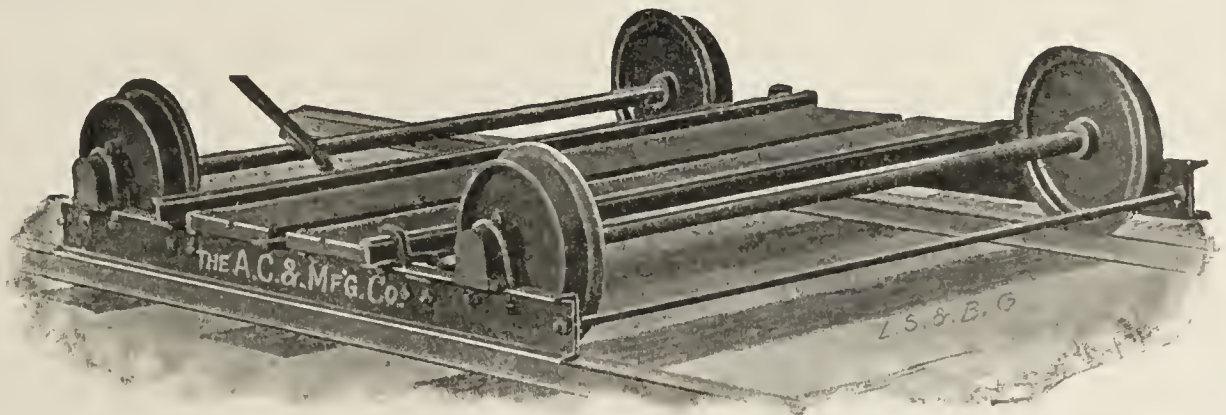
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for THE CLAY-WORKER.

NOTES FROM TIDEWATER, VA.



R. M. P. ADAMS, of Emporia, Va., is in the market for machinery to manufacture paving blocks from wood fiber and chemicals. In a recent letter from Mr. Adams, asking information about such machinery, he said he intended to put in such a plant in the early spring, to manufacture paving blocks from wood fiber and chemicals, under a new process. He wants information about machinery that would handle this material.

Mr. Raleigh T. Daniel will build a new brick plant at Weldon, N. C., this spring. He has made shipment of clay to the Suffolk Clay Company, Suffolk, Va., to be tested. He will soon be in the market for new machinery.

Mr. John Sailes is building a new brick plant at Waverly, Va. He has bought a J. D. Fate Hummer machine, and side-cut cutting table. He expects to be in full running order by early spring. The machinery is now on the ground.

The city of Valdosta, Ga., is advertising for bids for the paving of South Patterson street with vitrified brick; also 2,000 yards of cement sidewalks. J. J. Newman, City Clerk.

The city of Wilmington, N. C., is advertising for bids for paving Front street with vitrified brick on concrete foundation; 16,000 yards. Patrick Matthew, City Engineer.

Mr. W. R. Frazier, of Suffolk, Va., will build a new brick plant on the A. C. L. Railway at Suffolk, Va., this spring. The property has been purchased and he will soon begin the erection of the plant.

Whitfield Bros. Company are building a new brick plant on Nansemond river, near Suffolk, putting in Chambers machinery. The plant is well under way and will soon be ready

to turn out brick. Their office and shipping point is Suffolk, Virginia.

There is a rumor that Wakefield, Va., is to have a new brick plant this spring. It has not terminated in anything definite as yet; it is being worked a little on the quiet.

W. G. Williams & Bro. are rushing work on their new brick plant at Franklin, Va. This plant will be equipped with the latest improved machinery and steam dryer, with a daily capacity of 30,000 brick. Charles Parker, of Suffolk, Va., is erecting the plant and will manage it for them.

The Southern Contracting Company made an assignment, on February 18, throwing up a number of unfinished contracts. The unfinished street paving in Suffolk, Va., is about 12,000 yards of vitrified brick. The City Council, at a meeting held on February 16, gave the unfinished contract to James L. Mc-Lemore, of Suffolk, Va., who will have until June 1st to finish the contract. The brick used in this work is the Maxwell block from Portsmouth, Ohio.

A charter was granted, on February 20, to the Granite Brick Corporation, of Norfolk, Va. E. S. Mahoney, Norfolk, Va., president; L. F. Kwiatowski, New York, vice president; Edward Mahoney, Norfolk, Va., treasurer; capital stock, maximum \$150,000, minimum \$50,000, to manufacture brick.

H. L. J.

WILL DOUBLE CAPACITY TO MEET DEMAND.

Editor THE CLAY-WORKER.

We herewith enclose check to renew our subscription to THE CLAY-WORKER for another year. Business with us has been excellent the past season and the prospects for the coming season is still better, so much so that we are making plans to double our capacity to meet the demands.

Yours respectfully,

SACO BRICK CO.

WANTED, FOR SALE, ETC.

FOR SALE—One Lion brick machine. In good condition.
PROGRESS PRESS BRICK AND MACH. CO., St. Louis, Mo.
3 2 c

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States.
WESTERN CLAY DEVELOPMENT CO., Van Meter, Iowa.

FOR SALE—One "Quaker" soft mud brick machine, twenty thousand capacity in "A one" condition. Reason for selling, changing to stiff mud process. Price, \$150.00. Address,
POLK CLAY WKG. CO., Fort Branch, Indiana.
3 1 cm

FOR SALE OR LEASE to one or more tenants. Valuable brick property, at Fiskill-on-Hudson. Four fully equipped yards, river frontage, docks. Clay inexhaustible. Capacity fifty million bricks annually. Particulars from
BENJAMIN RICHARDS, 75 Liberty St., New York.
3 1 dm

WANTED—To become associated with a firm manufacturing clayworking appliances and having established business. Have from \$2,000 to \$4,000 to invest with services. Am ceramic engineer with five years' experience in brick machinery business. Address,
HAVERSTRAW, Care Clay-Worker.
3 1 dm

WANTED—Situation as manager by one who is thoroughly familiar with all details pertaining to the erection, manufacturing and marketing of either stiff mud or dry pressed brick. Can give all references and will expect fair compensation for services and experience. Address
3 tf d I. X. L., Care Clay-Worker.

FOR SALE—Complete plant for making brick and drain tile. Eight acres of land, plenty of clay for both red and white brick. Would consider selling part interest in plant to experienced man. For particulars address,
MULLIKEN BRICK & TILE CO., Mulliken, Mich.
3 1 dm

WANTED—A sober, industrious, competent man, as foreman for a stiff mud brick plant, with some capital to take stock in the company. For particulars, address,
WATERLOO & CEDAR FALLS BRICK CO., 16th and East Sts., Waterloo, Iowa.
3 1 c

BRICK PLANT FOR SALE.

The property and plant of the American Hygienic Brick, Tile and Fireproofing Co., Inc., consisting of about 180 acres of clay lands, dryers, kilns, machinery, steam shovel, scows, etc., located at Riverside Park, Va., near Washington, D. C. Capacity, 60,000 brick per day. Water and railroad facilities.

The plant can be operated immediately. Good title will be made to purchaser through Chancery Court of the City of Richmond. Property leased to highest bidder until sale. Correspondence invited.
S. P. STRINGFELLOW, Receiver,
3 1 dm P. O. Box 626, Richmond, Va.

ATTENTION!

Steam Shovels, Cars, Locomotives of all kinds and Rails.

Give us your requirements.

THE MALES CO.,
26 Cortlandt St., New York, N. Y.
1508 First Nat'l Bank Bldg., Cincinnati, O.

FOR SALE.

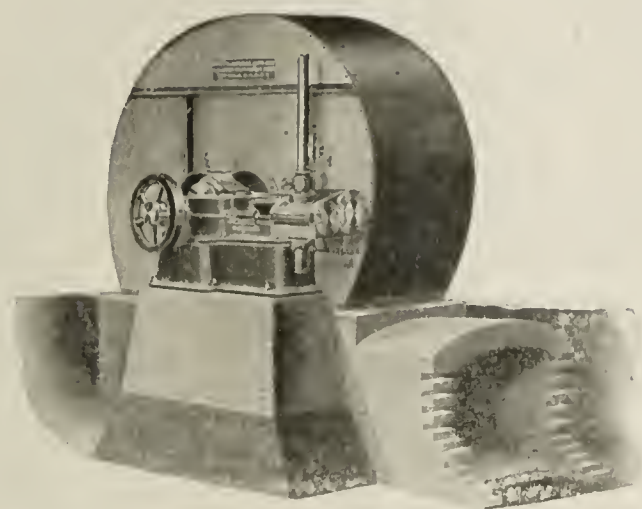
A practically new outfit.
Martin Letter B Brick Machine.
Martin 9 Ft. Pug Mill.
Martin elevator with belt.
Martin Brick Barrows (six.)
Martin double deck trucks (three.)
Kiln grates, doors, 10,000 pallet boards.
A complete outfit. Been used but three months. Good, desirable property, in excellent condition, but must be sold at once at some price.
SIRENO F. ADAMS, Attorney,
3 3 cm Dansville, N. Y.

FOR SALE—BRICK MACHINERY.

One 999 Raymond brick machine.
One Raymond automatic cutting table.
58-ft. carrier belt, 112 wood rollers, pulleys, etc.
Three Victor represses, each fitted with three set of dies.
One 10-ft. Raymond pug mill, complete.
We have discontinued the manufacture of paving brick and offer these machines at attractive prices. Address,
ROBINSON CLAY PRODUCT CO.,
3 1 d Akron, Ohio.

[Continued on page 570.]

BUFFALO WASTE HEAT DRYER.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

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Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



KANSAS CITY appears to now be on the eve of the most prosperous era it has ever experienced. The fact that the new union depot location has at last been definitely settled is the main factor in this expected prosperous era. The location has not only been settled,

but a union freight terminal of great extent has been planned, and work is to begin very shortly along the line of improvement. This improvement has been needed for years, and now that the railroads are going to take hold, they promise that everything will be done on a large scale. They are going to spend \$50,000,000 in buying the land for these terminals and building the depot itself, which is to cost \$2,000,000, so it will be seen that a large part of the money they will spend will go into the hands of the property owners of the city for the land needed, and it is to be expected that this money will not be allowed to lay idle, but will be put into other property or into developing business channels. This will insure a great deal of building, even though there was no other cause. The fact that all kinds of buildings which have been constructed in the past are well filled, and at a good rental, is also a reason for the expectation of further investments in this line.

The lack of proper freight facilities has held back manufacturing enterprises in the best sections, the east bottoms and the Blue valley, and now that there is to be union freight depots in both these sections, so factories can make either car or local shipments from a near-by station, it is expected that factories will take advantage of the cheapness of property in both sections and will soon build them up.

The demand for brick is already strong, and the indications are good for a big year for all the brick plants in the city and also in the Kansas gas belt, but the business of the latter will depend a great deal on the railroads. There would be no question about the orders. The demand for brick will be heavier than ever before, but the railroads have not been handling the freight in a satisfactory manner for months, and there is no indication of any improvement. A man who is in close touch with the situation predicts that before the close of the year there will be a good many brick plants idle in Kansas, merely because they can not get their product shipped to market, even though the market may be demanding it ever so urgently.

There has been nothing heard about labor troubles, and it is not anticipated that anything of the kind will develop here. Laboring men, especially builders, are well paid, and the employers organization has a number of times proved itself to be too strong for other organizations to fight in a strike, so the ordinary union is a little careful about striking of late.

The report of the superintendent of buildings for the month of February shows that there was a nice increase in the amount of building, as compared with the same month of last year. The total number of permits issued was 265 against 248 a year ago. Of these, 35 were to be of brick construction, to a value of \$258,000. The total estimated value of buildings for which permits were taken out during the month was \$602,215, as compared with \$464,255, or a gain of \$137,960 in comparison with February, 1906.

Among the many new buildings planned to be started in the business district of the city this year is a new 16-story hotel, to go on Grand avenue. It will be modeled after one of the big New York hotels, and will be provided with a roof garden for summer theatricals. With the location the roof garden will be above all other buildings, and should give an admirable view of the entire city.

Walter S. Dickey, president of the W. S. Dickey Clay Mfg. Company, seems to have gone into the newspaper business, as he recently purchased The Review, a Republican paper of Jefferson City, Mo., which was sold under foreclosure of a mortgage. Mr. Dickey is a member of the State Republican Committee, and it is wondered by some if he has political aspirations which are to be fostered by his own press.

At the present time all the brick plants located in Kansas City are closed down, with the exception of the plant of the

Lyle Brick Company. They are running their old plant full time, and are entirely unable to keep up with their orders. Work has been begun on the site for their new plant and it will be rushed to completion as soon as possible, so it can take care of part of the demand.

It is stated on good authority that some of the Kansas gas belt yards have been shipping brick to St. Louis of late, even with the ten cent rate. This is a good deal like "carrying coal to Newcastle."

The Eadie Building Supply Company is reporting a good business. The last week in February their sales amounted to 1,250,000 brick, which was surely not bad, considering the season and railroad freight condition.

The Kansas City Hydraulic Pressed Brick Company is going to be better prepared to get business this year than ever before, having engaged traveling representatives to cover the neighboring territory. Each agent will establish headquarters in his state, keep samples there, and then cover surrounding territory. It is stated that they will have three city salesmen here the coming season.

Flannagan Bros. have closed down their plant for repairs, having run all winter to the present time. This is the first winter they have ever continued to run. They are now working a force of men night and day to overhaul the plant and get in good shape for the coming season as quickly as possible, as they have much business already on hand to take care of. A start will be made at the earliest possible moment, so orders already booked can be filled.

The Pittsburg Brick Company has been making some improvements to its plant in Pittsburg, which is having such a demand for its brick that it seems utterly impossible to keep up with it. A new machine shop has been furnished and it is equipped to take care of all their own repair work, including casting. They are beginning the construction of three new kilns and this will give them nineteen kilns. It is planned to put in a new machine which will help to greatly increase the output, and the coming year should make a good showing with them.

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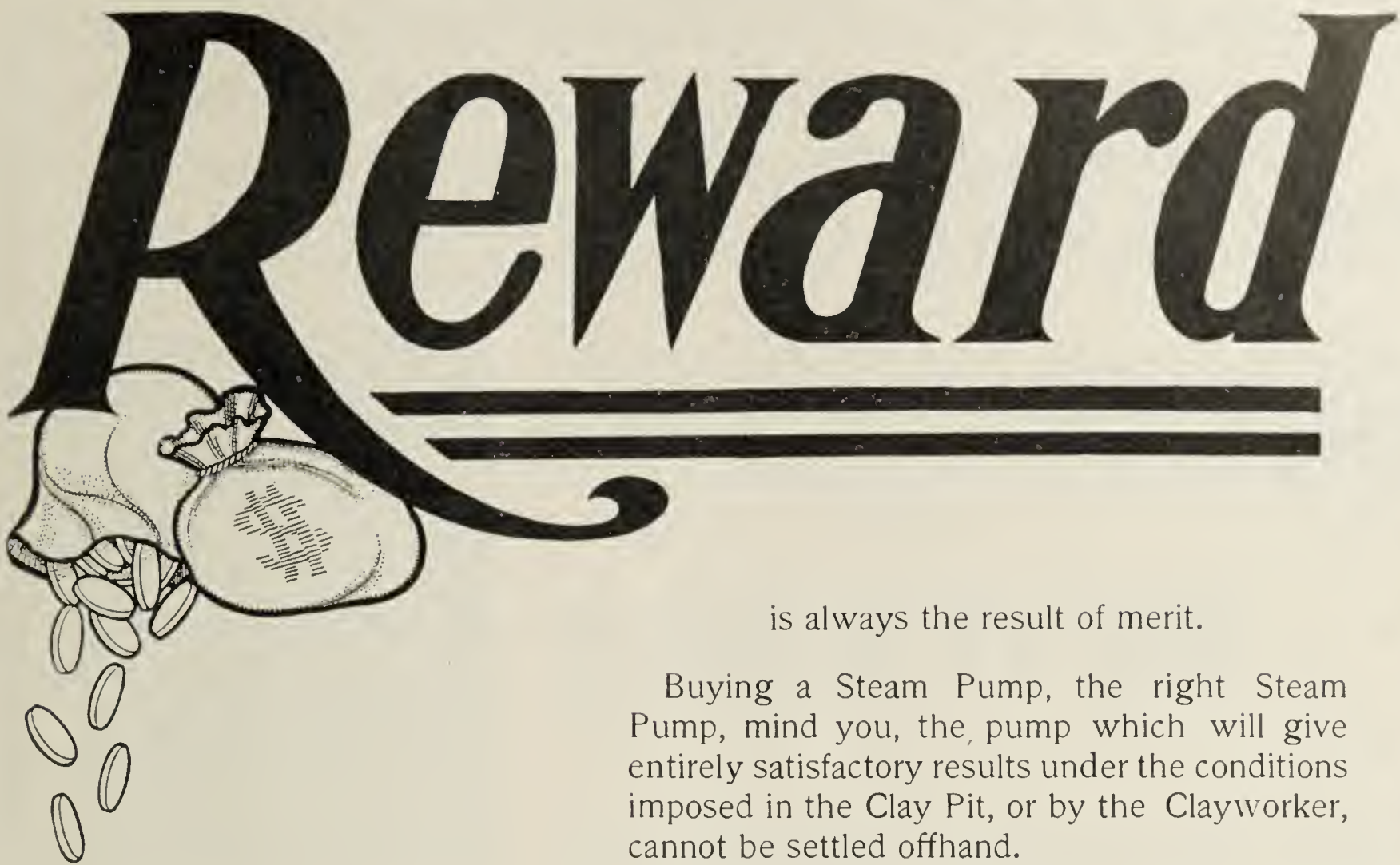
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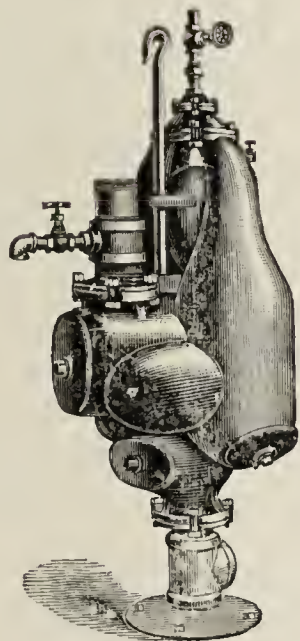
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By

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In the April number of THE HOME MAGAZINE will appear the first installment of a new novel by Francis Lynde, author of The Grafters. The new novel is entitled

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Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

WANTED—About fifty second hand tunnel dryer cars, 25 inch gauge, steel frames. Also 12 to 14 foot pug mill. Address, C. H. E., Care Clay-Worker.
3 1 d

WANTED.

Competent brickmaker, thoroughly familiar with the manufacture of fire brick. Address, C. A. WECK,
3 1 c Yerington, Nevada.

FOR SALE—Rathsum patent flower pot machine, with 8 molds, 2½ to 7 inches, inclusive. Also German clay roller and kick wheel. First class condition. Address, "BROOKSIDE,"
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FOR SALE.

Two complete sets brickmaking machinery, including Chambers brick machines, elevators, clay rolls, granulators, hoists, etc. Address ILLINOIS BRICK CO.,
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3 1 c

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Twelve hundred brick pallets, 9½ by 31 inches. Good condition. Suitable for five mold machine. A rare bargain. Address, WILL DEARNIM,
3 1 cm Elnora, Indiana.

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3 3 cm Care Clay-Worker.

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3 1 cm J. W., Care Clay-Worker.

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Capital to develop 400 acres of clay suitable for tile and pipe. Address, A. W. BREMER & SON,
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One 10x10x12 "Guild & Garrison" horizontal duplex, steam driven.
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One 50 h. p. "Olds" gas or gasoline.
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One 7x9x10 "Dean Brothers," jet condenser.
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One 66 inches by 16 feet, standard horizontal tube.
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One 18x26x42 heavy duty, tandem compound, Allis-Chalmers corliss.
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One 300 h. p. Ver., closed.
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FOR SALE—Neat little brick and tile plant; capacity, 1,000,000 brick per year. Or will sell interest to some one to run it. Will take but little cash. Address TERPENING BRICK & TILE CO., 1 3 cm Farmington, Ark.

FOR SALE—A well equipped brickyard, located in Mississippi. Capacity 40,000 per day; well located; good clay, and up-to-date machinery. Will sell at a bargain. Address J. S. LOVE, 1 3 cm Lumberton, Miss.

WANTED—An intelligent foreman for a lime bond, silica brickyard. Must be capable of taking full charge of yard from quarrying of the stone to the burning and loading of the brick. Apply to X. Y. Z., care Clay-Worker. 1 3 cm

FOR SALE.

One four-mold Boyd special dry press machine, complete with 36-inch Williams' cage pulverizer, screens, mixer, all ready for use, in first-class condition. One extra set of dies and die plates for the above. This machine can be seen installed at the Rayne brick plant, Rayne, La. Apply HAUBTMAN & LOEB CO., Ltd., 228 S. Peters St., 2 2 dm New Orleans, La.

FOR SALE

High grade brick plant at a special offer. An exceptional opportunity. Good reasons for selling. Business established. Large orders for next season's delivery. Only working capital required. One of the best plants in the country for the manufacture of high grade vitrified white brick. Only parties of experience and meaning business need apply. Address, 1 2 dm P. O. Box 595, Harrisburg, Pa.

FOR SALE—At a bargain, small brick plant. Henry Martin soft mud machine. Good town on railroad, central southern Illinois coal field. No opposition. Reason for selling, other business. Address A. J. BINKLEY, 1 3 cm Marion, Ills.

WANTED—Copies of Davis's Bricks, Tiles and Terra Cotta. Good price will be paid if same is in a good, presentable condition and free from mutilation. Address APPRENTICE, 10 1 L Care Clay-Worker.

FOR SALE—One No. 80 Brewer board delivery cutting table with attachments for cutting two thicknesses of brick. First class condition, used only three days.

BESLEY BRICK COMPANY, 3 2 d Council Bluffs, Iowa.

FOR SALE.

One second-hand No. 4 Hercules brick machine and one mold sanding machine. Brick machine was made by Horton Manufacturing Company, of Painesville, Ohio, and is a first-class soft mud machine, as good as new. Reason for selling is, that we have stopped use of all soft mud machines.

UNITED STATES COAL & COKE CO., 2 2 d Gary, McDowell County, W. Va.

FOR SALE CHEAP.

One Henry Martin letter A brick machine and pug mill, complete and in good condition. One 50 h. p. boiler. 40,000 lath pallets, 10 by 33, also standards for same. Standard 2 by 4 inches by 6 feet, pine, with a 2 by 4 by 24 inch foot piece, 10 one inch pins. Cheap for cash, f. o. b. Cleveland, Ohio. Address,

JOHN WILSON, 23 Stillson st., 3 tf d Cleveland, Ohio.

FOR SALE.

One 4-mold '97 Model Boyd brick press, complete.

One 8 wet pan, complete.
One 9 iron frame dry pan, complete.
One No. 4 Monarch brick machine.
One 9 Fire brick press with extra plate and molds for same, also molds, dump table, trucks, belting, shafting, pulleys, anvils, forge, carpenters tools, etc. Used very little. Will sell at great bargain. W. W. RUSSELL, Trustee, 3 2 cm Fort Payne, Ala.

BRICK PLANT TO LEASE.

On account of the death of the owner, will lease to reliable parties on a reasonable royalty, brick plant located one mile above Charleston, W. Va. Clay is suitable for making buff, grey, iron-spot and coke oven brick. Machinery the latest and best, with a capacity of 30,000 per day. Good demand and the best of shipping facilities, with private switch. For particulars, address,

MRS. W. A. BRADFORD, 3 1 cm Charleston, W. Va.

Philadelphia LINK-BELT COMPANY Indianapolis

New York St. Louis Chicago Denver Pittsburgh

CONVEYING & POWER-TRANSMITTING MACHINERY

Converted to Leviathanism.

"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

"Thanking you for your courteous dealing, and assuring you of our patronage for anything in your line we may need in the future, we beg to remain,

"Yours very respectfully,

"Signed: VALLEY BRICK & TILE Co."



Send for "FACTS."

MAIN BELTING COMPANY,

CHICAGO—55-57 Market St.
BOSTON—140 Pearl St.

BUFFALO—40 Pearl St.
NEW YORK—309 Broadway.
PHILADELPHIA—1215-1245 Carpenter St.

WANTED, FOR SALE, ETC.

FOR SALE—A going coal mine, with 24-in. fire clay bottom. Utilization of the fire clay would make this a highly profitable proposition. For particulars, address
JEROME A. TUCKER,
11 5 cm Birmingham, Ala.

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND
CONTRACTING COMPANY,
11 d Zanesville, Ohio.

FOR SALE.

One H. Brewer No. 5 brick machine. One
Brewer stone separating crusher. One 8-
foot pug mill. Address

H. L. SWIFT,
2 2 c Riverside, Iowa.

FOR SALE—One Premier brick machine;
one Bensing automatic brick cutter; one
Hummer brick and tile machine, with ver-
tical attachment; automatic tile and block
cutters; hollow brick and block dies, all
of the J. D. Fate Company make; all com-
plete and in good condition. For particu-
lars, address
C. C. COMPANY,
1 3 cm Care Clay-Worker.

TO SELL OR LEASE.

To a good potter, a good newly built
pottery brick building, 40x50 feet; two
foot-power wheels, one 14-foot down draft
kiln. Clay the best. Will cost \$1.30 per
ton. Trade good, but little ware on hand.
Am no potter, but a brickmaker. Will sell
cheap or lease on good terms. Write if in-
terested to
R. F. ECHOLS,
1 3 cm Longview, Texas.

FOR SALE—Finely equipped shale clay
brick and tile plant of 20,000 capacity, at
Boone, Ia., in coal field; 144 car dryer,
Corliss engine, Freeze mill, dry pan, seven
kilns; all in good shape and now running,
doing fine business. Will be sold for less
than it is worth, as the owner, after seven-
teen years in the business in this location,
is forced to quit on account of loss of
eyesight, and must sell.

J. B. McHOSE,
12 4 d Boone, Ia.

FOR SALE.

One Chambers end-cut brick machine
and pug mill, line shaft, pulleys and boxes,
capacity 30,000 brick per day; also six
steel trucks and pallets and covers to hold
400,000 brick. This machinery is as good
as new, having been run one season only.
It is being taken out to install a plant of
100,000 per day, on account of increased
demand. Address

THE ALTAMAHA BRICK & TILE CO.,
1 t f d Theo, Ga.

ENGINES AND BOILERS.

Engines, 12x36, 16x42, 18x36 and 20x48,
Corliss; also, 40 other sizes; all styles in
stock.

Boilers, 84x18, 78x16, 72x18, tubular;
also, 60 other sizes; all styles in stock.

Let us know what you need and we will
make you a proposition that will interest
you.

THE RANDLE MACHINERY CO.,
1735 Powers St., Cincinnati, Ohio.
1 t f d

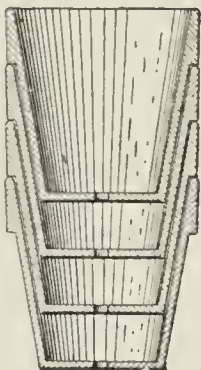
ATTENTION! ATTENTION!

Brickmakers if you want a good market
for Roman, Pompeian white and buff brick,
why not locate a plant on the Philadelphia,
Baltimore and Washington railroad. We
have clay suitable for all kinds of face brick,
also fire brick. Clay runs 22 feet thick.
Would have the best of markets, such cities
as Philadelphia, Chester, Wilmington,
Baltimore and Washington and smaller
towns. Will sell the land or let out on
royalty. Railroad siding on the property.
For further information write,

AMERICAN CLAY CO
1012 Spring Garden St., Philadelphia, Pa.
2 2 cm

COX'S Special Drawn Coil Wire is
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires For End-Cut, Side-Cut
and Automatic Tables.
GEO. S. COX, East Liverpool, Ohio. Satisfaction guaranteed.
Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.

The Rockwood Mfg. Co.,

1801 English Ave.

INDIANAPOLIS, IND.



The Kiln of Kilns is the
"IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY
chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, lime-
stone, etc., with ONE-THIRD the fuel used in intermittent kilns.
No fuel comes in contact with the goods and an oxidizing or reducing atmos-
phere can be produced at will.

All progressive brick manufacturers must have this kiln.

For full particulars please apply to

J. OSMAN & CO., Ltd.,

Cable Address: Dampening, London.

Arundel St., Strand, London, W. C.

THE
WEBB WIRE WORKS

MANUFACTURERS OF

MUSIC WIRE

NEEDLE WIRE

NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE
CUTTING WIRE, drawn especially
to withstand abrasion.

Send for prices of wire in coils.



CANADIAN TRADE.
Wooden Brick Pallets.

WRITE US

BARCHARD & Co., Limited,

135-151 Duke St.,
TORONTO, CANADA.

26-foot vein, covering 200 acres. Located on Chicago & Alton R.R., 70 miles north St. Louis. Miners and shippers of red, white mottled and yellow buff clays for all varieties of manufacture of front, face, enameled brick and terra cotta work, including the encaustic tile, semi-porcelain, pottery and fire brick, fire clays; also red mineral paint clay.

Hicks Clay Co.

Grand Prize and Gold Medal, St. Louis World's Fair, 1904.

Prices and samples free upon request.

Correspondence solicited.

CHARLES T. HICKS, Pres., Drake, Ill.

H. C. WORCESTER Sec'y, Roodhouse, Ill.

Warwood Kiln Co.

SEMI-CONTINUOUS, ROUND AND SQUARE DOWN-DRAFT KILNS
MUFFLE KILNS and
DIRECT AND WASTE HEAT DRYERS.

Warwood's Semi-Continuous Kiln, the cheapest, simplest and most effective first-class kiln on the market. It combines all the advantages of the best type of single down-draft kilns with the fuel saving features of the continuous kilns. It can be built either round or square and each kiln can be used individual or continuous, as desired.

Your present kiln, now constructed, can be easily and cheaply changed to Warwood's Semi-Continuous System, and in most cases your own style of kiln bottom can be used, and without any perceptible difference to its working features.

Warwood's Semi-Continuous System can be successfully applied to all kilns for burning all grades of Brick, Sewer Pipe or Fireproofing. In fact, anywhere a single down-draft kiln is now used.

In a correctly weighed test in a 100,000 capacity round down-draft kiln, we have burned all hard brick with 300 lbs. of coal per M, a saving of more than 60% of the fuel formerly used, and will guarantee to burn 95% hard brick.

Warwood's Kiln will burn any kind of fuel that any ordinary down-draft kiln, either coal, oil or gas. Address:

WARWOOD KILN CO.,

BEAVER FALLS, PA.

**Southern Address,
Augusta, Ga.**

We Manufacture

These Buckets

In All Styles, Sizes and Gauges.

Orders Shipped Promptly.

COLD ROLLED

SPIRAL STEEL CONVEYOR.



**We Also Make Shafting,
Pulleys, Friction Clutches,
Sprocket Wheels, etc.**

WEARS BEST, Costs No More.

**WE MAKE this Conveyor in All Styles
and Gauges.**

SKILLIN & RICHARDS MFG. CO., CHICAGO.

SALEM BUCKETS



FOR SALE.

Grand opportunity to buy a brick, tile and hollow block plant; 10 acres shale; electric power; railway switch to kilns.

Close to the best manufacturing cities in Canada; big demand; now running. Good orders being received daily. Good reason for selling. Apply to W. G. E. BOYD, 1 3 cm Hamilton, Ont.

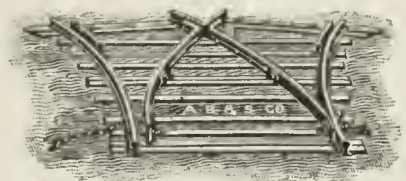
WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH, 5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE CHEAP.

One iron horsepower soft clay machine.
One steam power soft clay machine.
One hand repress.
One disintegrator.
One second-hand sand grinder and sifter.
One 4-mold Boyd Dry Press, never used.
One 250 horsepower heater.
About 500 feet of one-inch wire cable, never used, one-fourth price.
Second-hand dryer cars for sale cheap.
All in first-class condition.

THE HORTON MFG. CO.,
1 tf L Palmsville, Ohio.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
7 tf d Cleveland, Ohio.

FOR SALE

Soft mud plant, capacity 25 thousand. Rack and Pallet system. C. & A. Potts all iron machinery new, 3 up draft kilns, 865 thousand capacity. Twenty acres of land located on two railroads, also suburban line. Within half mile of center of city of 10,000. Cheap fuel and labor. Good local trade, fine shipping point. For further particulars address

WM. READ,
1 3 c Princeton, Ind.

(See additional ads under Table of Contents.)

DRY PRESS BRICK MACHINERY

New or Second-Hand.

Correspondence solicited.

H. S. SIMPSON,

**817 Chamber of Commerce,
CHICAGO, ILL.**

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," \$1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

T. A. RANDALL & CO.,
Indianapolis, Ind.

CONCRETE

Leading Monthly Journal on Cement and Concrete Construction.

Tells all about Reinforced Concrete, Concrete Blocks and Brick, Sidewalks, and all other kinds of Concrete work. Handsomely illustrated. Good information department.

Send for sample copy, 10 cents.
Yearly, \$1.

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DETROIT, MICH.

The Department of Clayworking and Ceramics

Established by the Legislature
in 1902 at the

New Jersey State College,

RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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W. H. S. DEMAREST, D.D., Acting President.

OHIO STATE UNIVERSITY

Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture.

Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

For information or catalogue address,
Prof. EDWARD ORTON, JR.,
Department of Ceramics.
DR. W. O. THOMSON, President,
Columbus, Ohio.

"Latest Improved Wonder of the Age."



I now propose to give all a chance to try "The Swift System" by remodeling one kiln or building one new one for \$100.

Write for particulars to

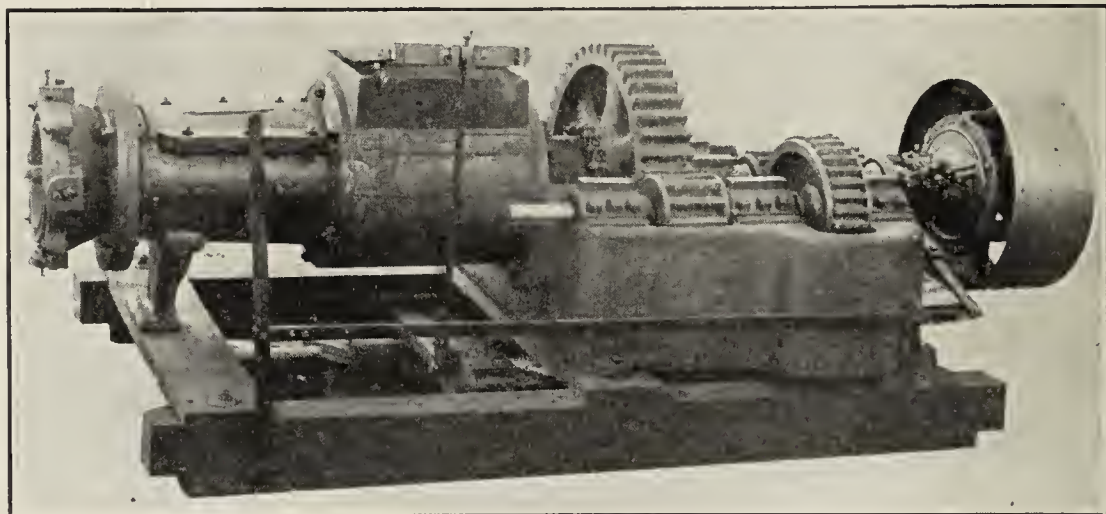
F. E. SWIFT,

514 West Fourth St., Dayton, Ohio.

MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers of Brick and Tile Machines.



No. 5 Auger Tile and Brick Machine with our New Endless Belt Cut-off Table, which has no equal for handling tile of all sizes from 3 to 12-inch. This table has carriers which move with the tile, and can be readily and perfectly adjusted to any size tile.

Our Upright Tile Machines are unequaled for large tile, 10 to 24-inch. These machines are all sold on their merits, and warranted to do first-class work. We also manufacture Soft and Stiff Mud Brick Machines.

Full line of Tile and Brickyard Supplies kept constantly on hand. Get our prices.

MADDEN & CO., Rushville, Ind.

[See ads on pages 610 and 611.]

PHILLIPS & McLAREN CO.

PITTSBURG, PA.

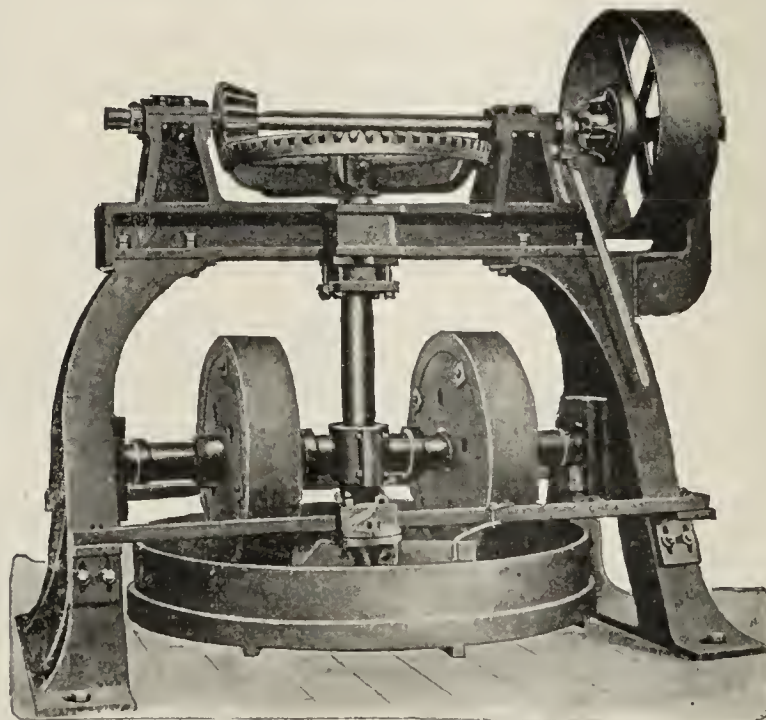
Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.

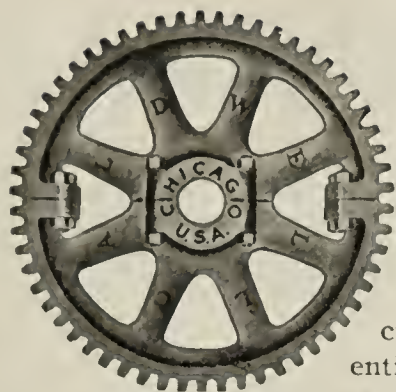
Also
Rock and Ore Crushers.

When writing for Prices state
kind of Clay or Material to be
ground and capacity required.

Eastern Sales Agents
BORTON & TIERNEY CO.,

Stephen Girard Bldg.
Philadelphia, Pa.





Machine-Molded Gears

One to 6-inch pitch and larger. Our machine-molded gears last longer than others, give higher efficiency under actual scientific tests, and in many cases cost no more than inferior gears. Catalogue 27 for all gear users.

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MANGANESE
FOR ALL USES.
LUMP, GRAIN AND GROUND
60-70% 70-80% 80-90% OXIDE.
CLAY WORKERS GOODS A SPECIALTY.
SAMPLES AND PRICES ON INQUIRY.
KENDALL & FLICK
WASHINGTON, D.C.

C. K. WILLIAMS & CO.,
EASTON, PA.

Largest Manufacturers in
United States of

Brick and Mortar COLORING.

Correspondence solicited.

Samples and estimates cheerfully furnished
on application.

GABRIEL & SCHALL
P. O. Box 1712. 205 Pearl Street.
NEW YORK.

Sole Importers in the United States of the

Precipitated  Carbonate
of Barytes

The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

Chattanooga Paint Co.,
Chattanooga, Tenn.

Manufacturers of

Red Oxides for Brick-
makers' Use.

Eclipse.
Mortar Colors,
Red, Brown, Buff, Black.

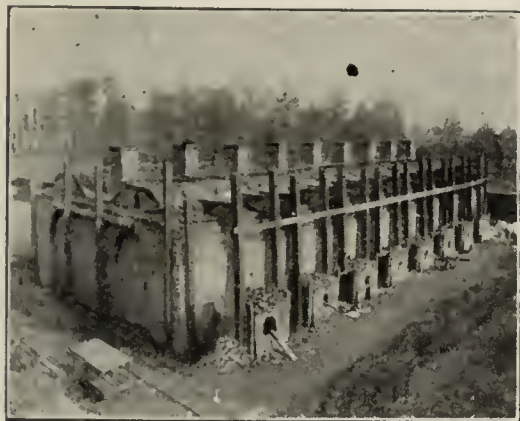
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EXPERIENCED HELP?
See Clay-Worker
Want Ads.

Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air Brick Dryers show many new features that make them superior to all others.

Economical, durable and strong in construction and operation, having many points of advantage that appeal to practical brickmakers.



Double Up and Down Draft Kiln.

Salisbury, Md, August 11, 1906.

Mr. F. W. Dennis, Norfolk, Va.:

Dear Sir—I must congratulate you on your kiln, for I have had lots of experience with other down draft kilns, but I made the best burn that I have ever seen this time, in this kiln. We burnt part of one chamber of tile, and they are all O. K. The kiln holds about 400,000 brick when set right. Wishing you lots of success with your kiln.

Yours respectfully,

C. LANO.

Brick plants installed and put in operation.
Write for booklet. Correspondence solicited.

F. W. DENNIS,
145 Water Street, Norfolk, Va.



THE PIONEER. Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-working industry for the past thirty years.

It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

The Kells Foundry and Machine Co.
ADRIAN, MICH.

Mention the CLAY-WORKER
When writing to Advertisers.

Deal in Nevada Mining Stocks.

Action Sure.

Profits Large.

A Square Deal Guaranteed.

Write us for information.

The Zeb Kendall Company, Inc.
Mining and Brokerage.

P. O. Box 722. TONAPAH, NEV.

ATTENTION.

Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

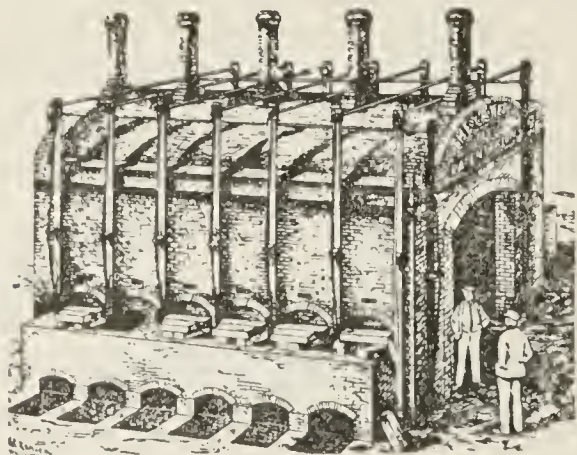
Do you want to buy a

Good Clay Screen?

If So

Correspond with

Stedman's Foundry & Mach. Works
Aurora, Ind.



For Economy of Fuel and Percentage of Hard Burned Brick,

This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

ALFRED YATES,

SHAWMUT, PA.

Or EDWIN A. KING, 911 Walnut Street,
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White Pine Pallets

For Brick, Roofing Tile,
And Sewer Pipe Boards.

The Best Are the Cheapest.

Send Specifications and Get Prices.

Mershon, Schuette, Parker & Co.,
Saginaw, Mich.



FLORIDA NEW ORLEANS AND CUBA

REACHED VIA

QUEEN & CRESCENT ROUTE

—AND—

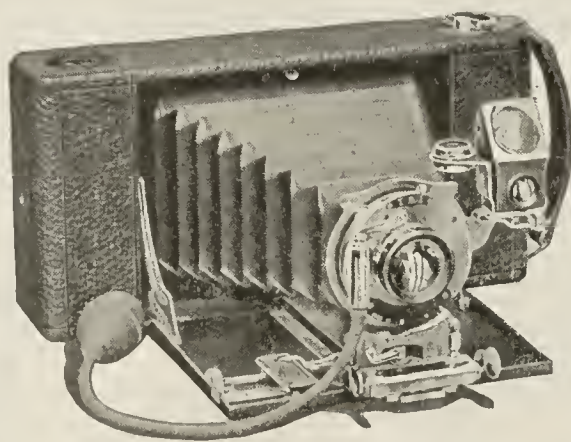
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Winter Tourist Tickets On Sale Daily via Cincinnati. Through Service from Cincinnati, Chicago, Indianapolis, Cleveland, Columbus, Detroit, Toledo and Louisville to Chattanooga, Atlanta and St. Augustine. Double Daily Service Cincinnati to Knoxville, Asheville, Savannah and New Orleans.

For Particulars and Booklet write

CHAS. W. ZELL, D. P. A., Cincinnati, C.

“OPENS THE CORRECT WAY.”



For Pictures, $3\frac{1}{4} \times 5\frac{1}{2}$.

**No. 3 B
Folding
Hawk-Eye**

Loads in daylight with Blair or Eastman N. C. Film Cartridges. A superb lens; an accurate shutter; every desirable adjustment.

Price, = = \$20.00

BLAIR CAMERA COMPANY,

Rochester, N. Y.

Send for descriptive catalogue.

Testing and Controlling Apparatus for Clayworkers.

Draft Gauges, Pyrometers, Cones, Watersmoking and Dryer Thermometers, Test Kilns, Electric Furnaces, Experimental Ball Mills, Automatic Brick Counters, Watchmen's Clocks and other apparatus. All designed to keep a record of your business. Prices on application.

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MANGANESE.

BEST QUALITY MANGANESE, CAREFULLY AND UNIFORMLY PREPARED FOR BRICKMAKING. WRITE US FOR SAMPLES AND PRICES.

NATIONAL PAINT AND MANGANESE CO.,
LYNCHBURG, VA.

MINERS AND GRINDERS.

Why not wash your clay and eliminate losses caused by Sulphur Balls, Iron Pyrites or Unequal Mixture?

The "CROSSLEY" process will save money for you, as it has for others.

THE CROSSLEY MFG. CO.,

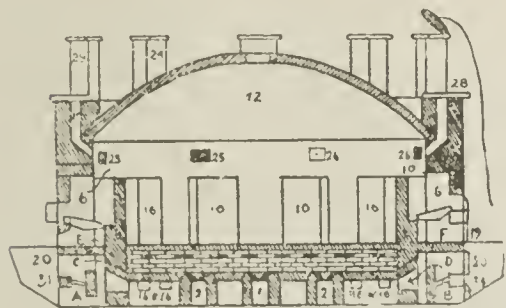
MANUFACTURERS OF

CLAY WASHING
POTTERY
TILE

MACHINERY

TRENTON, N. J.,
U. S. A.

Waste Heat and Furnace Dryers.



Up and Down-Draft and Continuous System of Kilns for drying and burning brick and fire proofing.

ANDREW BOWNE, Matawan, N. J.

THE secret of **successful burning** of any clay product lies in the **right application of heat**. To apply heat **where it is needed** it is obvious that **draft control is necessary**.

Positive draft control is provided by our

IMPROVED FLUE SYSTEM

which has the **right principle** and is simple and easy in operation and construction.

Our kilns are profit makers, burning the brick with the **minimum fuel, shortest time; all the same color and all hard**.

We welcome correspondence from those who intend building new kilns, and from those having old kilns that are not giving satisfaction. Address

J. P. BRADLEY & CO., New Cumberland, W. Va.

TAPLIN, RICE & CO., AKRON, OHIO.

Sewer Pipe and Clay-Working Machinery.

ESTABLISHED 1862.

— AN —

Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



for sewer pipe plants, paving and pressed brick plants and potteries. Full information furnished upon application. In writing please be specific in your inquiries.

Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

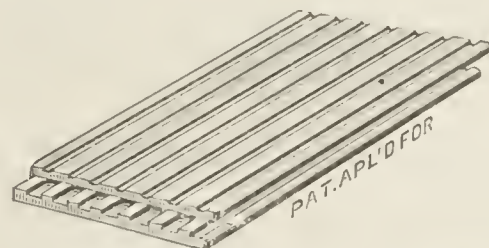
M. SCHULTER,

Industrial Commissioner,

Rock Island-Frisco Lines,

1144 Frisco Building, ST. LOUIS, MO.

Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles, Dies for all shapes, Hips, etc., in metal or plaster.

Special Roller and Auger Presses for Shingles, Interlocking Spanish Tiles, Automatic Shingle Cutting and Punching Tables. Special Tile Tables.

Stiff Mud Machinery for smaller capacity and horse power, stiff mud brick and hollow block dies, dry press liners.

MUELLER BROS.,

39 South Channing Ave. St. Louis, Mo.

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When Writing to Advertisers.

Terms
reasonable.

First-class
references.

If you have trouble with Clay, Machinery
or Kilns, then consult

THE BRICKMAKERS' ADVISOR,

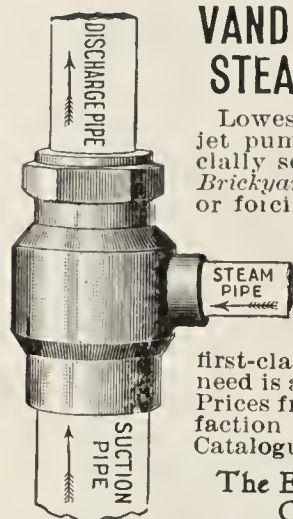
Julius J. Koch,

(25 years practical experience)

3325 Caroline Street, St. Louis, Mo.

Special attention paid to dry clay press
processes and down-draft kilns.

Contracts made contingent upon suc-
cess.



VANDUZEN'S PATENT STEAM JET PUMPS.

Lowest priced reliable steam-
jet pump in the world. Espe-
cially serviceable for *Quarries,*
Brickyards, Mines, for elevating
or forcing water from ponds,
pits, excavations, tube
or driven wells. No
valves to freeze, clog
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Always ready for in-
stant use and makes a
first-class *fire pump*. All you
need is a little steam. 10 sizes.
Prices from \$7.00 to \$75.00. Satis-
faction guaranteed. Write for
Catalogue H.

The E. W. Vanduzen Co.,
Cincinnati, Ohio.



Anyone sending a sketch and description may
quickly ascertain our opinion free whether an
invention is probably patentable. Communica-
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Send model, drawing, rough sketch or
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LACLEDE FIRE BRICK

Are the Best for
BUILDING KILNS.
Laclede Fire Brick Mfg. Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

**Fire Brick for
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Factories:

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ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

— Made by —

MITCHELL CLAY MFG. CO.,

5627 Manchester Avenue.

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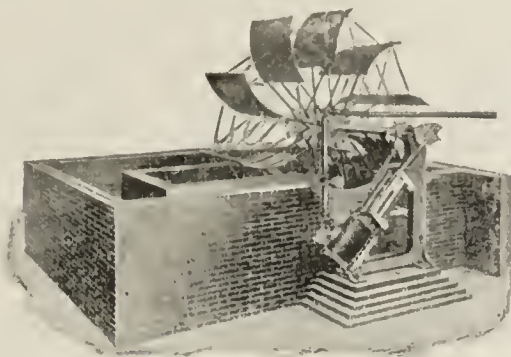
\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

Fans For Waste Heat

Purposes, and for mines, with long, heavy shafts and two or more journals. No wobbly shafts, and no overhung fan wheels. Just plain fan wheels. Large volume at moderate pressure. Experience of more than twenty-five years. Orders come spontaneously and as liberally as ever. Voluntary testimonials from users everywhere.

Waste Heat Fans, acknowledged by users to be superior to others working side by side.

Cheap and substantial construction. Original Flexible Braces. Air Cooled Ring Oiler Boxes. Moderate Speed. Brick fan house, most durable of all construction. An efficient Cooler made integral with the machine. Lower price owing to cheaper and better mode of construction. Extensively used.



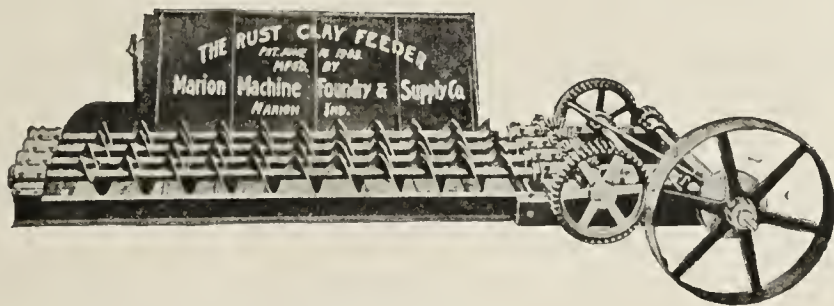
QUALITY IS ECONOMY—Established 1869.

Crawford & McCrimmon Co., Brazil, Ind., U. S. A.

Manufacturers of Hoisting and Hauling Engines, Ventilating Fans for Mines, Waste Heat Fans for Clay Plants, Roofing Tile Presses, etc.

A New Clay Feeder and Mixer.

Send for full descriptive circular.



BOSTON BRICK COMPANY,

Main Yard and Office, South Boston, Va. Branch Yard, Banister River Branch N. & W. Ry.

Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

South Boston, Va., Jan. 19, 1907.

Marion Machine, Foundry and Supply Co., Marion, Ind.:

Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men, besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

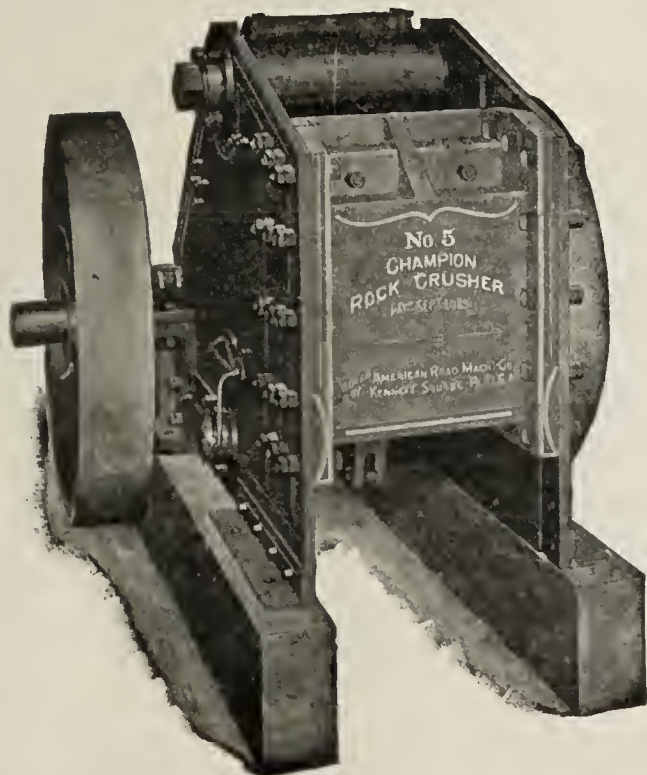
(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.



NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good

on paper.

It Looks Better

crushing shale, fire clay, rock and other hard material.

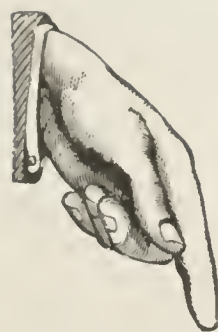
THE CHAMPION CRUSHER

is expensive, *to do without*, because it saves you money.

Catalogue is free on application. Address

AMERICAN ROAD MACHINE CO.

KENNETT SQUARE, PA.



If...

You Want to Sell or Buy...

Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

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for any position or a position in any connection with the Clayworking Trades use the

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RATES

For all transient advertisements, such as "For Sale," "Wanted," etc., the rate is 25 cents a line per insertion. Average of seven words to line. Head line counts as two lines.

The Best, Quickest, Cheapest Method of Securing Results.



The Burning Question

Is solved through the

CHMELEWSKI PATENT KILN

A clever combination of the common up-draft and the modern continuous down-draft kiln.

The limit of simplicity and effectiveness.

Produces thoroughly well burned, clean colored brick, without any cracks.

Can be burned with almost any kind of fuel, saving about 60 to 70 per cent. of it.

Daily capacity up to 100,000 brick.

For descriptive pamphlet write to

Dr. Herman Robergh,

Sole Agent in U. S. A. and Canada.

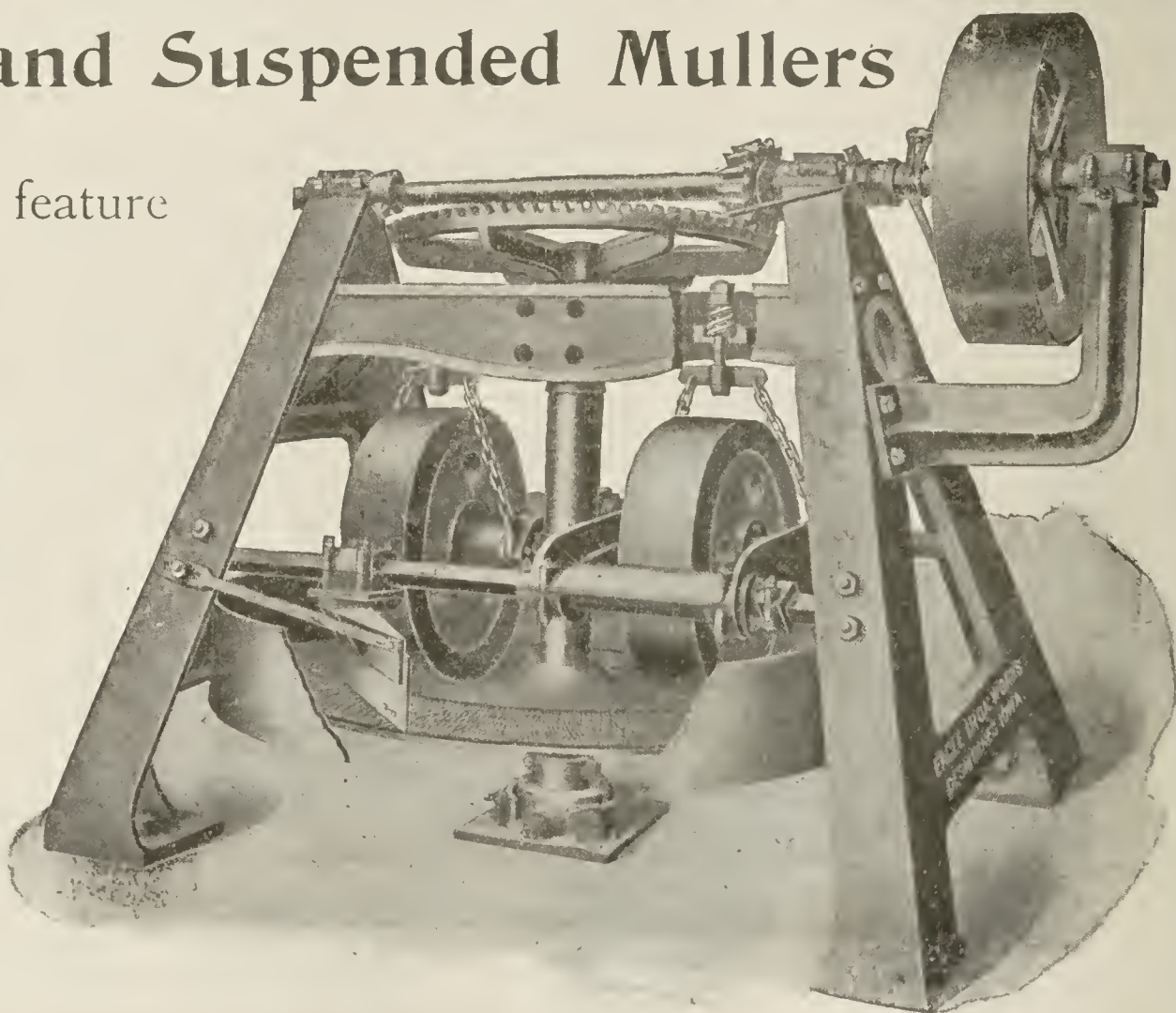
24 Cottage Ave., Fitchburg, Mass.

Independent and Suspended Mullers

the distinguishing feature
of our

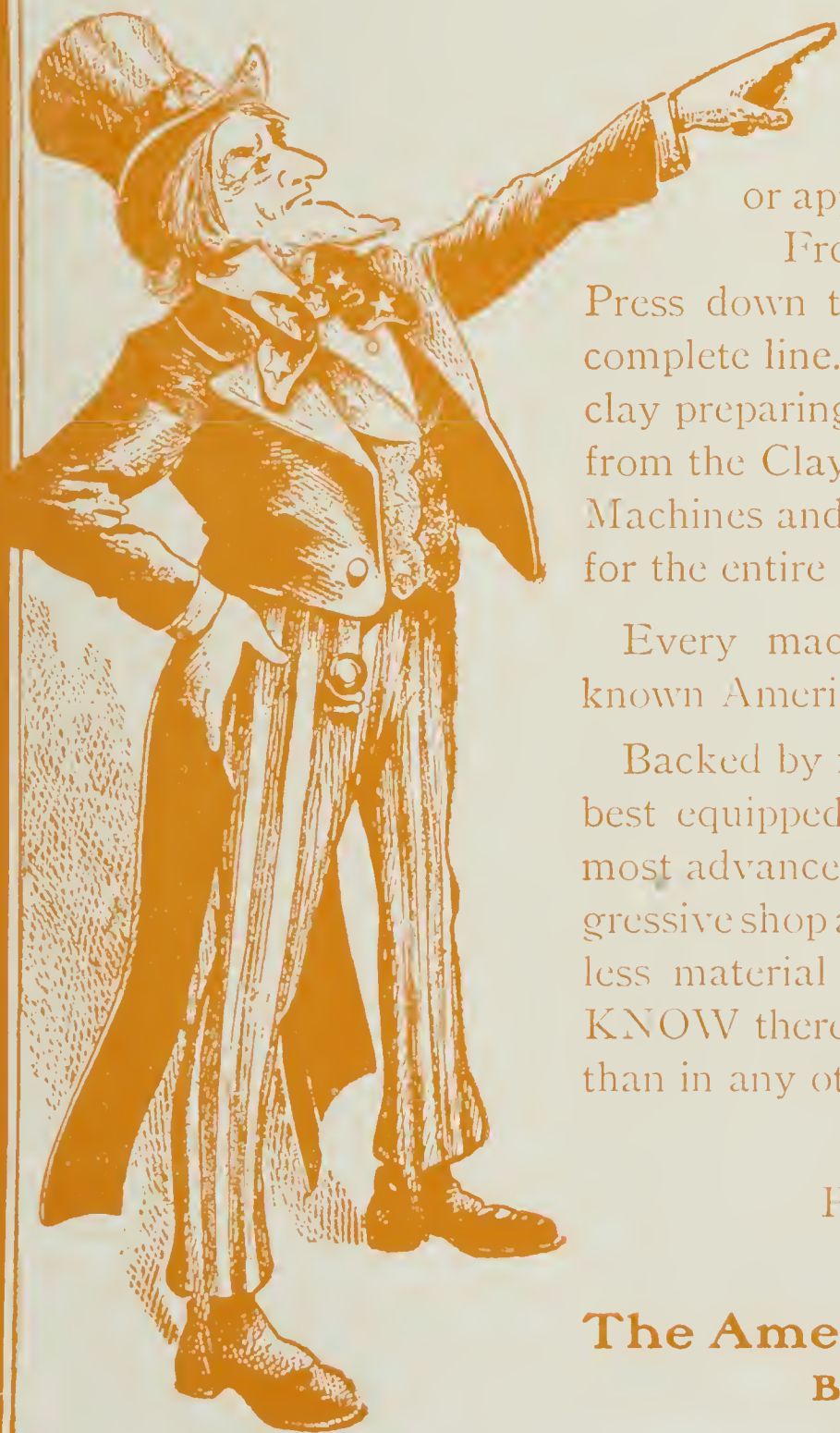
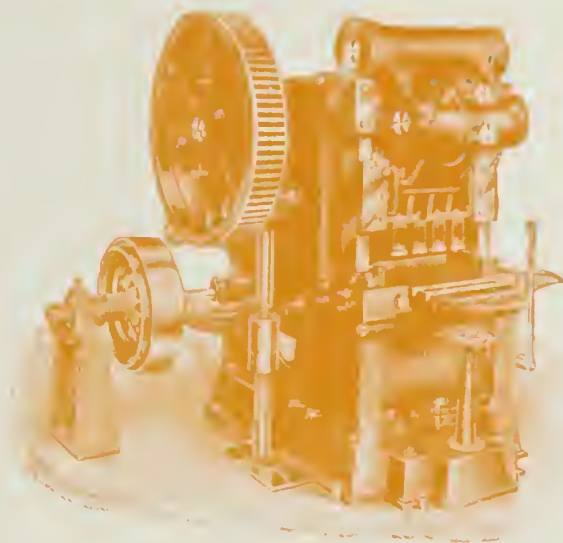
DRY PANS.

Other valuable
features which our
catalogue fully
describes.



EAGLE IRON WORKS, Des Moines, Ia.

Dry Press Brick Machinery.



For the manufacture of Dry Press Brick, there is no machine or appliance which we do not manufacture.

From the most powerful six mold Dry Press down to Hand Power Presses, we build a complete line. In addition to Presses we build all clay preparing machinery and appliances. In fact, from the Clay Bank to the Contractor, American Machines and American Methods can be supplied for the entire evolution

Every machine and appliance is of the well known American Standard of Quality.

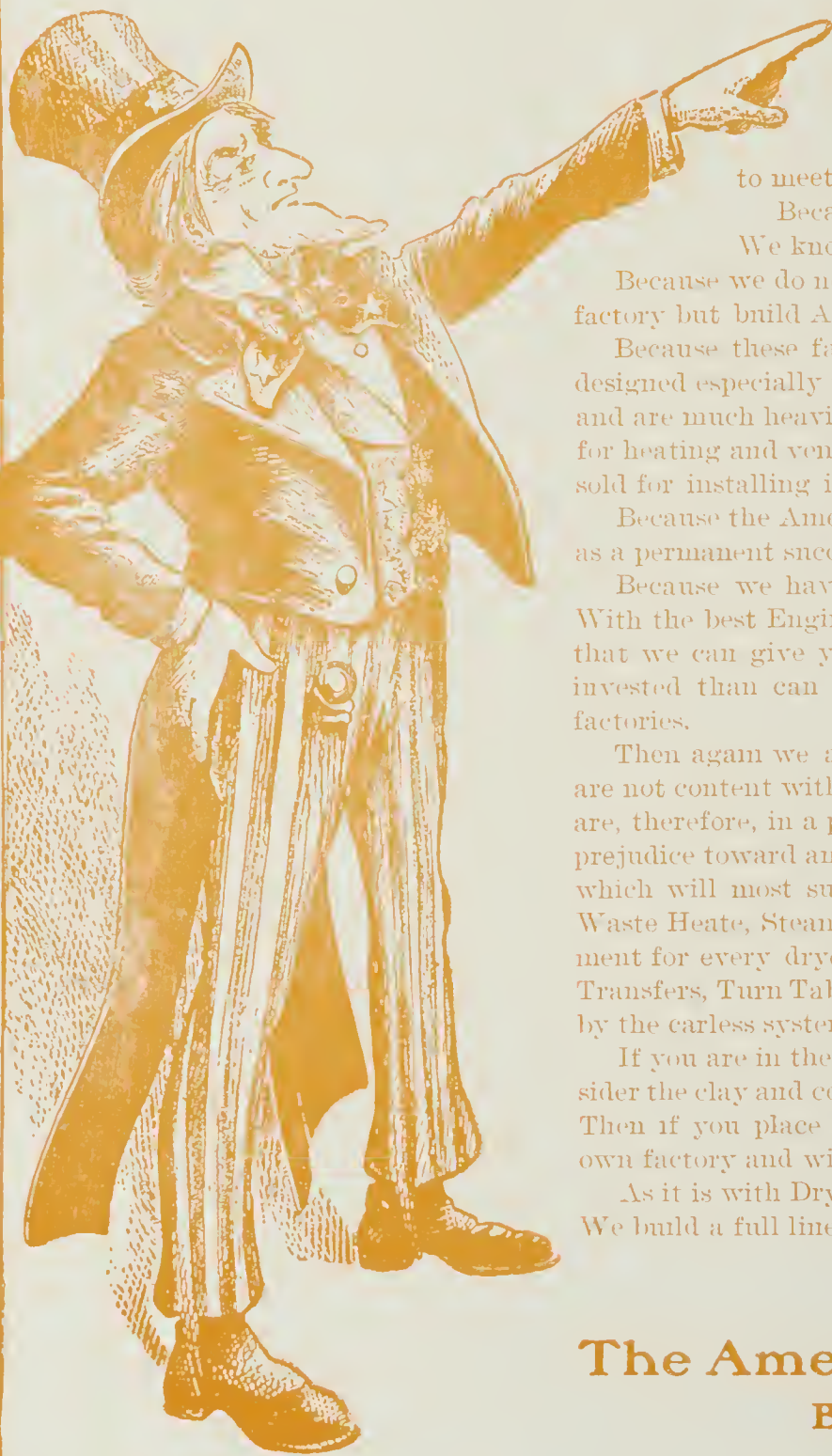
Backed by fifty years experience, the largest and best equipped shops in the country, the best and most advanced engineers, the most active and aggressive shop and office organization and with Flawless material and Faultless workmanship we KNOW there is more real value in our machines than in any other line on the market.

Particulars for the asking.

The American Clay Machinery Co.
Bucyrus, Ohio, U. S. A.

Waste Heat Dryers

And Other Dryers.



The success of a Waste Heat Dryer is largely in the Blower.

We know that our Blower Dryers are best because our specialists on Dryers design the fan to meet the needs of each case.

Because every fan for every dryer is built in our factory. We know its quality and can guarantee it.

Because we do not have to depend upon the workmanship of some other factory but build ALL OUR OWN FANS.

Because these fans are of extra heavy and substantial construction, designed especially for handling the hot gases from the cooling brick kiln, and are much heavier and more substantial than an ordinary fan intended for heating and ventilating factory or office buildings which are sometimes sold for installing in waste heat dryers and invariably give poor results.

Because the American quality is in our equipment and will maintain it as a permanent success.

Because we have the best Waste Heat Dryer men in the country. With the best Engineers, the best Material and long experience, we know that we can give you the best service and a better value for the money invested than can others whose equipment is assembled from various factories.

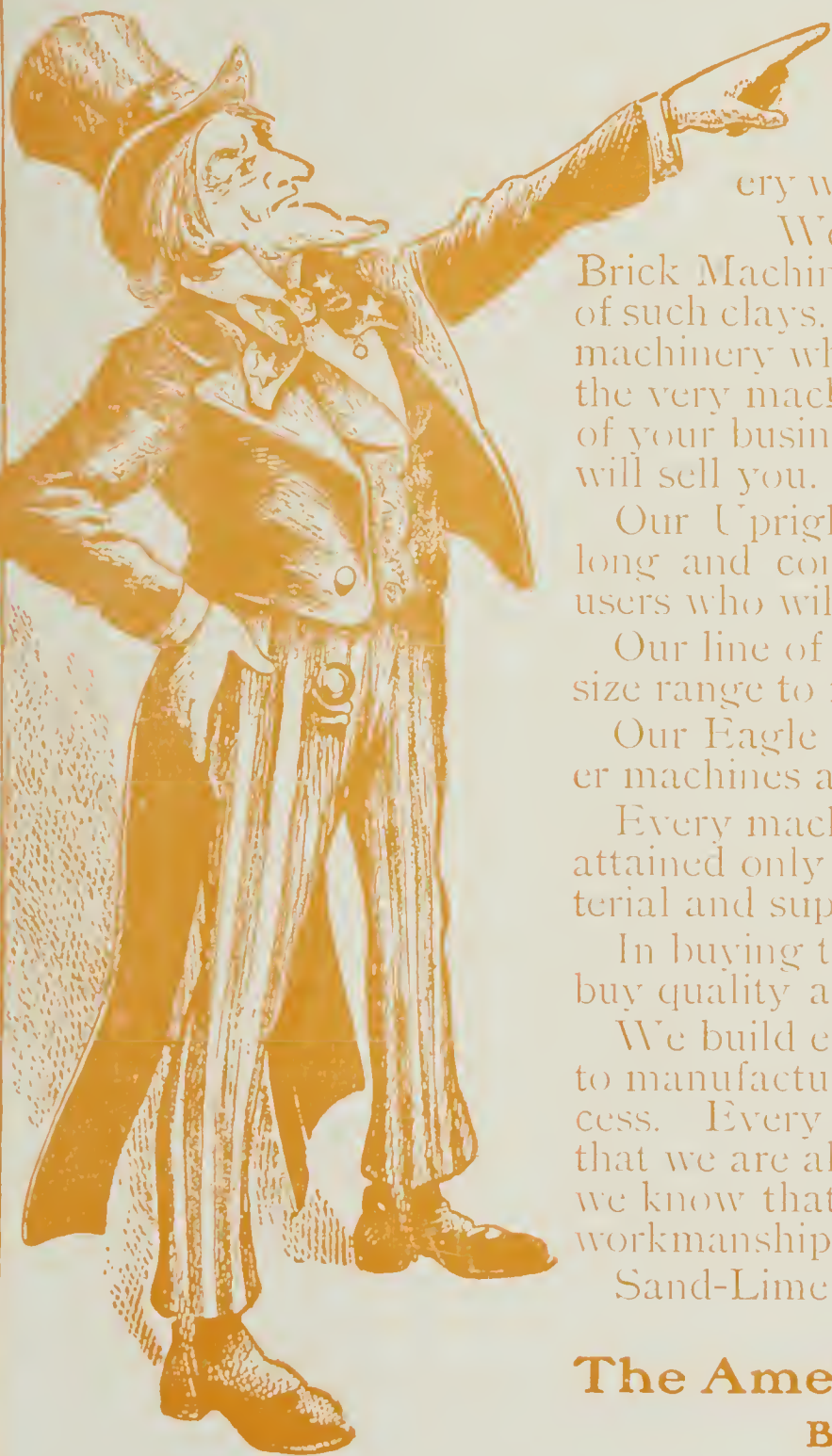
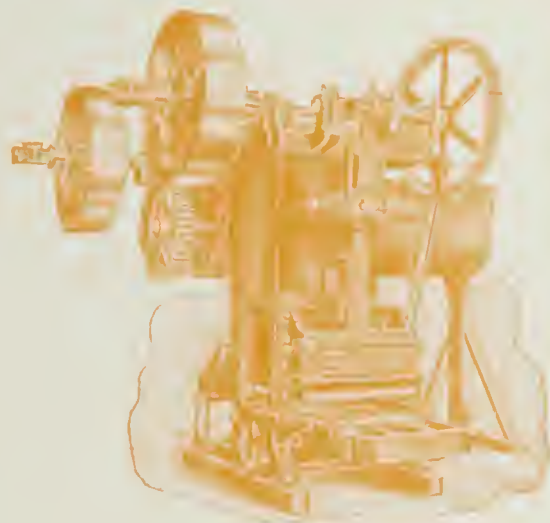
Then again we are Dryer Specialists in every sense of the word. We are not content with making one kind of dryer, but make every kind. We are, therefore, in a position to consider your interests without any bias or prejudice toward any one kind of dryer. This insures your getting a dryer which will most successfully handle your clay, whether that dryer be a Waste Heate, Steam, Hot Air or Furnace Dryer. We build a full equipment for every dryer in our own factory, including Fans, Heaters, Cars, Transfers, Turn Tables, etc. We also build and equip dryers to be operated by the carless system.

If you are in the market for a Dryer, let us look over your plant, consider the clay and conditions and design you a system that will be a success. Then if you place the order with us the equipment will be made in our own factory and will be of our standard quality.

As it is with Dryers so it is with every class of Clayworking Machinery. We build a full line for making Clay products by every known process.

The American Clay Machinery Co.
Bucyrus, Ohio, U. S. A.

Soft Mud Brick Machinery.



There is many a clay which can best be worked on Soft Mud Machinery. To handle such clay on Stiff Mud or Dry Press Machinery would prove a failure in the long run.

We build a complete line of Soft Mud Brick Machinery and appliances to meet the needs of such clays. We are not interested in selling you machinery which may prove a failure. We have the very machinery you require to make a success of your business, and that is the only machine we will sell you.

Our Upright Stock Brick Machine is built for long and continuous use. It has many satisfied users who will cheerfully recommend it.

Our line of Plunger machines is complete with a size range to meet your requirements.

Our Eagle Horse Power and Eagle Steam Power machines are popular favorites in their class.

Every machine we build has a quality behind it attained only by faultless designing, excellent material and superior workmanship.

In buying the "Built Right Run Right" line you buy quality and that means successful operation.

We build every machine and appliance needed to manufacture Clay Products by any known process. Every machine built in our own factory, so that we are able to guarantee the quality, because we know that quality to be all that material and workmanship can attain.

Sand-Lime Brick Machinery a specialty.

The American Clay Machinery Co.
Bucyrus, Ohio, U. S. A.

Sand=Lime Brick Machinery.



There is no line of Sand-Lime Brick Machinery built which will compare in Extent or Quality with The American Line.

We build every machine and appliance used in the manufacture of Sand-Lime Brick. Building these machines in our own factory we know their quality to be right.

In Design, Quality and Capacity, these machines are unsurpassed. As for their record the successful users will be willing to testify. We have equipped some of the most successful plants of this and other countries.

Our testing room is at your disposal for testing your material. We will take the material, make it into bricks and hand you the finished product.

We will be glad to have you present when the test is made. These tests require only a day.

Send for information on Sand-Lime Brick Machinery.

We also build a complete line of machinery for making Clay Products by all processes.

The American Clay Machinery Co.
Willoughby, Ohio, U. S. A.

BOOKS FOR CLAYWORKERS.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Clay Glazes and Enamels, by Henry R. Griffen. Price \$5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application

Tables of Analyses of Clays, by Alfred Crossley. Price \$1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

Clays; Their Occurrence, Properties and Uses, by Heinrich Ries. Price \$5.00.

A valuable and reliable treatise on the origin of clay, chemical and physical properties, kinds of clay, methods of mining and manufacture and distribution of clay in the United States, including a chapter devoted to Fuller's Earth, its distribution in the United States, mining and uses, etc. The book is well illustrated, which adds much to its value.

Bricklaying, by Owen B. Maginnis. Price \$2.00.

This book contains extensive explanations of the most improved modern methods of bricklaying, and is the current practice and experience of the best authorities, making an invaluable work of reference for architects, engineers, contractors, builders and mechanics.

The Clayworkers' Handbook, by the Author of "The Chemistry of Clayworking." Price \$2.00.

A manual for all engaged in the manufacture of articles from clay, containing chapters devoted to Materials Used in Clayworking, Preparation of the Clay, Machinery, Transport, Conveyors, etc., Drying and Dryers, Engobing and Glazing, Setting or Charging, Kilns, Firing, Discharging, Sorting, Packing and Dispatching, Defects, Tests, Analysis, etc., etc.

Burning Brick in Down Draft Kilns, by W. D. Richardson. Price \$1.00.

A manual on the "Burning of Brick," covering all the essentials of good burning, including chapters on kiln repairs, stages of burning, oxidation period, vitrification period, cooling, with valuable tables and illustrations of various testing apparatus.

Engineering for Land Drainage, by C. G. Elliott. Price \$1.50.

Giving instructions for laying out and constructing drains for the improvement of agricultural lands intended for the use of those who are charged with the responsibility of making plans for and executing drainage improvements.

Kiln Records, by W. D. Richardson. Price \$1.00.

To establish a successful system of burning, observations and records should be made regularly, carefully and conscientiously, and this can be done to best advantage by the use of Mr. Richardson's Kiln Records.

Vitrified Paving Brick, by H. A. Wheeler, E. M. Price \$1.00.

A review of present practice in the manufacture, testing and uses of Vitrified Paving Brick.

Practical Farm Drainage, by C. G. Elliott. Price \$1.00.

A Treatise on the Benefits of Farm Drainage, with plans and illustrations for making and laying tile.

These Books will be Mailed, Postage Prepaid, to Any Address in the United States or Canada, on Receipt of Price.

T. A. RANDALL & CO.,
Indianapolis, Ind., U. S. A.

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

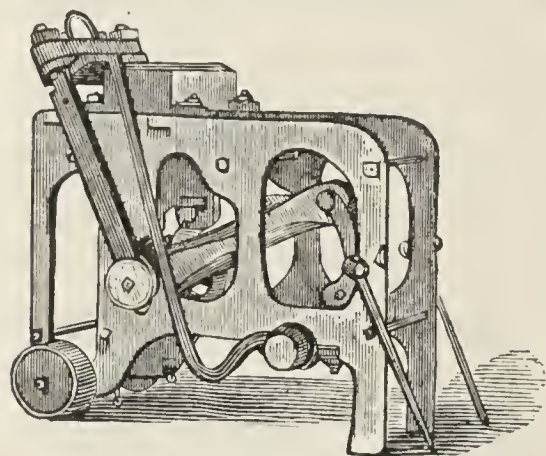
Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

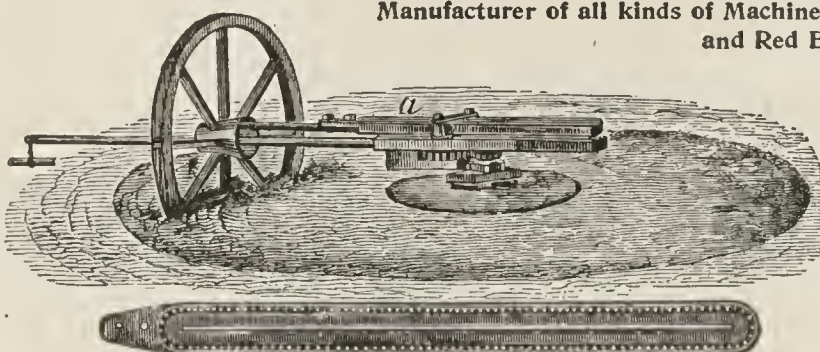


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

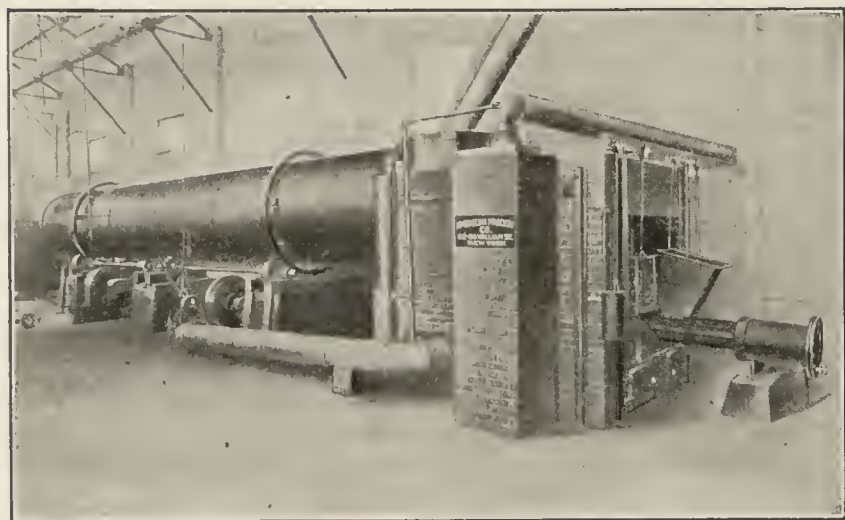
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL. 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

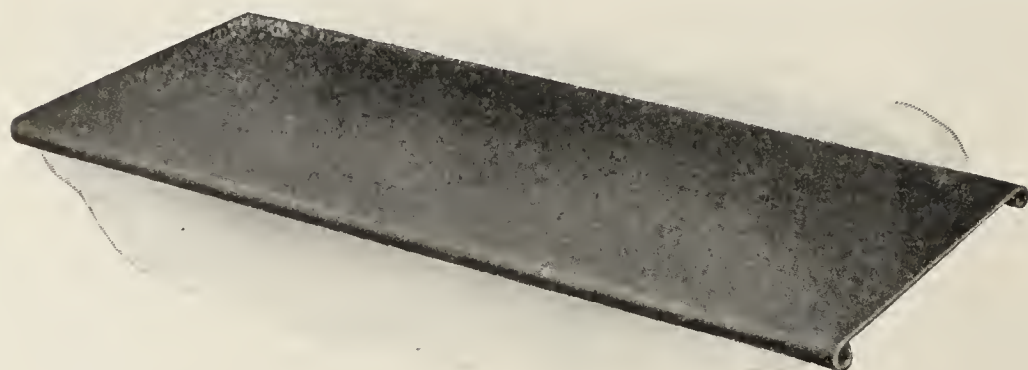
For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel, Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.

THE COST

ACCURATE COST SYSTEMS, GIVING COST AT ANY TIME, ARE ESSENTIAL TO GOOD MANAGEMENT.

Use Our Business Accounting and Record System and know at any time

The Cost Total of All Ware.

The Cost in Any Division.

Complete Timekeeping System.

Perpetual Invoice.

Kiln Records, Fuel Records, and all Knowledge Essential to Success.

If you wish to enter the clay business, either to buy an old plant or start a new one, write us. We have some bargains.

We own original kiln patents of the triple draft system, now being extensively infringed. Write us about round kilns. We have some bargains in Stiff Mud Machinery.

WESTERN CLAY DEVELOPMENT COMPANY, Van Meter, Iowa.

The
ROESSLER-HASSLACHER
CHEMICAL COMPANY,

100 William Street,
NEW YORK.

As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

Ludowici=Celadon Company,

General Sales Office—Chamber of Commerce Bldg., Chicago.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Braddock, Pa., Nov. 22, 1906.

J. C. Boss, Elkhart, Ind.:

Dear Sir—In reply to your letter of November 20, 1906, would say that we have just got through burning our twenty-sixth kiln for this year with the BOSS SYSTEM.

I think we are doing some very good burning, better than we ever did with the Bar System, and we like the BOSS SYSTEM very much. We burn our brick better and cheaper than we did before we installed the BOSS SYSTEM.

One thing that no brickmaker can do as well with any other system of burning brick where coal is used for burning than the BOSS SYSTEM can do, the brick are more solid and stronger when burned. We remain,

Yours truly,
KELLER & MILLIKEN.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

ELKHART, IND.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

An Old-Time Favorite.

Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & CO.,
P. O. Box 756. Rome, Ga., U. S. A.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906.

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,

West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of 5,000 each,	15,000
2 " 4 "	" 3,000 "	6,000
1 " 5 "	" 2,040 "	2,040
2 " 10 "	" 550 "	1,100
2 " 12 "	" 415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.

The 10 " " 6 ins. and 4 ins.

The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

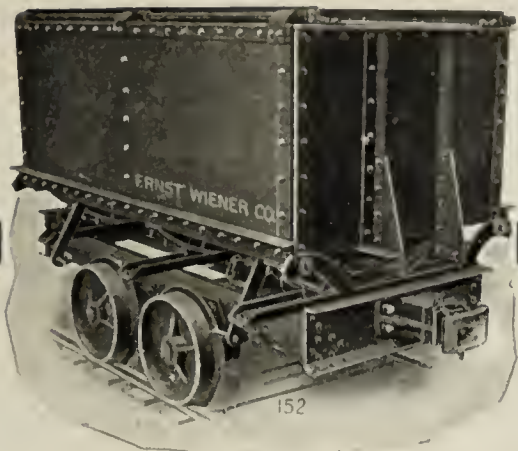
Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am

Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.



The above cut shows our double side dump cars for sand and coal. Built in capacities up to 40 cubic feet and of 36 inch gauge.

We have had

TWENTY YEARS' EXPERIENCE

in constructing

Railway Equipment for All Industries.

Portable, Industrial and Permanent Tracks, Switches, Frogs, Turntables, Transfer Cars, Steel and Wooden Cars of every Discription for All Industrial Purposes.

Large stock on hand.

Write Our Dept. 13 for Catalog N.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
COMPANY.

Works: Youngstown, Ohio.
64 Broad St., New York. 37 Farnsworth St., Boston.
Barnaby Bldg., Bisbee, Ariz.
The Youngstown Car Mfg. Co., representatives for West Virginia,
Ohio and Western Pennsylvania.

COAL — HEAT MONEY

All Saved by Using Our
WASTE HEAT DRIERS.

Get Catalogue 56F.

ESTIMATES AND PLANS FREE.



The New York Blower Co.,

DEPT. 14,

Office:

Factory:
BUCYRUS, OHIO.

Stewart Ave. and 25th Place,
CHICAGO, ILL.



B. E. BECHTEL.

We Are
PRACTICAL BRICKMAKERS.

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

Jacob Buhrer's Technical Bureau

At Constance, Germany.



BUHRER commenced work on his father's brickyard in April, 1838, when he was ten years of age, and established his technical bureau in 1860.

BUHRER assumed charge of the construction of kilns and kilns with dryers in which brick and tile are dried with the waste heat of the kiln, and the kilns which are provided with heat collectors, produce plenty of waste heat.

Very fine glazed and unglazed tile are burned in Buhrer's shortened kilns, often by mistake called zig zag kilns.

BUHRER'S kilns and dryers are also well adapted for burning common and face brick. Brick and tile made by the plastic process, of clays of normal quality, may be dried in from $1\frac{1}{2}$ to 4 days, and in four additional days be drawn from the kiln, well burned.

BUHRER demonstrates by his new burning process that

the production of kilns of other systems may be increased from 50 to 100 % by means of his ventilators, the output being first-class, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50 % or more of the required goods may be dried in Buhrer's dryer.

BUHRER also builds lime kilns. Fat lime containing 98 to 99 % pure lime is burned with 14 % coal. The kilns can also be used for burning Portland cement.

BUHRER'S methods have a bearing on all the work done on a brickyard, and all the large works he has built are working with great economy.

BUHRER'S largest plants, constructed without chimneys, are in the hands of prominent men, famous for their success in the ceramic industry.

For any further information, prices, plans, etc., address

JACOB BUHRER, Constance, Germany.

STEAM SHOVELS FOR BRICK YARDS.



We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg, San Francisco, Cal.

Marion, Ohio.

F. H. HOPKINS & CO., Agents,
Montreal, P. Q.

SAND-LIME BRICK MACHINERY

Furnished and installed by the
International Sand-Lime Brick & Machinery Co.

(Incorporated under the laws of the State of New York.)

Under the Safest and Strongest Guarantees.

Inventors and Owners of the "Division Method" (patented in the
United States and all Foreign Countries.

Installed and Successfully Operated in Over Twenty Factories
in the United States.

Write for information to the

International Sand-Lime Brick & Machinery Co.
136 Liberty Street,
NEW YORK.

**Handle Your Clay
With One Man and**

The Thew Steam Shovel.



Type No. 0—Ohio Brick Company, Toledo, Ohio.

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

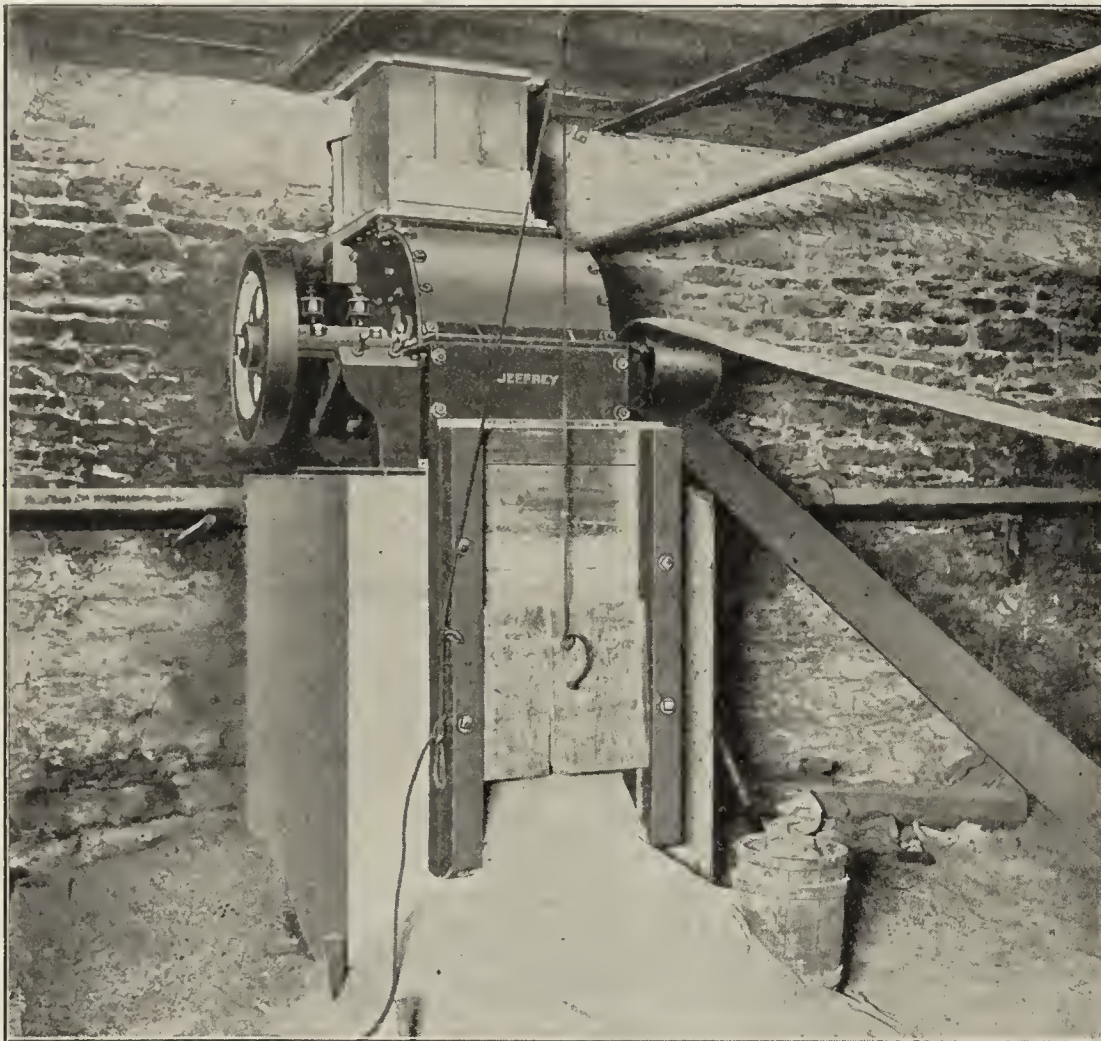
Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.



Crusher Installed for the Cincinnati Gas and Electric Company.
WE MAKE FREE CRUSHING TESTS.

Showing
**RESULTS
PRODUCED**
by
**The JEFFREY
CRUSHER**
on
BROKEN BRICKS.
Reduced to Any Mesh
Desired.

Limestone, Hard Shale,
Fire Clay, Vitriified Fire
Clay and many other ma-
terials treated.

Correspondence invited.

The Jeffrey Mfg. Co.,
Columbus, Ohio, U. S. A.

**ELEVATING
CONVEYING
SCREENING**

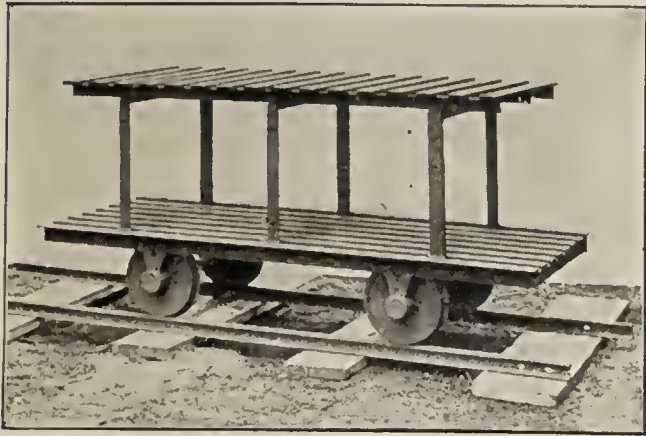


Cut represents our **SUCCESS No. 4 Stiff-Mud Machine**, constructed on **steel** foundation, **self-contained** and fitted with **steel** gears throughout. The strongest, most desirable and modern brick machine on the market.

Success Brick Machinery Company,

1403-4-5 Tennessee Trust Bldg., Memphis, Tenn.

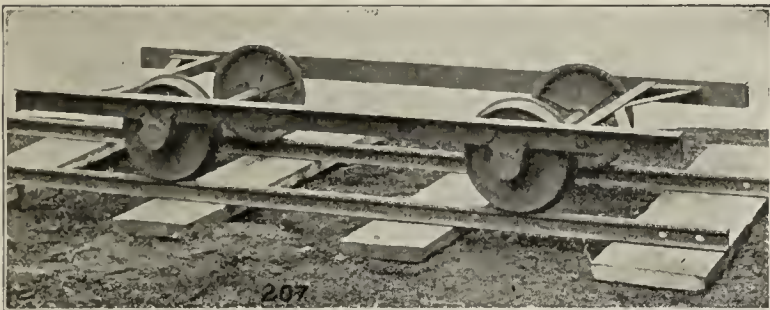
INDUSTRIAL RAILROAD EQUIPMENT.



No. 244.
DOUBLE DECK DRYER CAR,
STEEL DECKS.



No. 52,
TRUNION DUMP CAR.
FOR GENERAL USE.



No. 207. SOFT MUD FLAT CAR FOR FOOT PALLETS.

The Cleveland Car Co., West Park, Ohio.

Pacific Coast Agency, The F. W. Braun Co., San Francisco, Cal.
Eastern Canadian Agency, W. E. Hamilton & Co., Montreal, Can.

**Builders of Light Steel Cars of
Every Description,**

**Switches, Turntables,
Portable Track Crossings,
Steel Pallets, Rail, Etc.**

The Exhaust Steam Dryer is THE NATIONAL.

CARROLLTON BRICK CO.

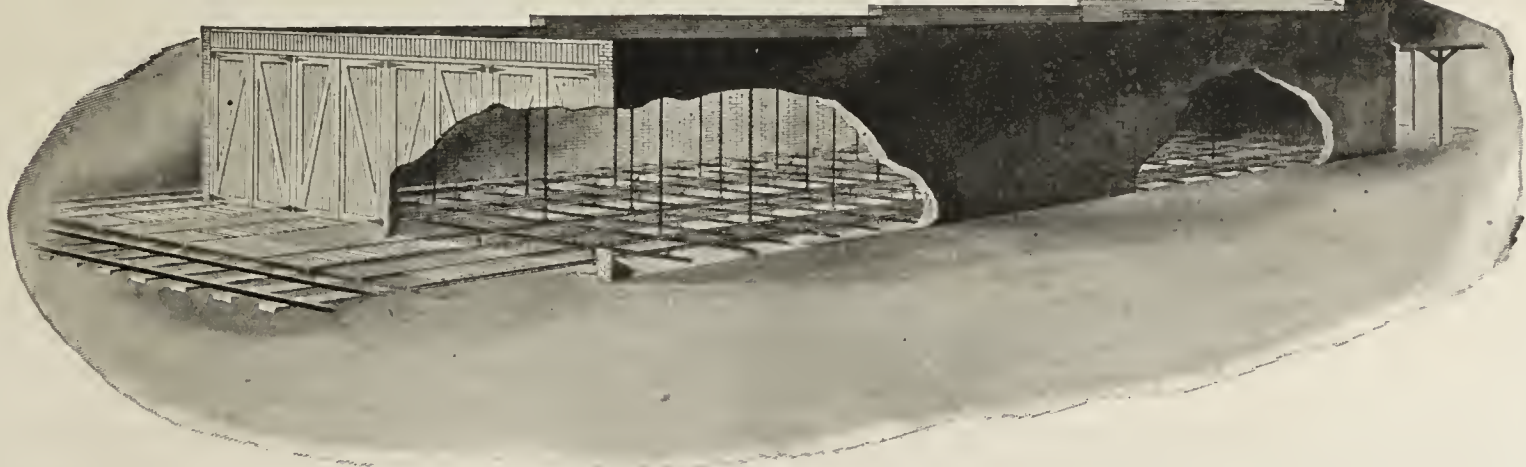
The National Dry Kiln Co.,
Indianapolis, Ind.

Carrollton, Ky.

Gentlemen—In reply to your favor of the 2nd will say our dry kiln which you installed last spring, is giving the utmost satisfaction. We are drying more brick than you guarantee, and can recommend it to anyone as a first-class drier in every respect. Easy to operate and no expensive repairs, and never out of order. Wishing you success, we are,

Yours truly, THE CARROLLTON BRICK CO.

The National Patented STEEL FOUNDATION and STEEL ROOF
SUPPORTS Eliminate all Woodwork Below the Ceiling Line.



We make all kinds of Cars for carrying Brick, Turntables, etc.

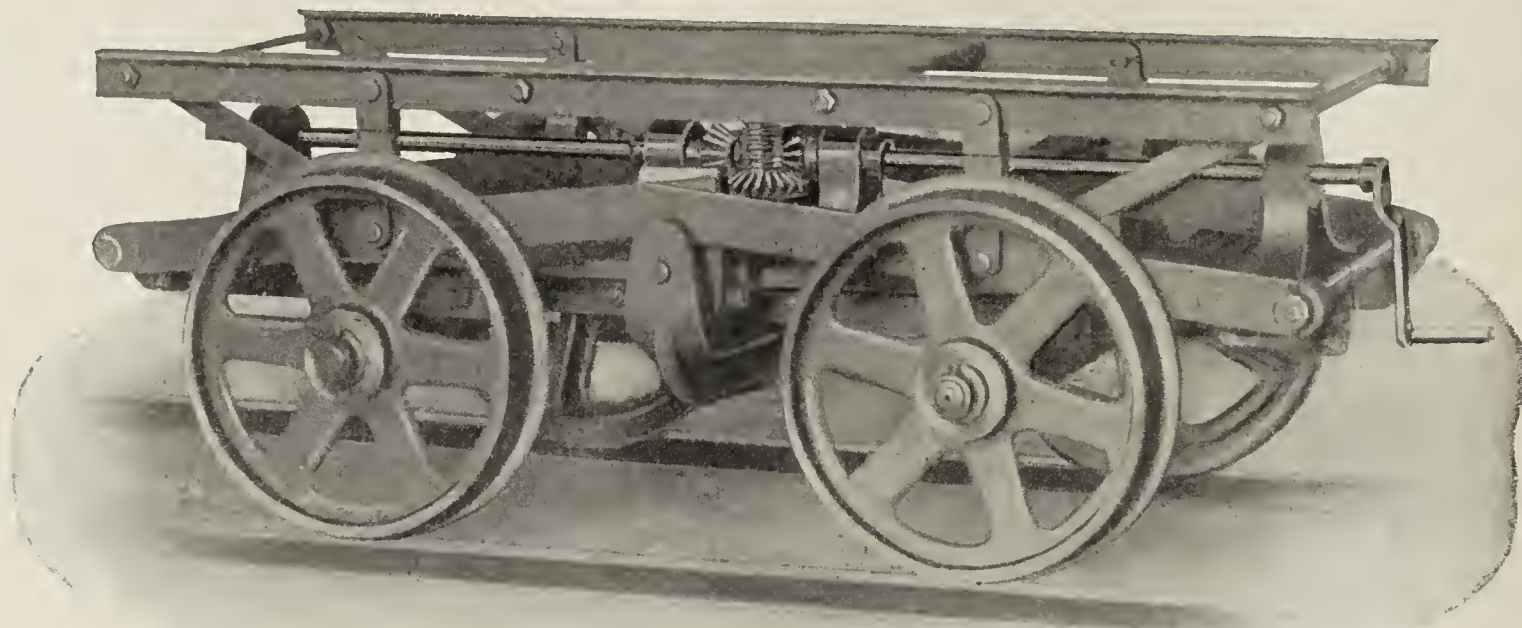
The National Dry Kiln Company,

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

INDIANAPOLIS, IND.

COMPETITION COMPELS

the brickmaker to reduce the cost of manufacture to the lowest possible point. If **two** men properly equipped will accomplish what **all** your truckers now do, and at the same time deliver the ware to the setters in perfect condition, can you afford to continue as you are? An inquiry from you will receive prompt attention.

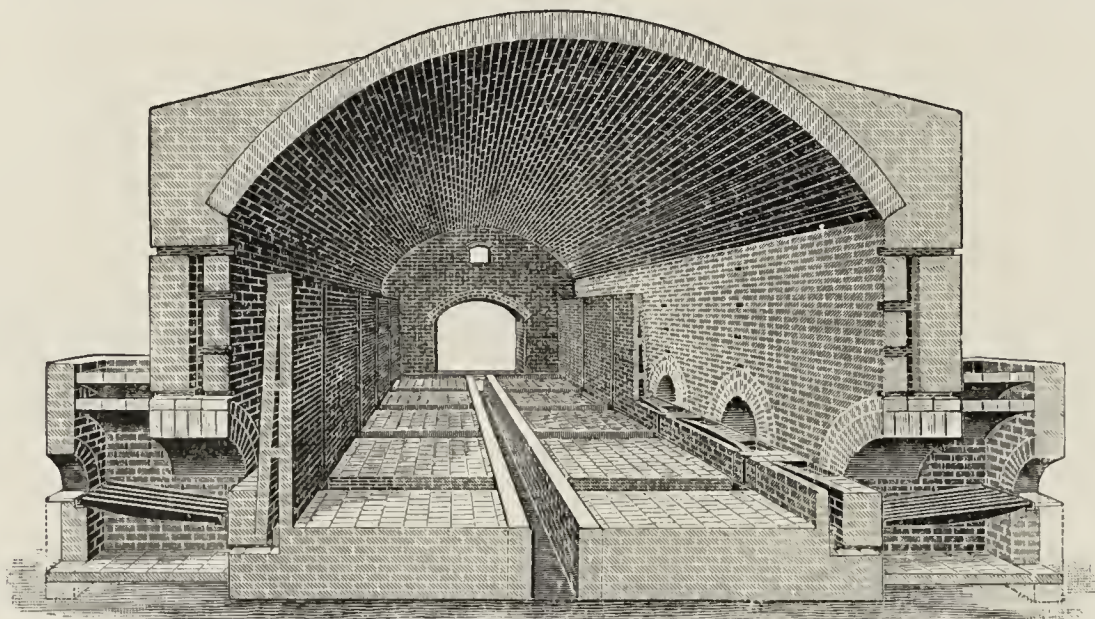


OPEN AIR AND ARTIFICIAL DRYERS—Car and Carless.

The Drymore System, 7th and Chestnut Sts., St. Louis, Mo.

The EUDALY ^{DOWN DRAFT} KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

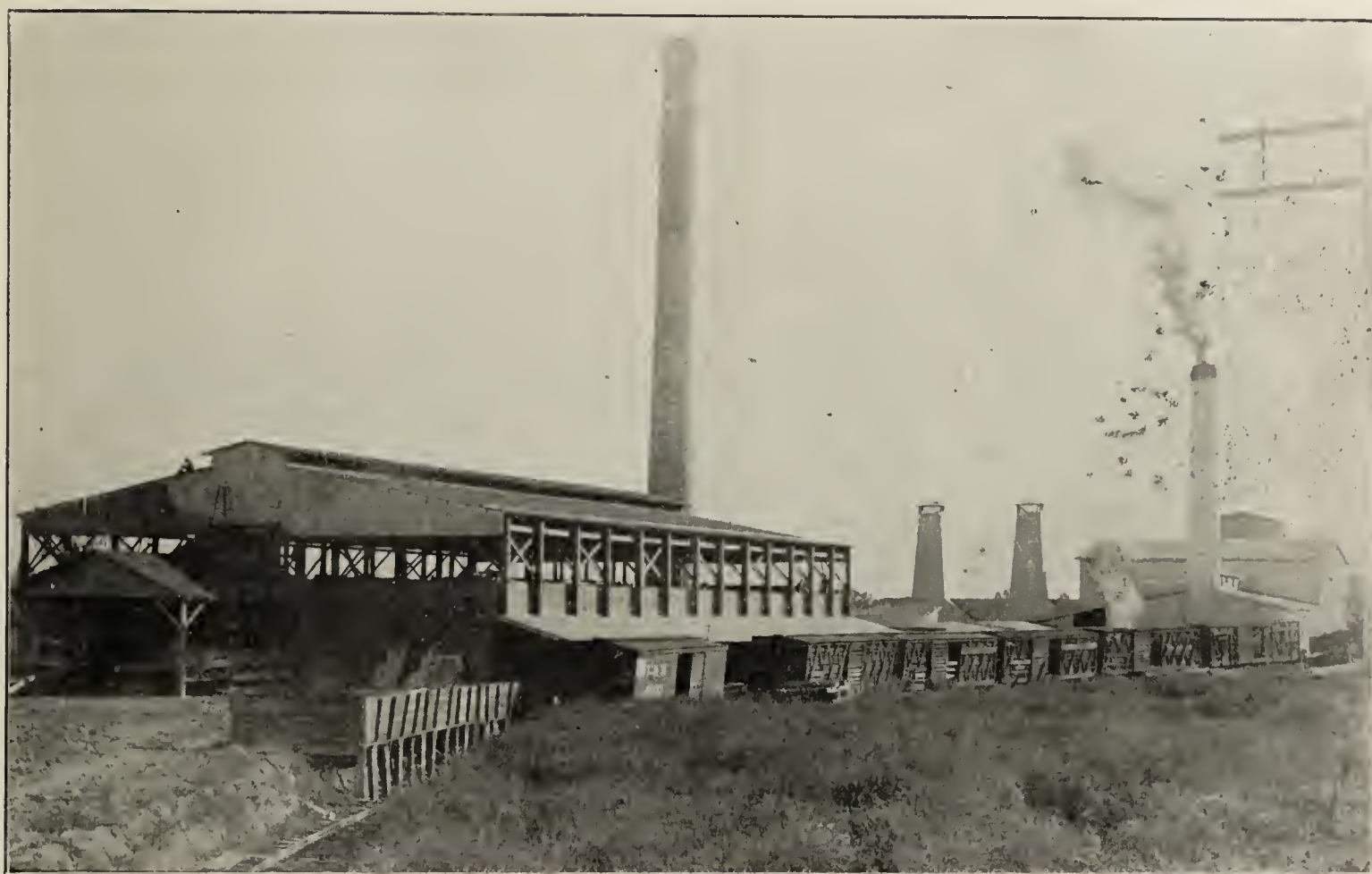
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.

The Youngren Continuous Kiln Producer Gas Fired.



THE YOUNGREN GAS FIRED CONTINUOUS KILN AT THE PLANT OF THE INDIANA
DRAIN TILE COMPANY, BROOLYN, IND.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.

The RICHARDSON-LOVEJOY ENGINEERING CO.,

Consulting Engineers and Factory Architects.

1534 North High St.,

COLUMBUS, OHIO.



ENGINEERING.

Geological Examination of Properties; Surveying and Mapping; Investigation of Manufacturing Propositions; Designing of Plants; Driers for Any Material; Kilns of All Types; Faults of Manufacture Corrected; Modernizing for More Economical Operation.

TESTING MATERIALS FOR CLAY, LIME AND CEMENT INDUSTRIES.

Preliminary Practical Tests Showing Value of Clay for Any Purpose; Chemical Analysis; Refractory Tests; Cement Testing.

TESTING AND CONTROLLING APPARATUS,

Thermometers, Pyrometers, Hygrometers, Anemometers, Draft Gages, Recording Apparatus, Power Plant Specialties, Fuel Testing and Gas Analysis Apparatus.

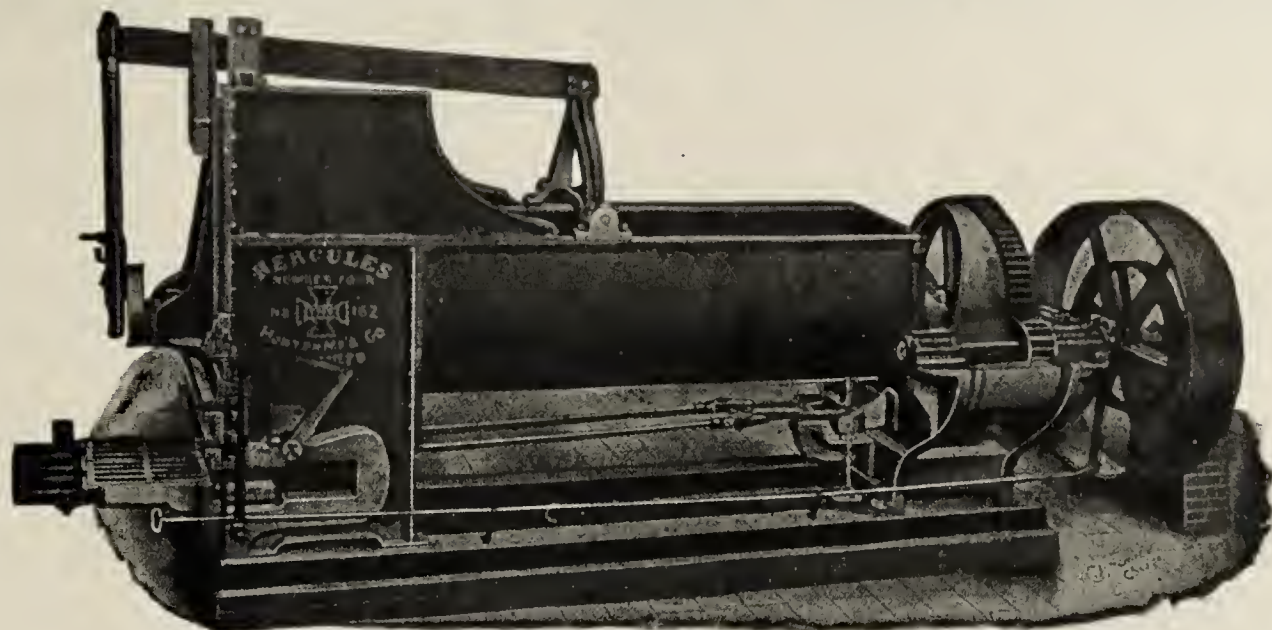
MECHANICAL DEVICES.

Special Labor Saving Devices; Moulds and Dies; Improved Clay Preparing Machinery.

The cost of our services is insignificant compared with the returns from an Economical Construction and Economical Operation.

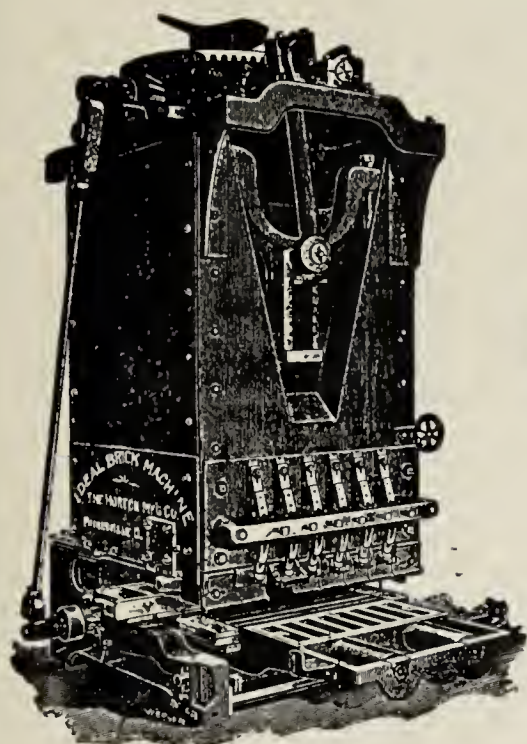
Send for "Brick Works Engineering;" "Brick Kilns;" "Testing and Controlling Apparatus."

Do Not Miss This Opportunity.

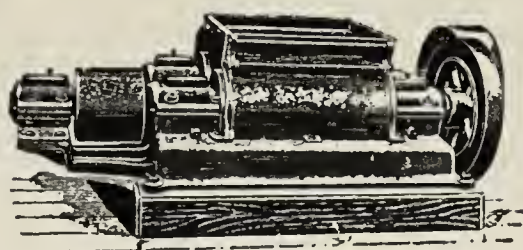


Hercules No. 4 Brick Machine.

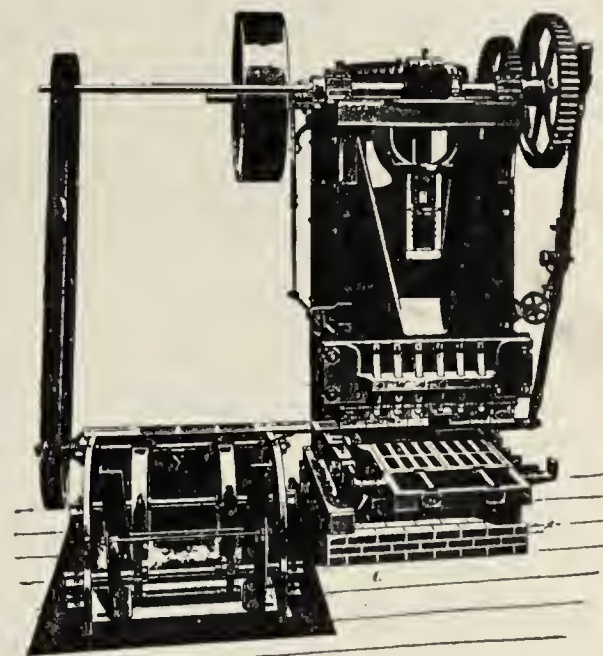
Let Us Have Your Inquiries Today.



Ideal Horse Power.

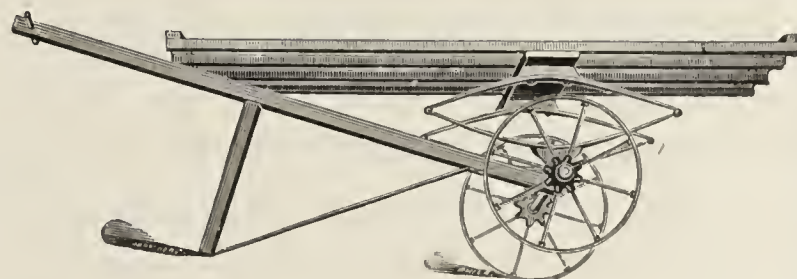
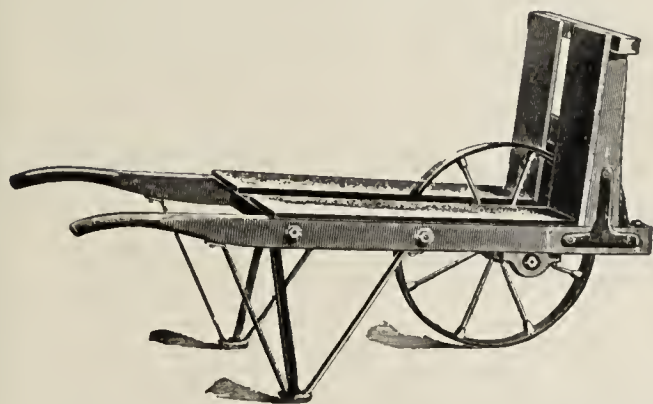


Disintegrator.



Ideal Steam Power and Sander.

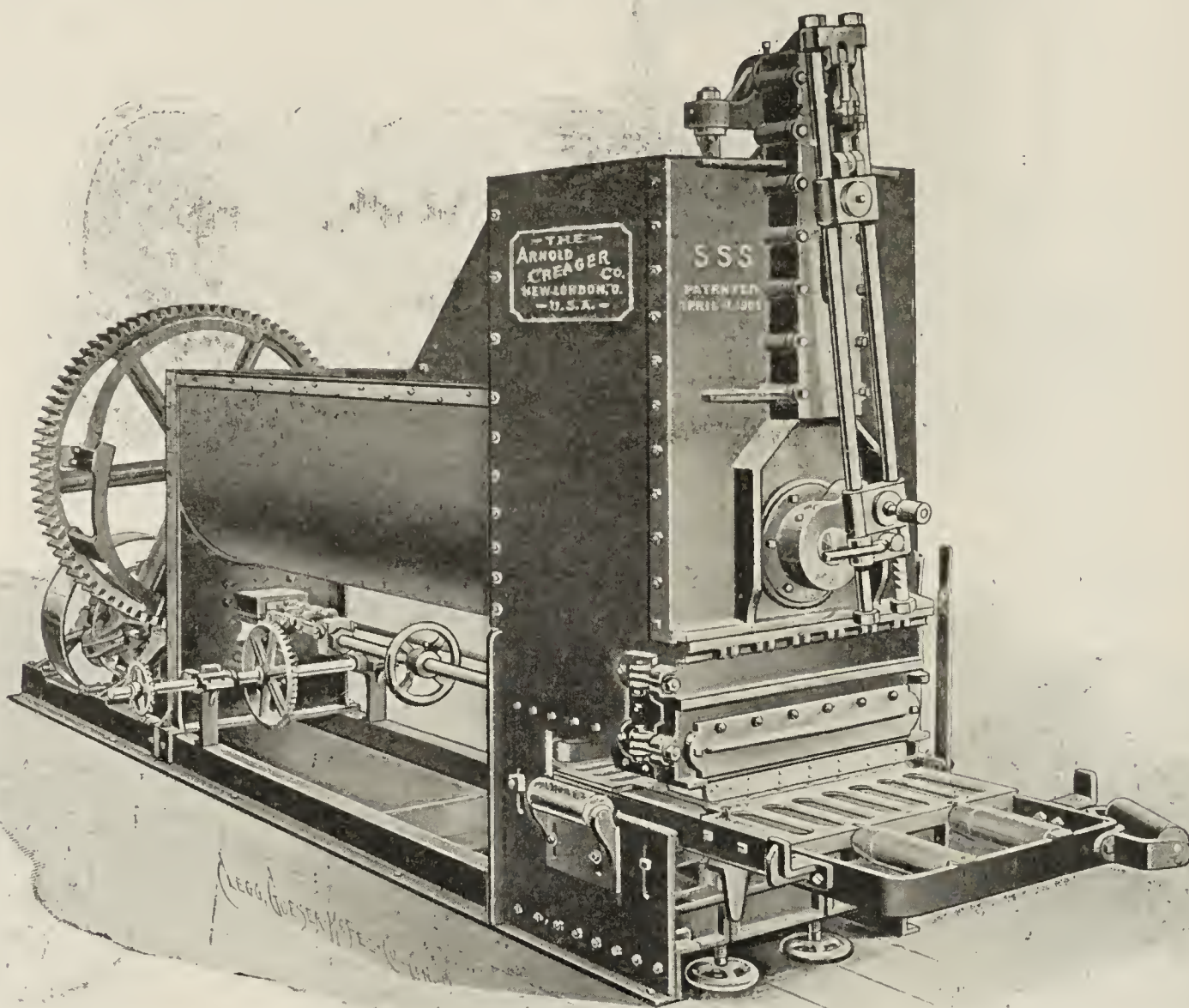
OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

CINCINNATI, OHIO.

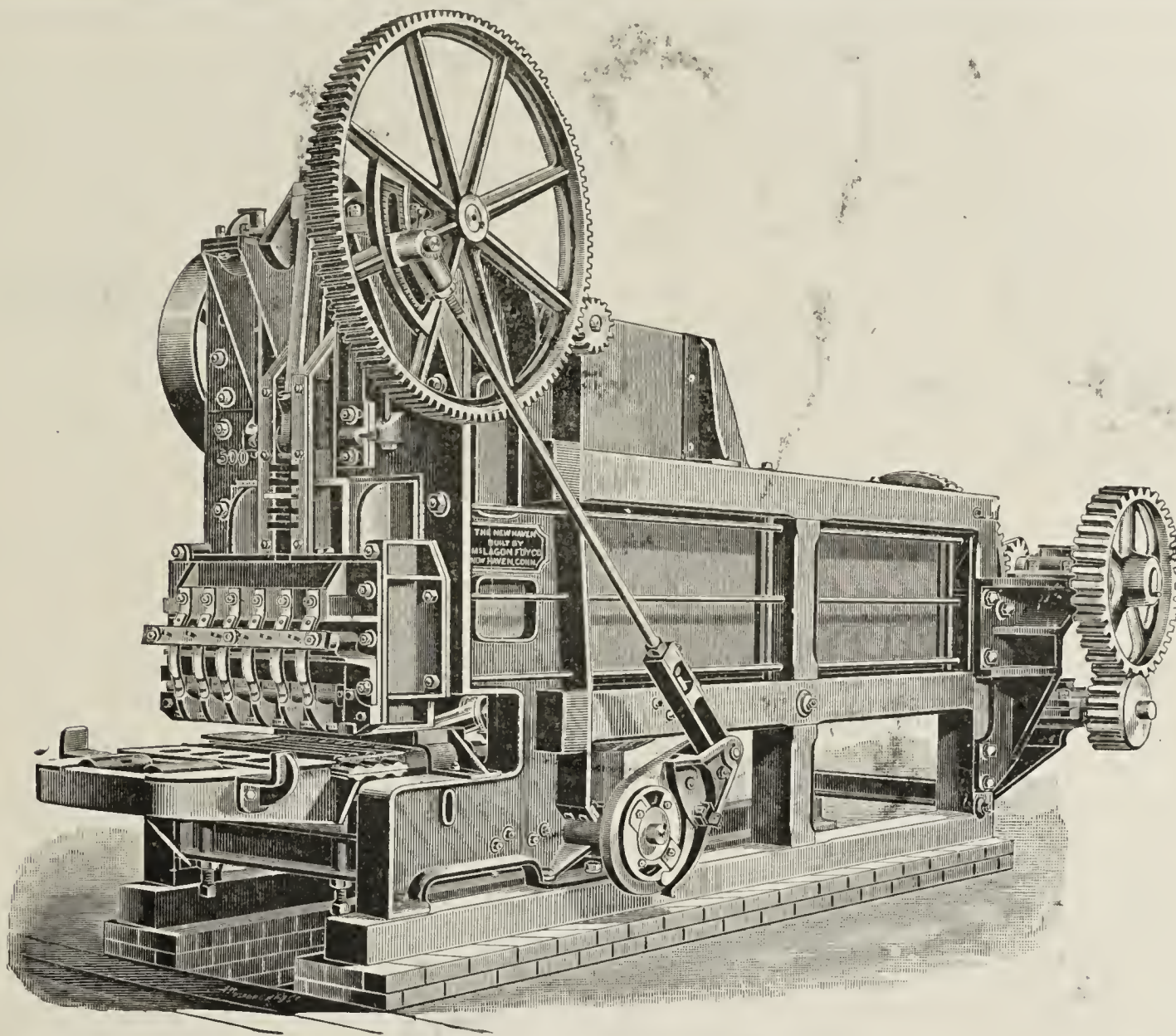
CABLE "AUTOMATIC".

Soft Clay Brick Machines

Are the only kind we build and its our aim to build them well. They are the reliable kind with great strength placed just where it is most required.

Stout shafts, long bearings, large oil holes, strong gears, steel liners and other details in proportion. They are the kind

♦ ♦ **THAT DON'T BREAK DOWN EVERY DAY.** ♦ ♦



THE "NEW HAVEN" BRICK MACHINE.

"New Haven" Brick Machines

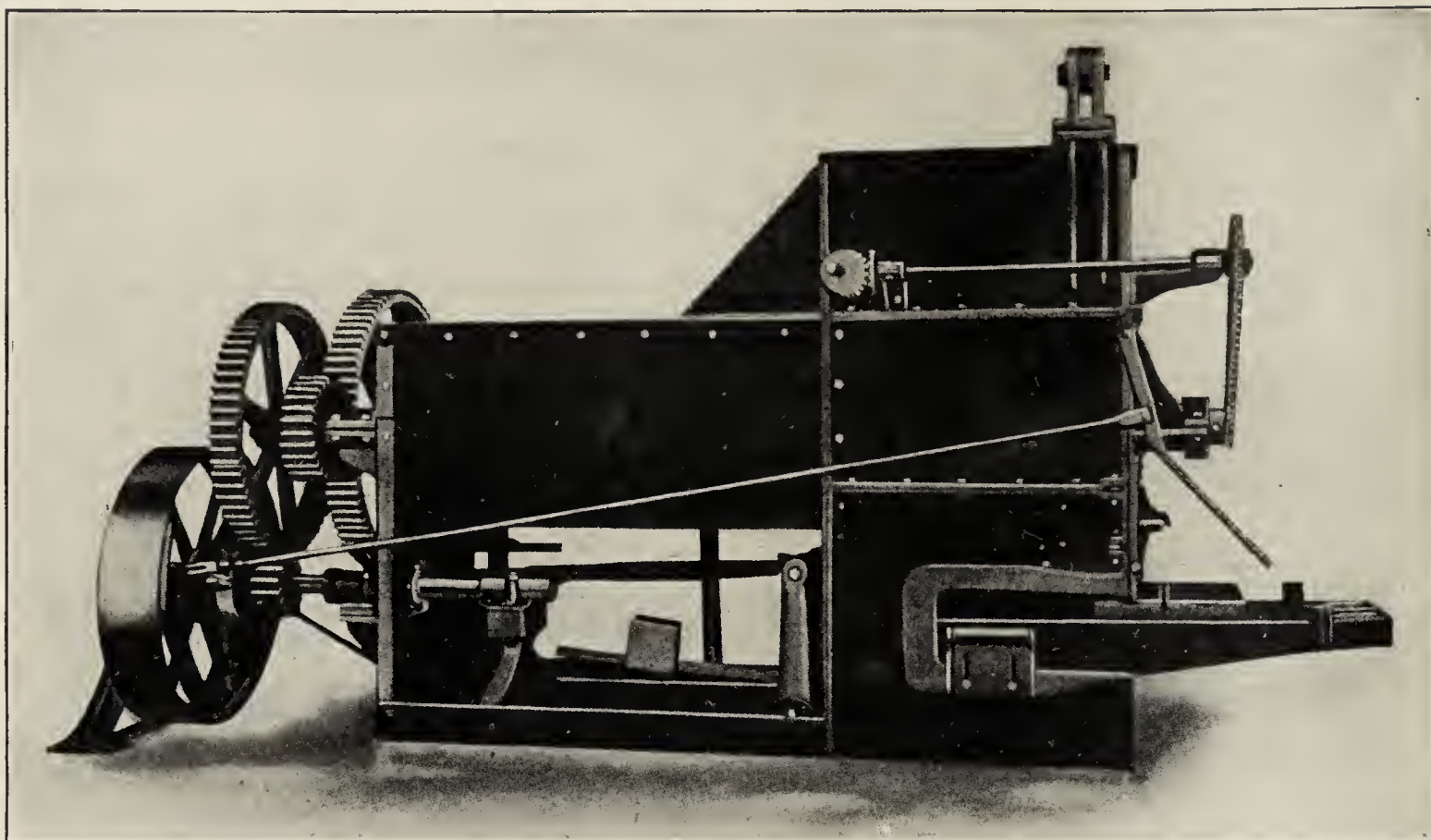
Came into existence some eighteen years ago, and they came to stay. They have staid so well and are so well liked at home that three-fourths of all the brick made in New England are the product of **"New Haven" Machines.** They excel everything and

===== **For Hard Service Are Sure to Satisfy** =====

Where others fail. That is the reason all our machines are standing advertisements and why all our patrons recommend them. Such machines are worth investigating.

The EASTERN MACHINERY CO.,
 NEW HAVEN, CONN.

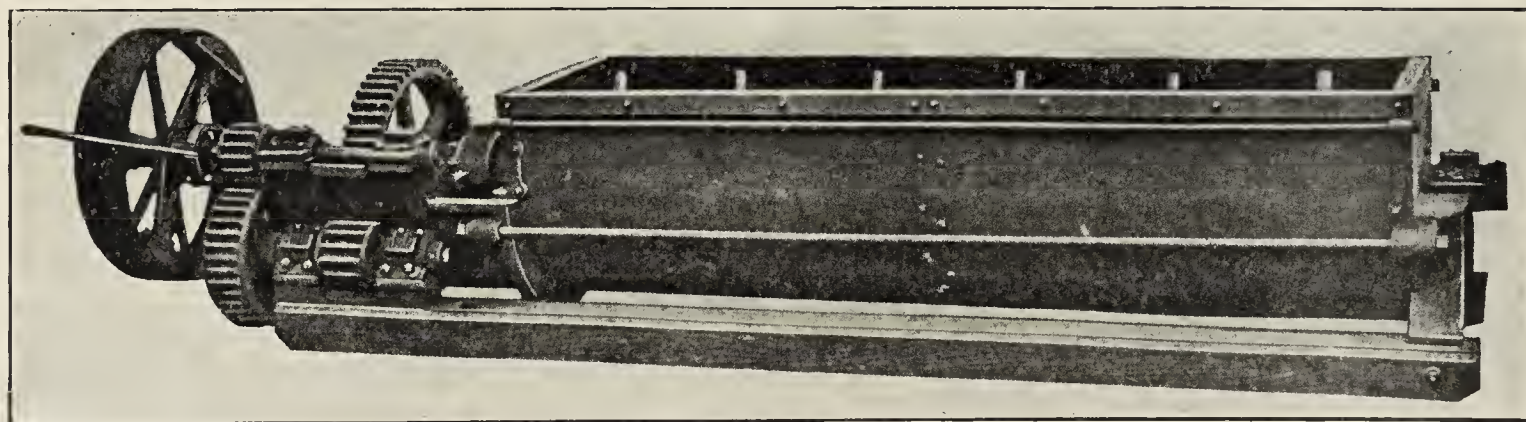
THE DUKE OF WELLINGTON BRICK MACHINE.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine of large capacity, strong and heavy, with vertical press. To meet this demand, we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

Compound-Geared Horizontal Pug Mill or Granulator.



Built for Side, Bottom or End Delivery, as ordered. Tub is boiler steel. Shaft is $3\frac{1}{2}$ inch square steel. Length, 10 to 14 feet, according to order. **Capacity**—35,000 to 50,000 brick per day. Friction Clutch Pulley, 36x8 inches. **Speed**—200 to 300, according to capacity desired. **This is a Massive Machine**, very heavily constructed, and intended for the hardest work. The gears have 5-inch face. The end-thrust bearing is very large and heavy, and of the best design.

Don't place your order for Machinery or Supplies until you have seen my 1907 Descriptive Catalogue. Mailed free on application.

For small capacity yards there is nothing that is quite as good as the "Quaker" Machine, which is made for horse power as well as steam.

Let me give you full particulars.

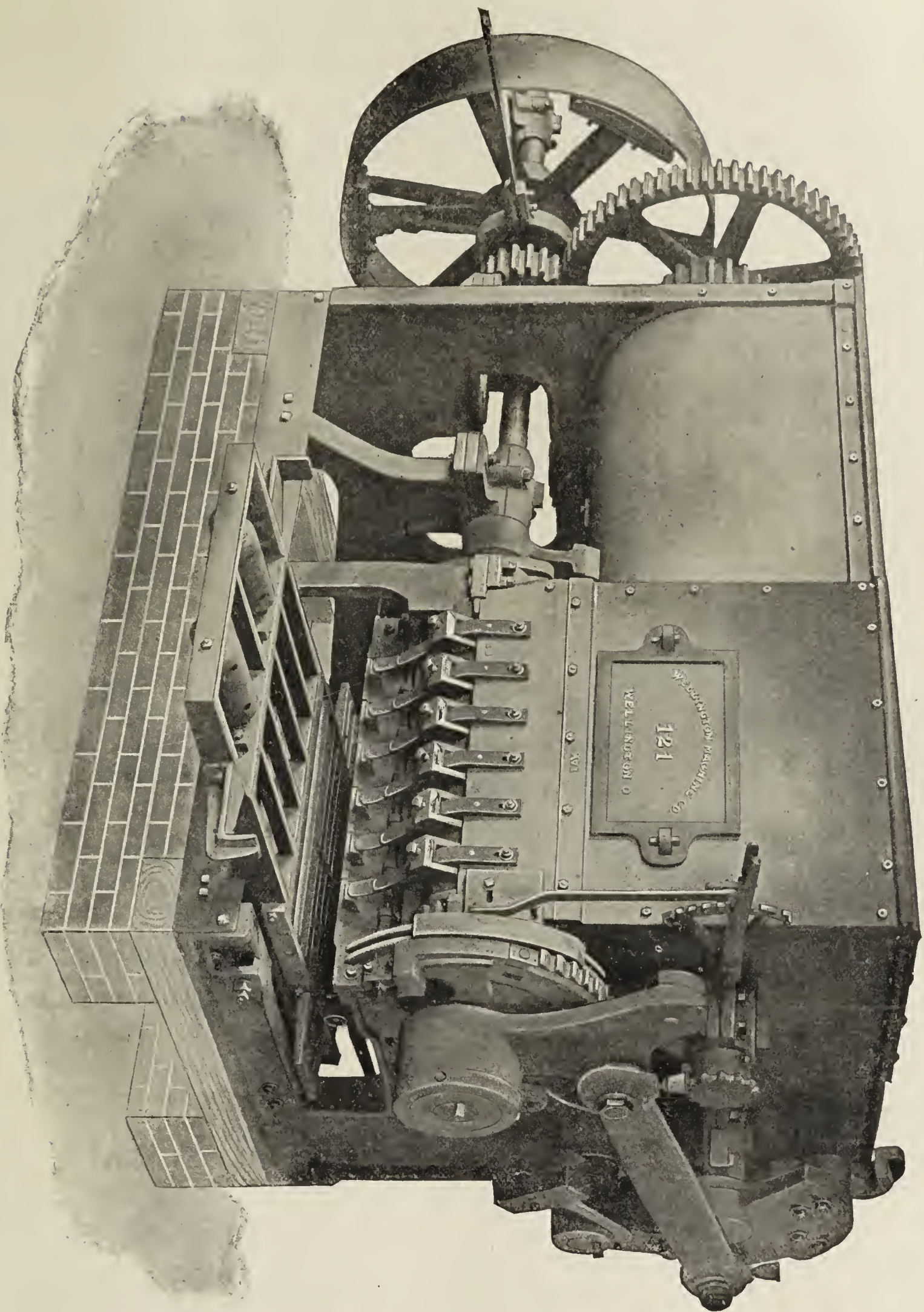
JAMES W. HENSLEY,
Indianapolis, Ind., U. S. A.

List of users furnished on application. My 1907 catalogue, which will describe this machinery fully, mailed free on application.

OVER
235
"Monarch"
Brick
Machines
in use

OVER
565
"Quaker"
Machines
in use.

WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

**ROLLER-BEARING
BARROWS.**

The Wellington Machine Co.,

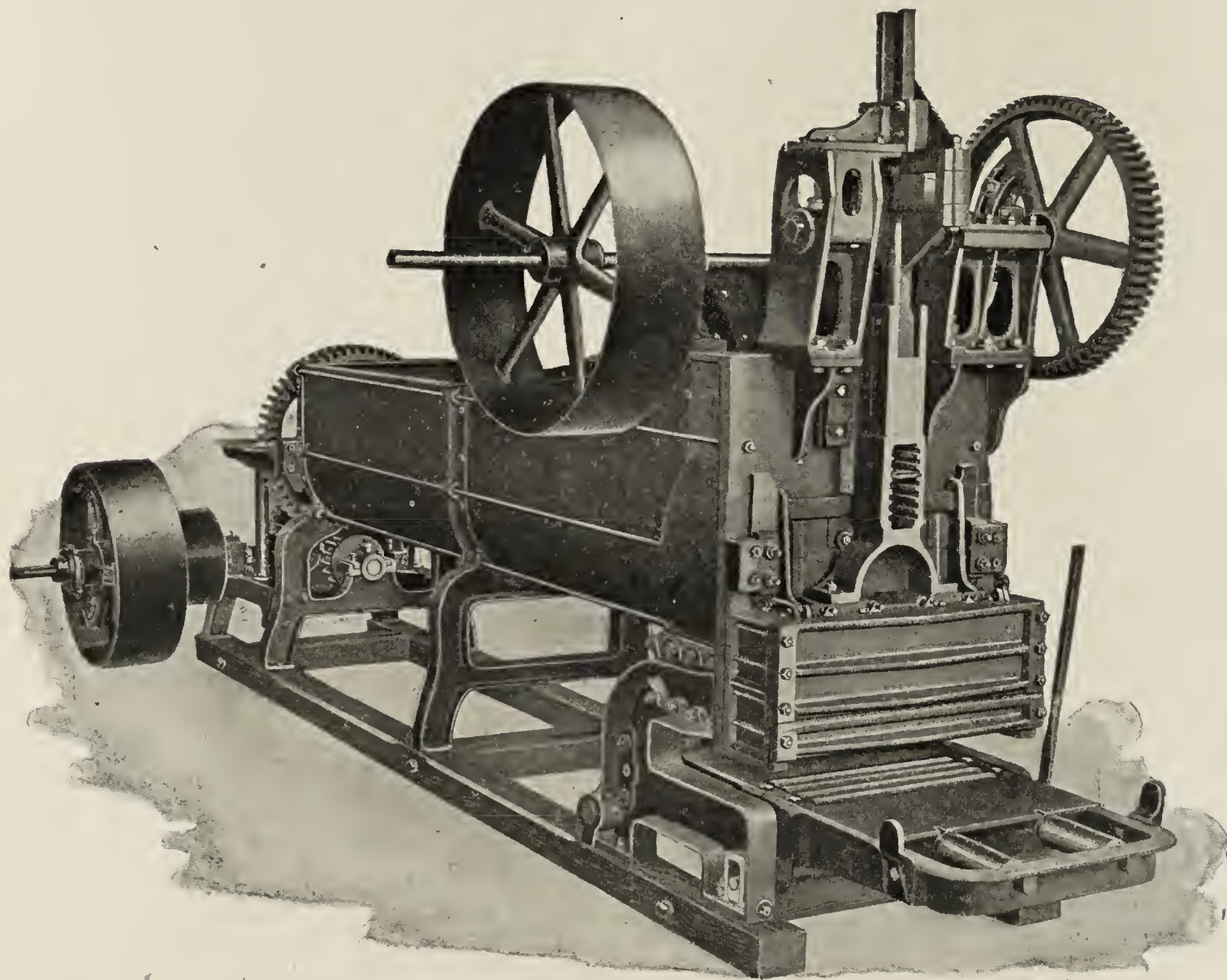
WELLINGTON,

OHIO.

Send for Catalogue.

The Potts Horizontal Brick Machine.

The equipment of Sand Mould Brick Plants is our specialty. We manufacture the complete plant—Brick Machine, Disintegrators, Mould Sanders, Granulators, Winding Drums, Clay Cars and Steam Dryer. This makes a one-man proposition, and we are responsible for the satisfactory working of the entire plant from The Clay Bank to the Kiln.



The only
Sand Mould
Brick Machine
made
in which
Cast Steel
Gears
are used
exclusively.
They can not
be broken.
Steel shaft
large
in
diameter.

ALL IRON AND STEEL.

Heavy, Strong and Durable. Large tempering capacity, insuring brick that will have clean, sharp corners and smooth surfaces.

Great strength enables working the clay stiff and filling a six brick mould perfectly. Every claim made fully guaranteed.

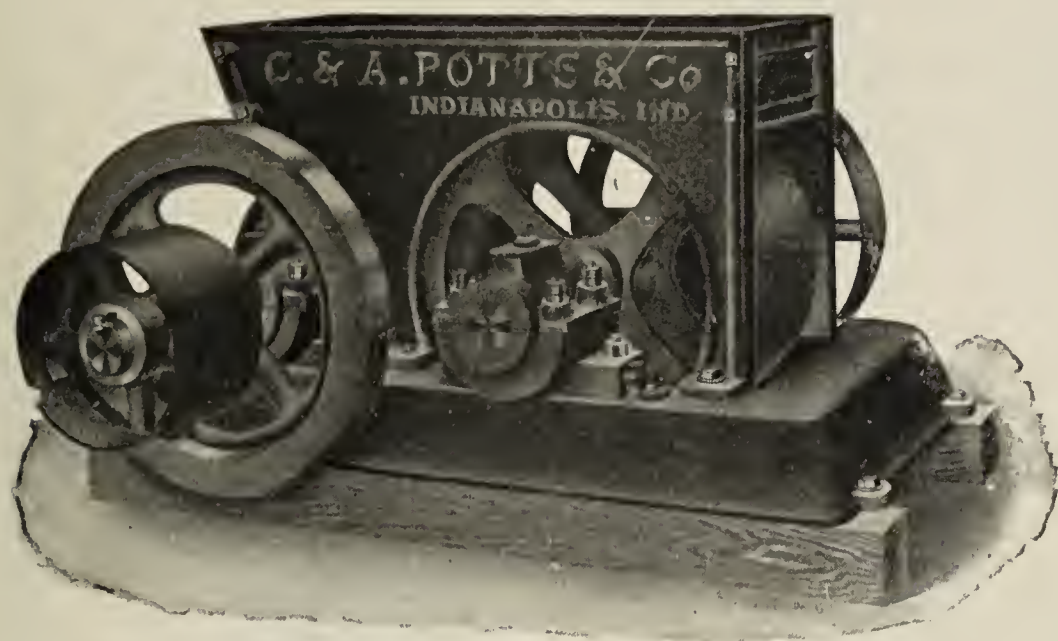
C. & A. POTTS & CO.,

Indianapolis, Ind.

Mention the Clay-Worker.

CLAY DISINTEGRATORS

Either Single or Compound.



Having chilled rolls made from a special grade of iron.

Steel shafts. Ring oiling bearing, long and large in diameter. Adjustable steel bars.

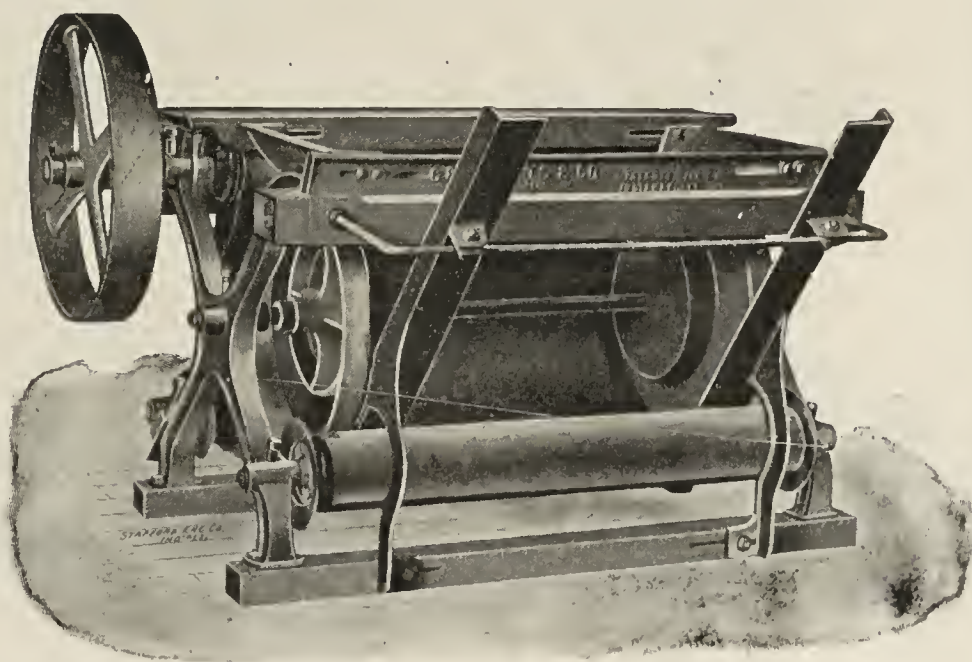
The Potts Disintegrator is the standard machine. All others are imitations. Grinds the clay and separates the stone. No choking or clogging from wet, sticky or hard dry lumps.

MOULD SANDERS

which have no place for the moulds to catch. No unusual wear on the moulds. No chains, sprockets or gears to wear and break.

Does not waste or spill the sand.
Sands the moulds perfectly.

Every machine guaranteed and shipped subject to trial.



We manufacture a complete line of Clayworking Machinery, Granulators or Feeders Winding Drums, Clay Cars, Trucks and Barrows, a Dryer which is no experiment, and which will dry the most tender clay in from eight to ten hours.

We furnish everything from Clay Bank to Kiln, and GUARANTEE RESULTS.

C. & A. POTTS & CO.,

Mention the CLAY-WORKER

Indianapolis, Ind.

CLAY- WORKING MACHINERY

WE HAVE IT

BUILT FOR THE
RIGHT WORK

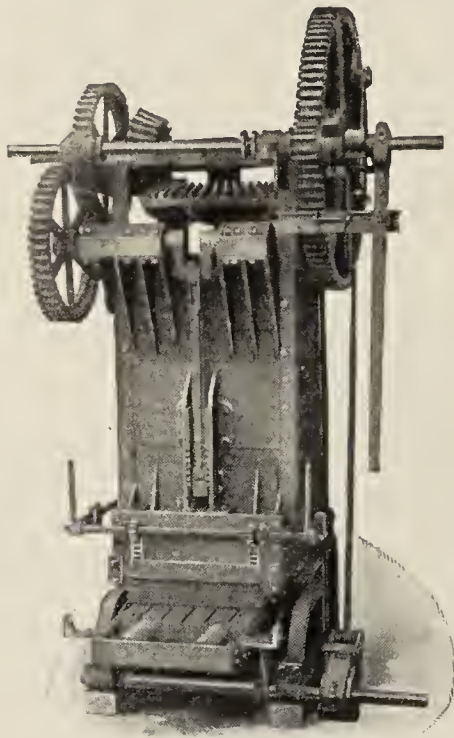


COMPLETE PLANS AND SPECIFICATIONS

FOR YOUR INSPECTION

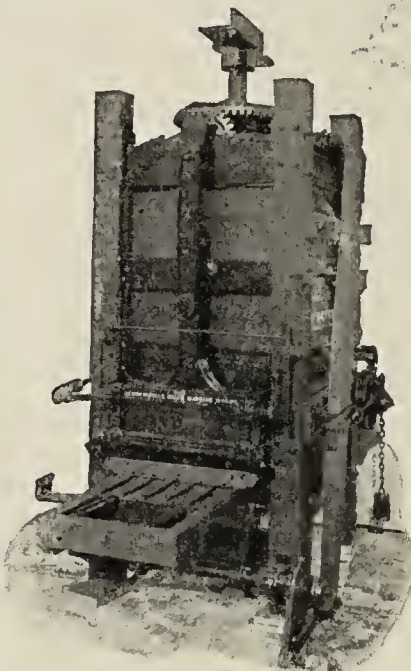
LET US KNOW YOUR
REQUIREMENTS

MARTIN-LANCASTER



Style "P" Brick Machine

NONE
BETTER



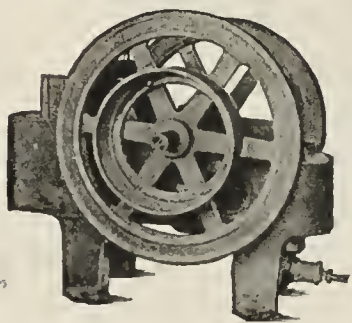
Horse Power Machine

UP-TO-DATE

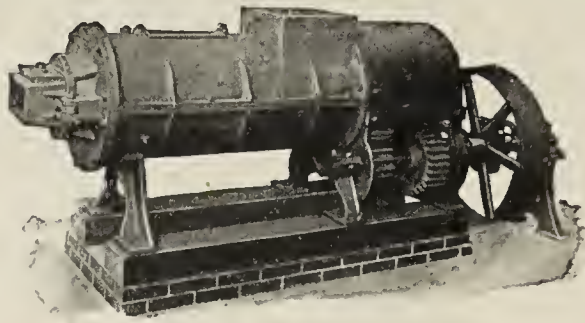


Style "A" Brick Machine

WE SOLICIT A THORO INVESTIGATION INTO THE MERITS OF THIS LATEST IMPROVED MACHINERY

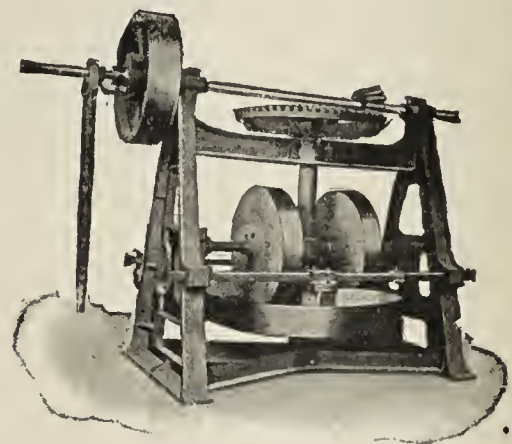


Rock & Ore Crushers

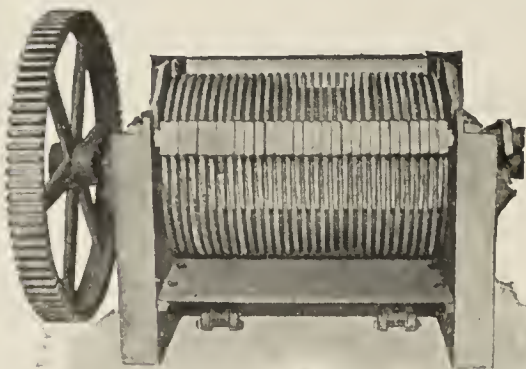


No. 1 Auger Brick Machine

WE FURNISH EVERYTHING YOU NEED FOR YOUR PLANT



Dry & Wet Pans



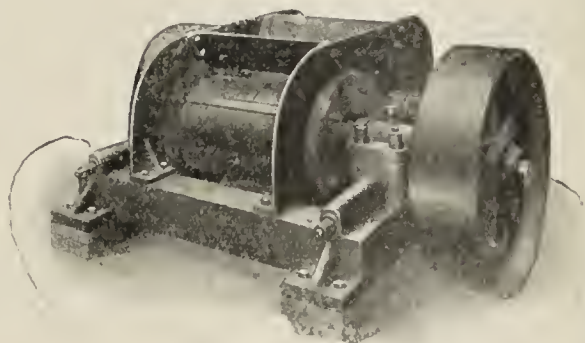
Separators - Clay Screens

— THE —
**HENRY MARTIN
BRICK MACHINE
MFG. CO.**

CLAY WORKING ENGINEERS

— LANCASTER —

PENNA. : : : : U. S. A.



High Speed Disintegrators

THE "MARTIN" RACK PIPE STEAM BRICK "DRYER SYSTEM"



PATENTED

February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.



This Drier and the design in arranging it are under the protection of the United States Government by virtue of patents granted. Patents also have been taken out in the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS.

Brick
Dried
In From
Six to
Twelve
Hours.

Building
Practically
Fire=
Proof.

Labor
Saving
Through=
out.
Good
Results.



No Fans
No Blowers
No Tunnels
No Cars

All Iron
And Steel
Construc=
tion
Excepting
Roof.

Can We
Dry Your
Brick—
Write Us
Today.

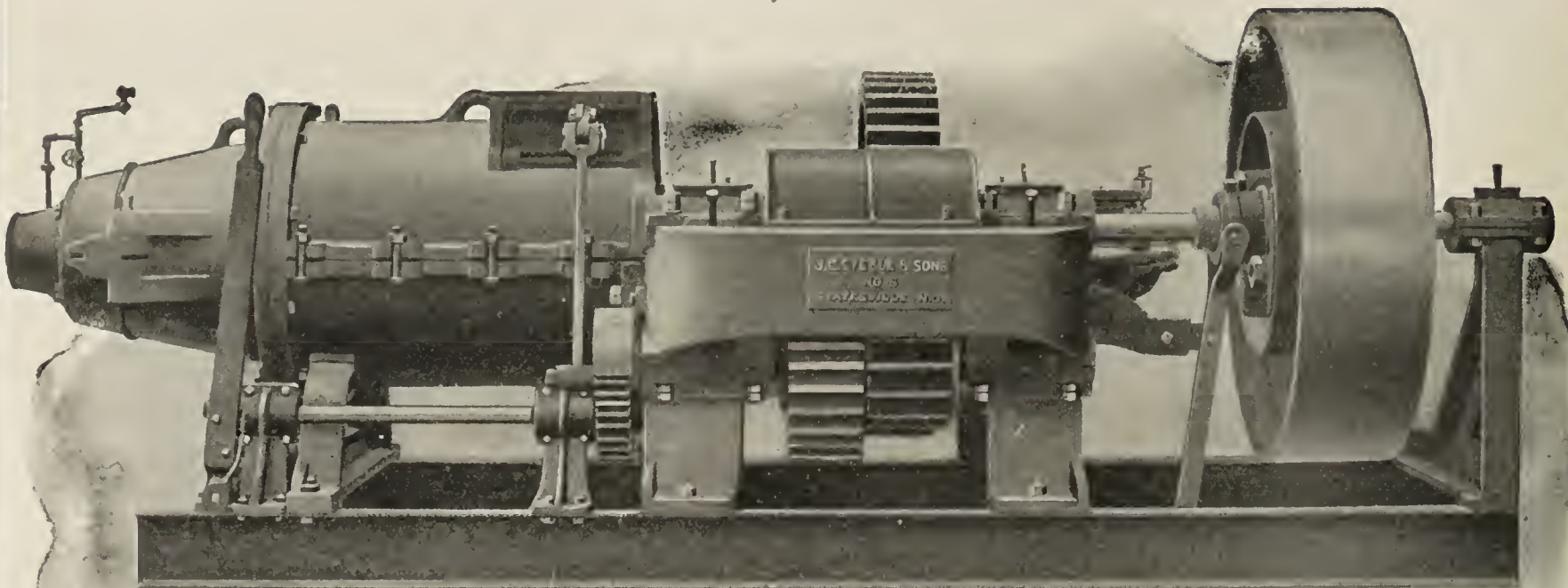
ADAPTED FOR SOFT MUD OR STIFF MUD BRICK.

Superior in Every Respect to Any Other System—Labor-Saving Throughout—Dispenses With Truckers and Car Pushers—Pallets Automatically Returned to Brick Machine—Quick to Install and Low in Price and Takes Up Very Little Yard Room.

The Sale and the Construction of the "MARTIN" Rack Pipe Steam Brick Dryer is Under the Direct Supervision of the Factory Office at Lancaster, Pa.

For further information address

The Henry Martin Brick Machine Mfg. Co., Inc.
LANCASTER, PA., U. S. A.



No. 5. CAPACITY 50,000 to 100,000 PER DAY.

Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen:—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.

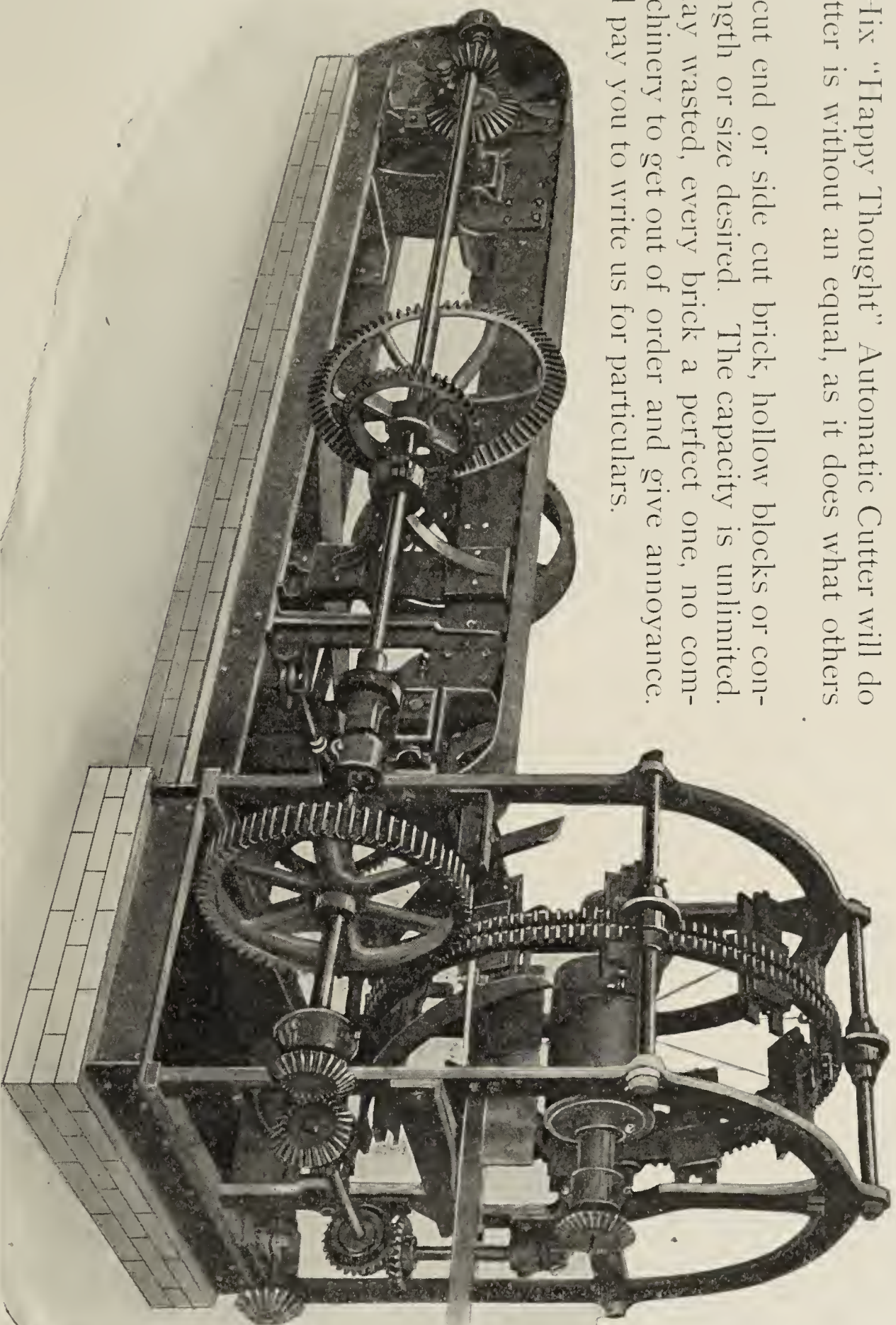
Are You Interested in a Cutter That Will Double Your Profits For 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal, as it does what others can not do.

Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited.

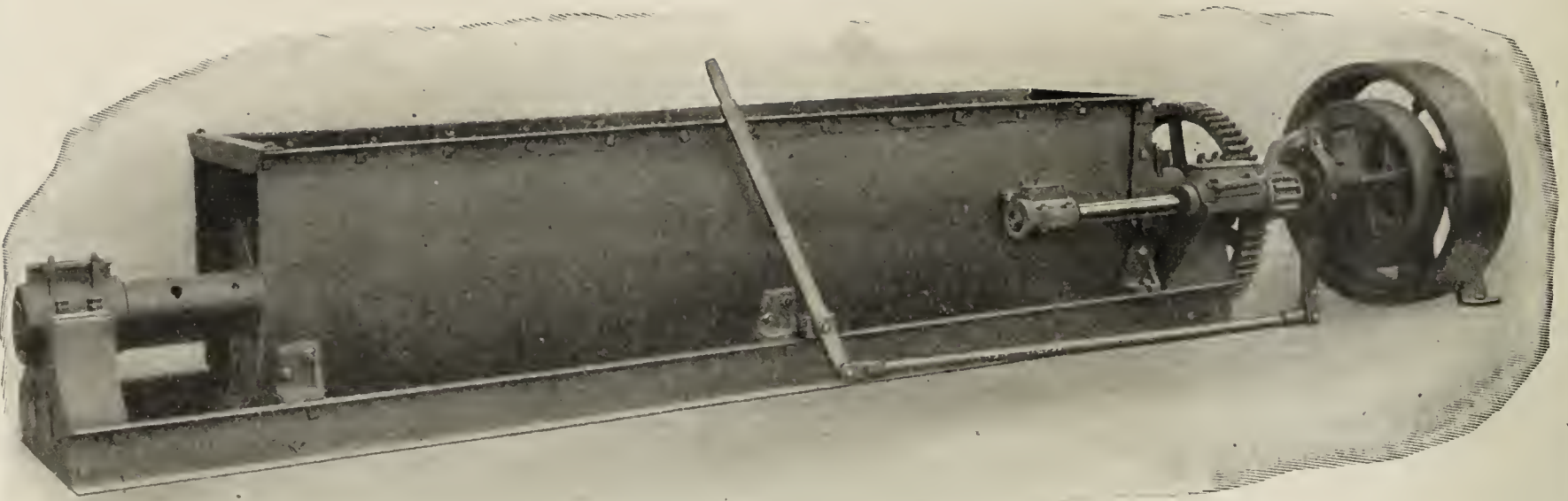
No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

It will pay you to write us for particulars.



THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

THE WALLACE MFG. CO., Frankfort, Ind., U.S.A.



No. 34 (Pushing.)

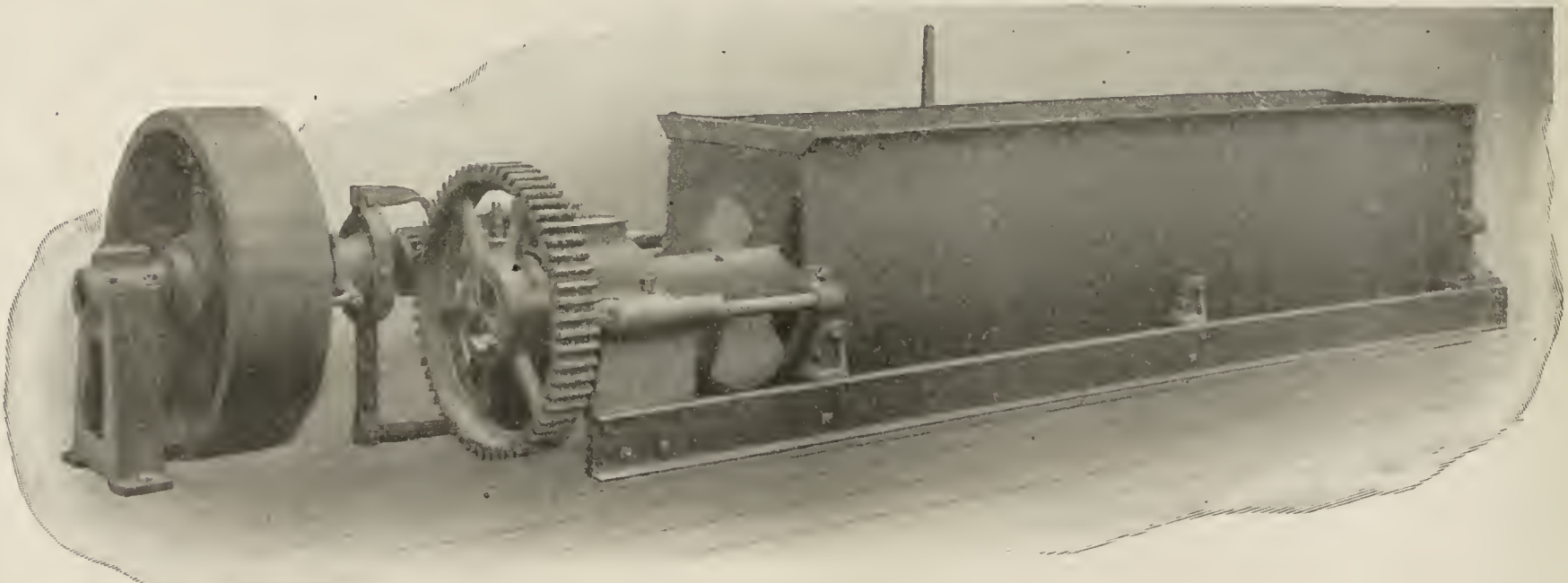
PUG MILLS

Let us tell you about these new patterns of ours. They are not ordinary pug mills but are especially good ones, and you will be interested in them.

If you could do more and better pugging and tempering with less power you would be glad to know it, wouldn't you? That's just exactly what these mills can do for you. Let us tell you how and why.

We have four different patterns.

H. Brewer & Co. Tecumseh, Michigan.



No. 35 (Pulling.)

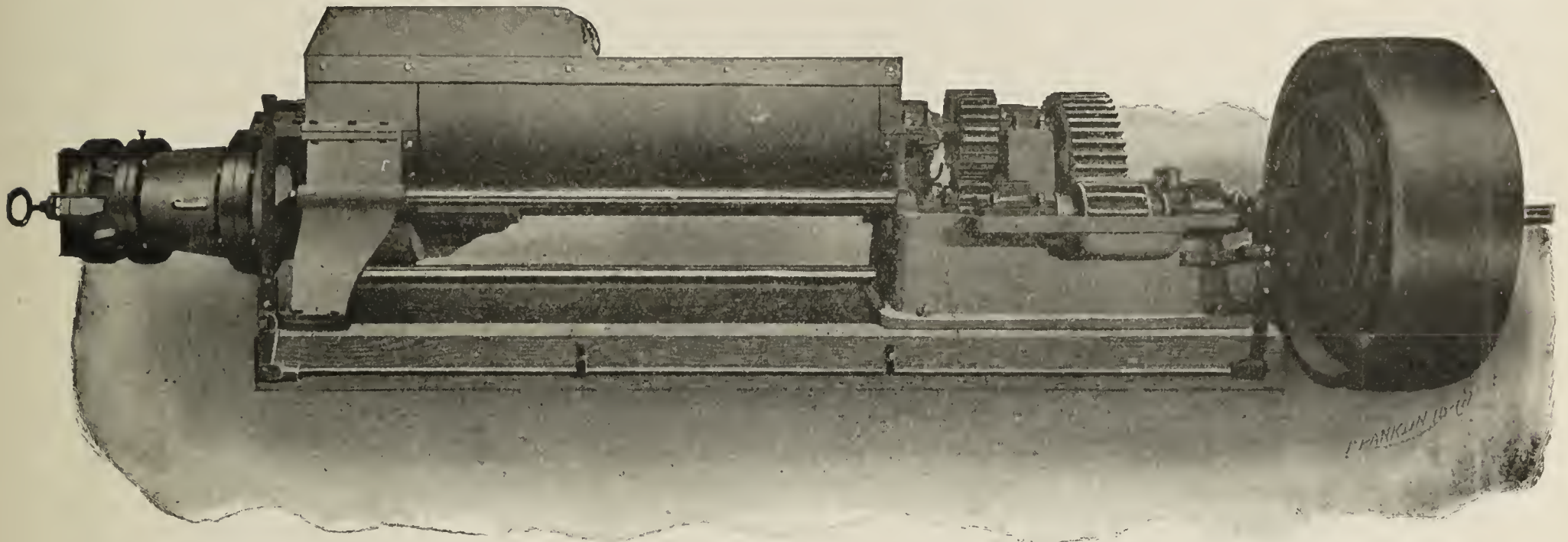


The J. D. Fate Co.

Richland County,

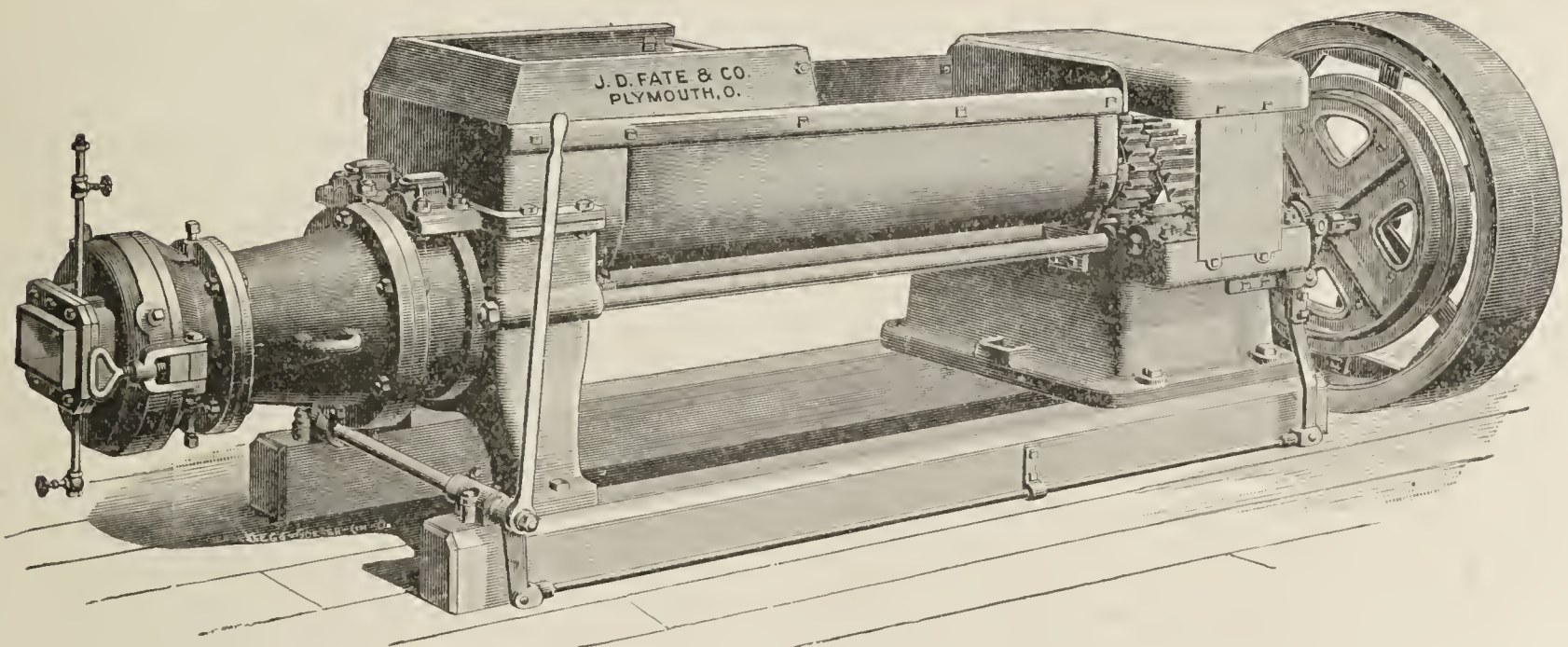
Plymouth, Ohio.

Imperial Combined Machine.



This is our middle size Combined Machine and is a favorite with the brick maker who wants to make from 30,000 to 40,000 brick per day, and more so with the tile maker who wants very large capacity in drain tile, combined with the very finest quality. Look at the cut of this machine with vertical attachment.

Hummer Combined Machine.



This was the first of our Combined Machines, and one of the best for the clayworker with a medium capacity plant, either of Brick or Tile, or both.

HOME OF HOOSIER CLAY MACHINERY.

ESTABLISHED 1878.

INCORPORATED 1906.



New Factory of Madden & Co., Manufacturers of Hoosier Brick and Tile Machinery.

Hoosier Upright Tile Machines are in a Class by Themselves. Machines for all Sizes of Tile—3 inches to 30 inches.

Hoosier Cutting Tables for Brick and Tile are unsurpassed for accuracy and service.

WATCH FOR OUR NEW CATALOGUE.

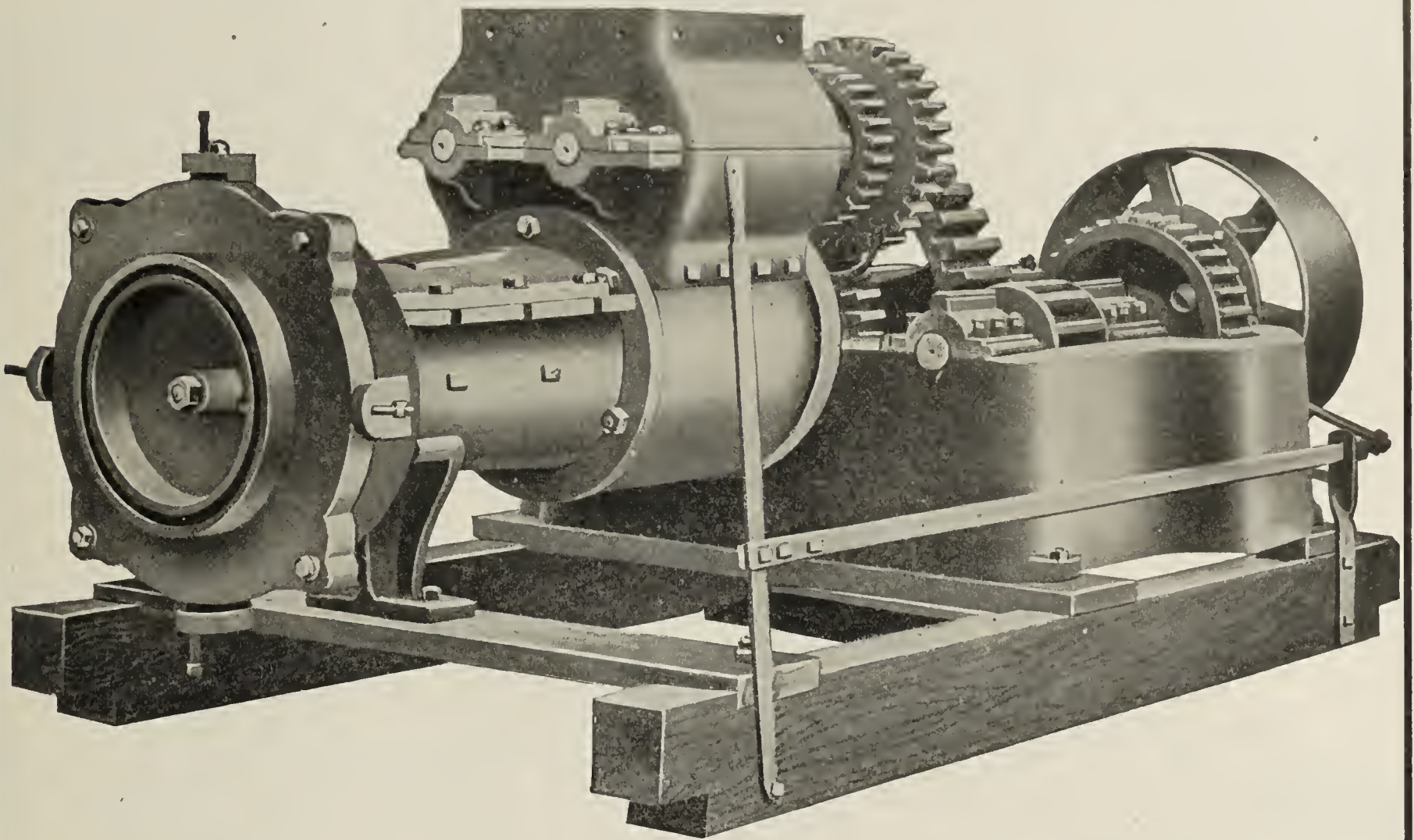
Write us for information.

MADDEN & COMPANY, Rushville, Ind.

Hoosier Clayworking Machinery

1878—Twenty-nine Years' Experience—1907

Brick, Tile and Hollow Block Machines



Note **DESIGN, STRENGTH** and **SIMPLICITY** of this machine.
THIS IS OUR NEW MODEL Stiff Mud Machine with extra pugging
 and feeding attachment, the use of which practically eliminates lamination.
 Made in two sizes for capacity up to 100,000 per day.

AUSTIN BRICK AND TILE WORKS.

ED. BARR, Proprietor.

Manufacturer of PAVING AND COMMON BRICK AND DRAIN TILE.

Dealer in St. Louis Fire Brick and Fire Clay.

Austin, Minn., December 29, 1906.

MADDEN & Co., Rushville, Ind.

Gentlemen—It affords me pleasure to give my testimonial of the efficiency of Madden machinery. Fifteen years ago I put in an outfit of your machinery in Mason City, consisting of a 5 B Brick and Tile Machine, Pug Mill and Granulator, which has been in continuous operation ever since, and has worked enough clay to make a string of tile to encircle the globe. The machine is rated at 25,000 brick per day, and the last time I saw it, it was making tile at the rate of 36,000 4-in. tile a day, which was about a month ago. There has been three other outfits of Madden machinery installed there. Eleven years ago I installed an outfit of your machinery in Austin, consisting of 5 B Brick and Tile Machine, Pug Mill and Granulator in which I have worked a great variety of clay from the fattest to the leanest, and the machinery does its part well.

I consider the Pug Mill the best mixer I ever saw. It operates with mill level full of clay from one end to the other and with little power.

I don't think my repair bill has exceeded \$300.00 in 10 years on the brick machinery.

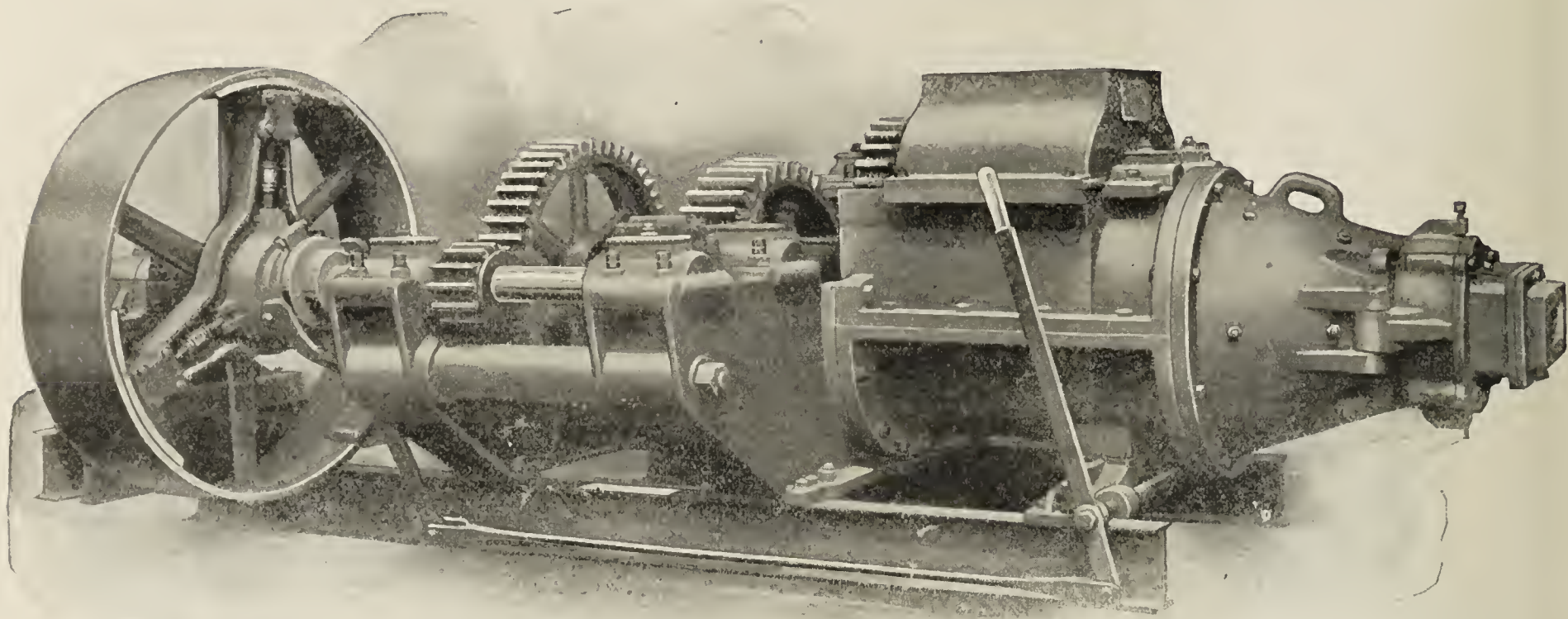
Yours respectfully,

ED. BARR.

For further information address

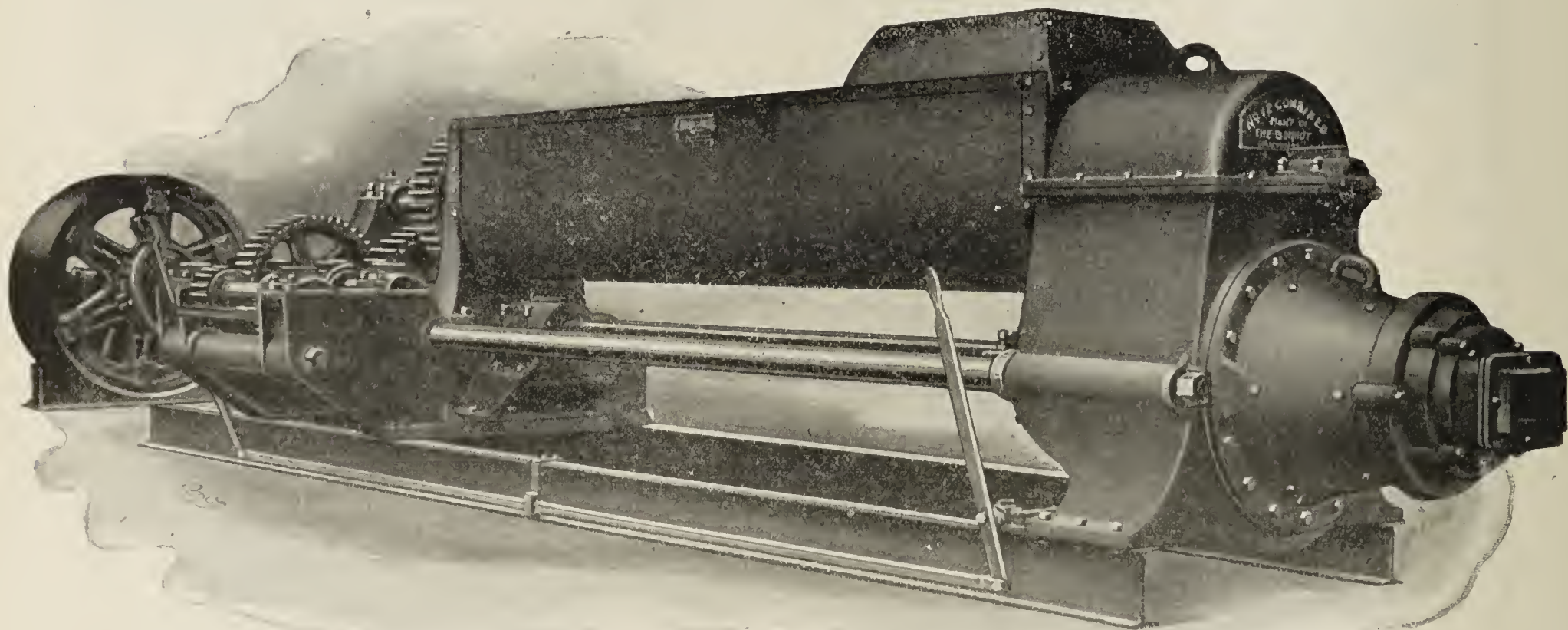
MADDEN & COMPANY, Rushville, Ind.

Modern Brick Machinery



No. 10 $\frac{1}{2}$ Auger Brick Machine.

50,000 to 75,000 capacity per day. Steel gearing, all wearing parts accessible. The best machine for those difficult clays.



No. 12 Combined Brick Machine and Pug Mill.

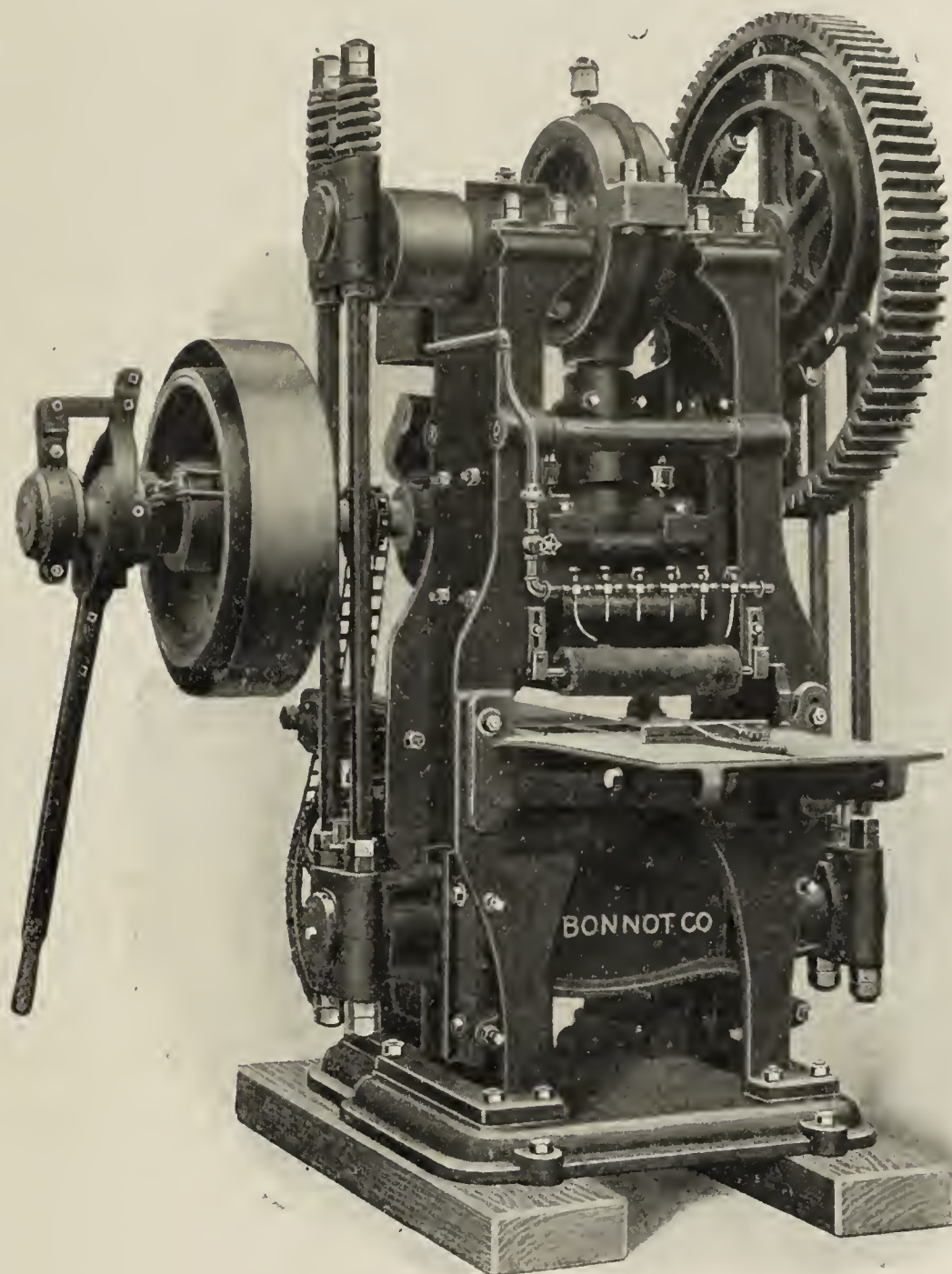
All steel gearing and very heavy construction throughout. Main thrust bearing is outside of frame and can be rebabbited without dismantling the machine. Capacity 100,000 to 125,000 per day.

THE BONNOT COMPANY, Canton, Ohio.

To Lessen Your TROUBLES Use Our PIANO WIRE SCREEN.

DO YOU WANT THE BEST REPRESS?

The
Canton
Repress
has
fewer
parts.
No toggles.
Heavy
Pressure.
Convenient
Adjustment
for
Changing
Thickness
of Brick.



Pressing
strain
taken on
the heavy
steel
side rods.
Large
shafts
and
bearings.
No
wearing
parts
below
the die.

The Canton Repress

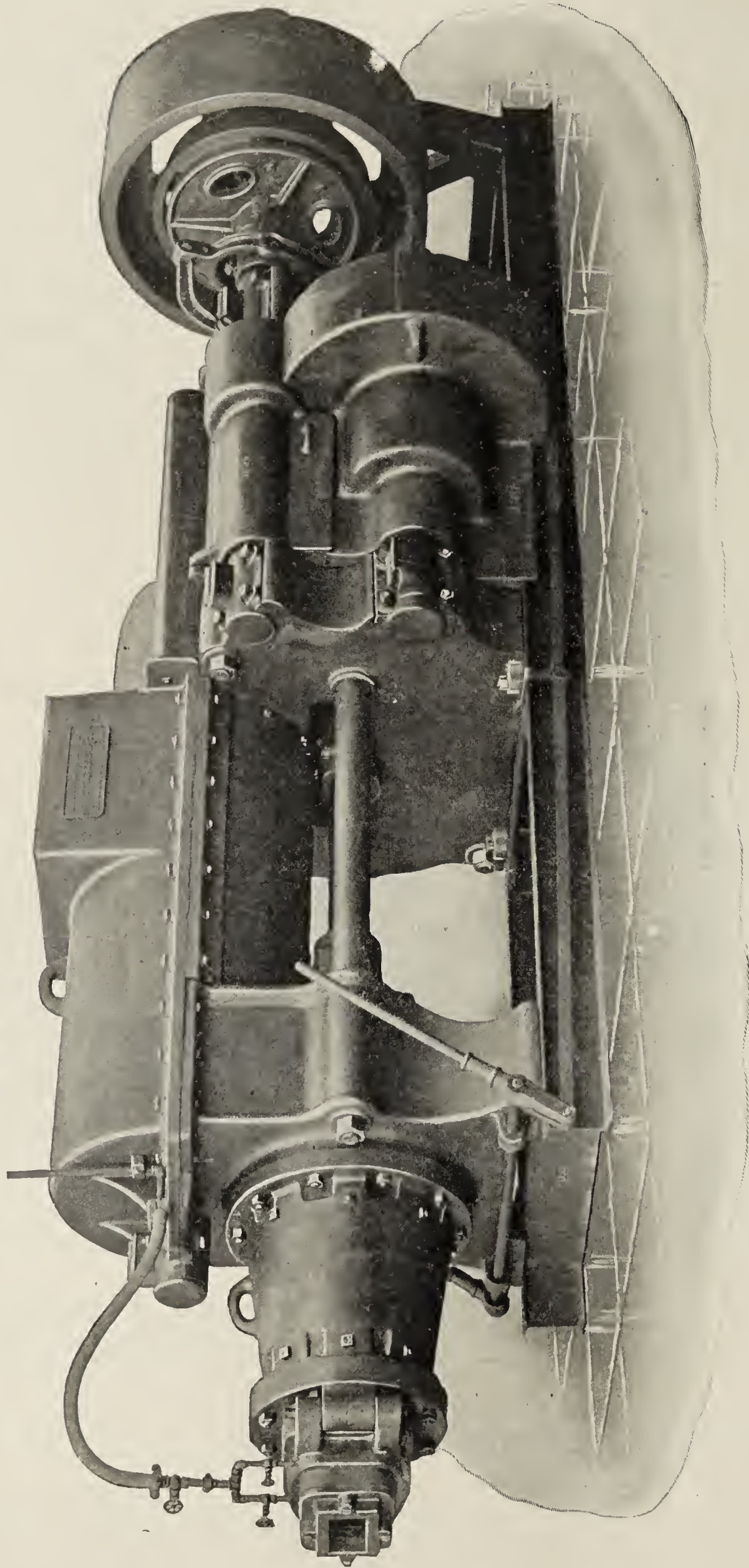
More points of merit than any other repress made.

THE BONNOT COMPANY,

Canton, Ohio, U. S. A.

Write for our Circular No. 12, just issued describing the latest designs of brick machinery.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

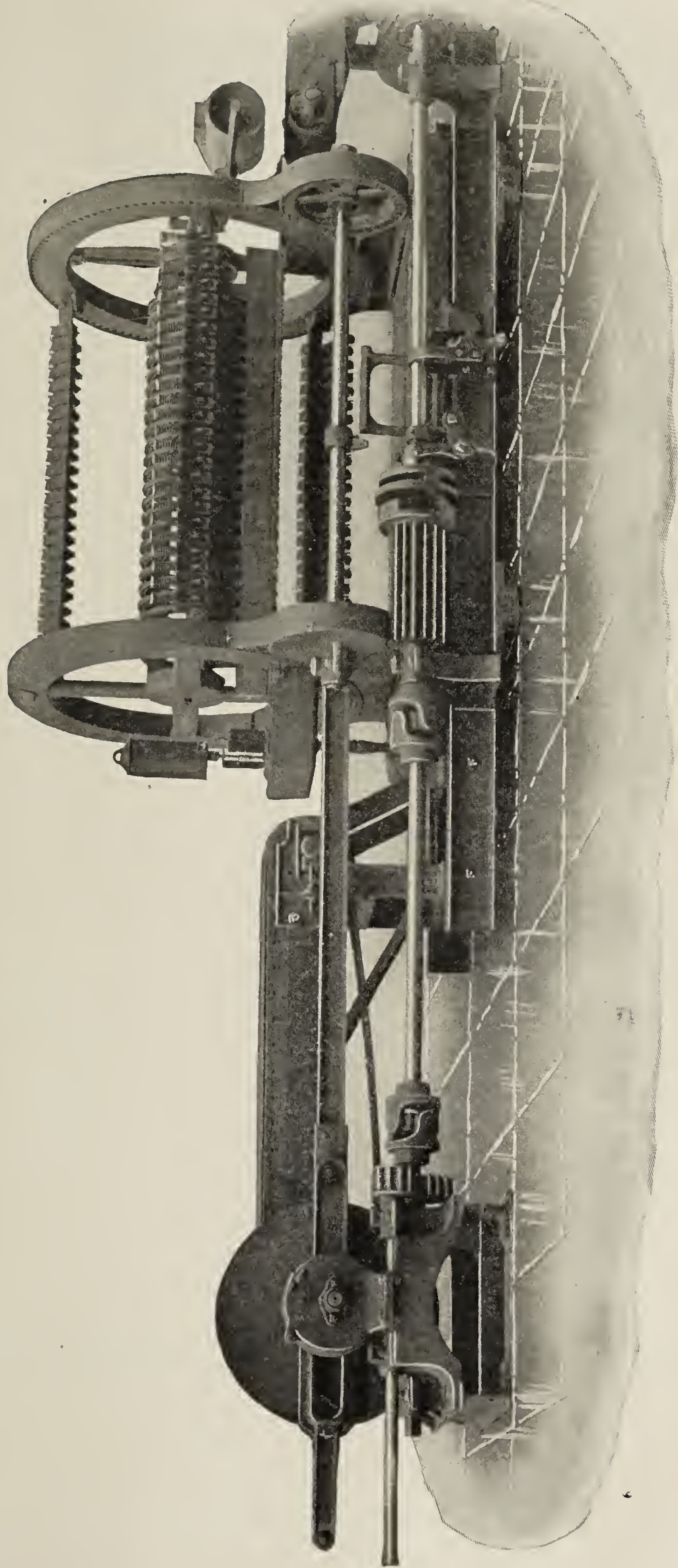
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.



Setters in Kiln at Plant of Howard-Park Brick Co., Chattanooga, Tenn.

\$ A Dollar Saved
is
A Dollar Gained **\$**

You can save a dollar on every thousand brick you make by using the

Scott Kiln=Drying System

(Alex A. Scott Patents)

Calculate how much this would mean to you in the course of a year, then write us. We can prove this statement from the experience of those now using the system

American Blower Company

Detroit, Mich.

New York
141 Broadway

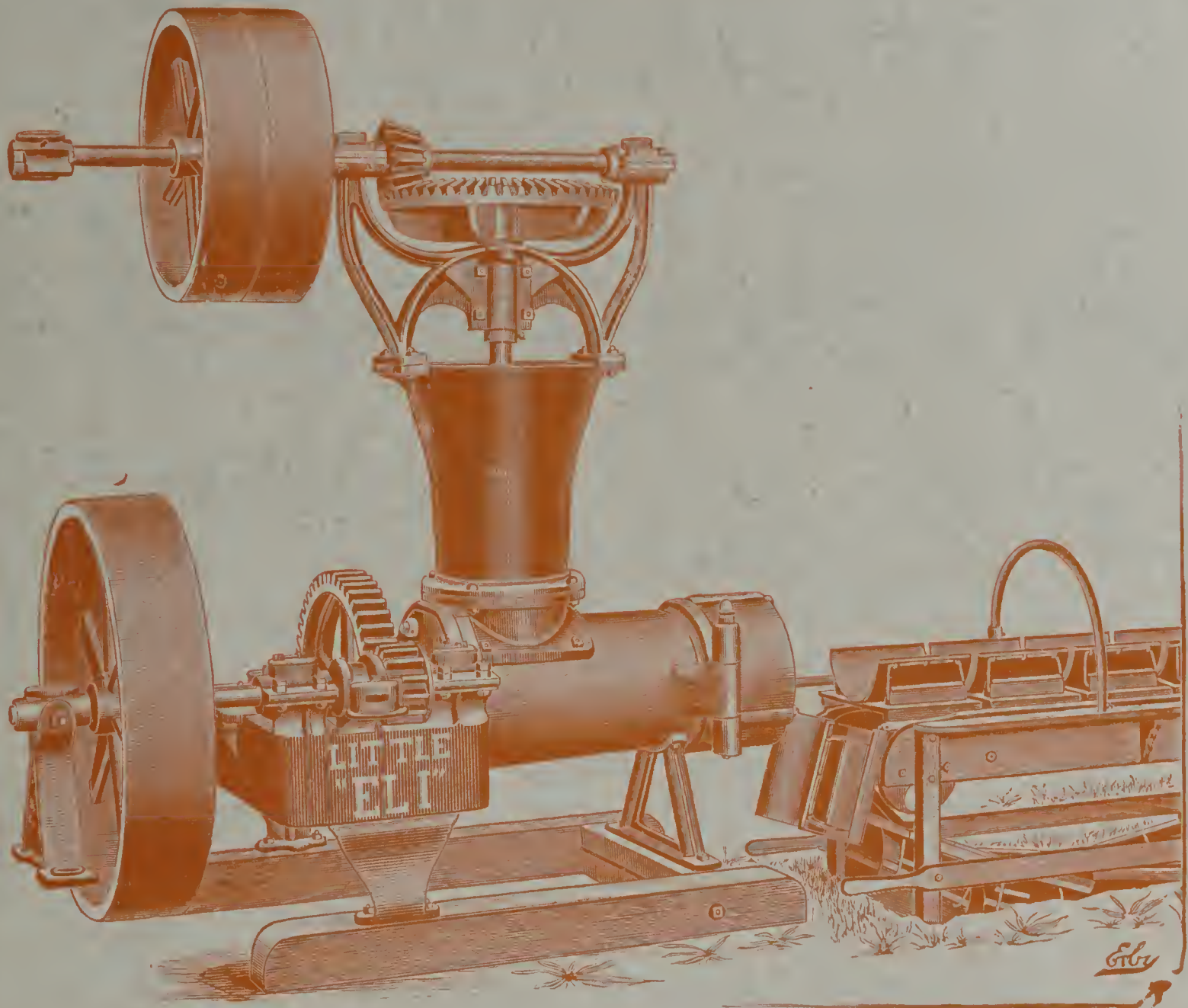
Chicago
Marquette Bldg.

Atlanta
Empire Bldg.

Our Smallest Machine for Brick, Tile, etc.

Capacity 18,000 or over First-Class Brick, or 8,000 to 12,000 3-inch Tile daily.

Horse Power required, 12 to 15.



MIXES THE MATERIAL THOROUGHLY. POSITIVE FEED. NO LAMINATION. INCREASES CAPACITY. IMPROVES QUALITY. IT HAS THE HINGED NOSE, EXTRA LONG, WHICH ALLOWS THE DIES TO BE MOVED TO OR FROM THE AUGER NEARLY SIX INCHES. WRITE FOR PRICES AND DETAILS.

Michigan Brick and Tile Machine Co., Morenci, Mich.:

Seattle, Wash., Oct. 31, 1902.

Gentlemen—"Eli" is still doing excellent work for us after ten years of faithful service making millions of brick out of clay that would put many brick machines out of business in the first round.

Yours very truly,

DENNY CLAY CO. (By Geo. W. K.)

Michigan Brick and Tile Machine Co., Morenci, Mich.:

Seattle, Wash., Nov. 26, 1902.

Gentlemen—The "Eli" brick machine that we bought from you was put into service at our works in 1893. Up to date we have made something over fifteen million brick on this machine. This includes shale paving brick and fire brick from highly refractory clays, in fact the clays we have run through "Eli" are of a character that will find a weak spot that there may be in any part of the machine. This output amounts to upwards of one hundred and five million pounds of clay. While this is a comparatively small run, based on Eastern concerns, in the time that has elapsed, yet we do not believe that there is a brick machine in the country today that is in better condition after the services rendered, than is our "Eli," for to all appearances, "Eli" is as good as the day he was installed.

Very truly yours,

DENNY CLAY CO.

Michigan Brick and Tile Machine Co., Morenci, Mich.:

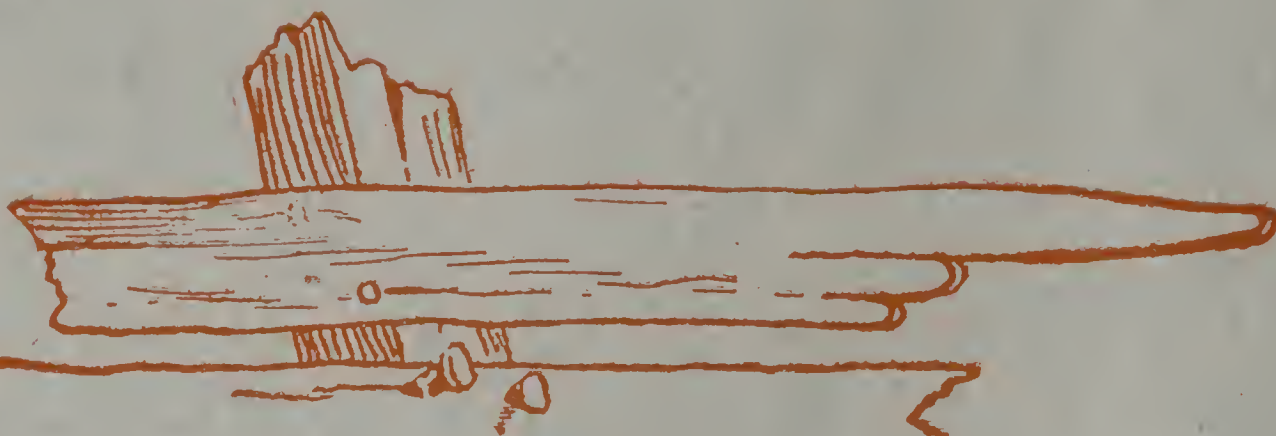
Seattle, Wash., June 20, 1904.

Gentlemen—Your informant was mistaken, and you were right in the matter of our having replaced the brick machine that we bought of the — — —. This machine is doing fairly good work for us. I am free to say, however, that if we had an order to place today for another brick machine, that we would buy the "Eli," as we have now tried different machines, "Eli" among them, and none are so satisfactory as the machine you make, and we have many times regretted that we did not buy your large Eli when we were East the last time, though at that time we were desirous of placing our order with some firm that could equip the whole plant and do it quickly, and it was for this reason only that we did not place our order with you.

Yours very truly,

DENNY CLAY CO. (Per Geo. W. K. Mgr.)

Michigan Brick and Tile Machine Co., Morenci, Mich.



THOUGH the Robinson Clay Product Co., of Akron, Ohio (home of our competitors), old and experienced sewer pipe men as they be, had been testing the Stevenson Co.'s grinding pans, and as they said, had found them **superior to any other they had ever used**, they were still skeptical of the superior merits ascribed to The Stevenson Co.'s sewer pipe machinery by the owners and operators of later built works; but like Queen of Sheba of old they resolved to go and see for themselves; and, like her, when they had seen the machinery in operation, the rapidity of output, etc., they felt—

“The half had not been told”

Hence the

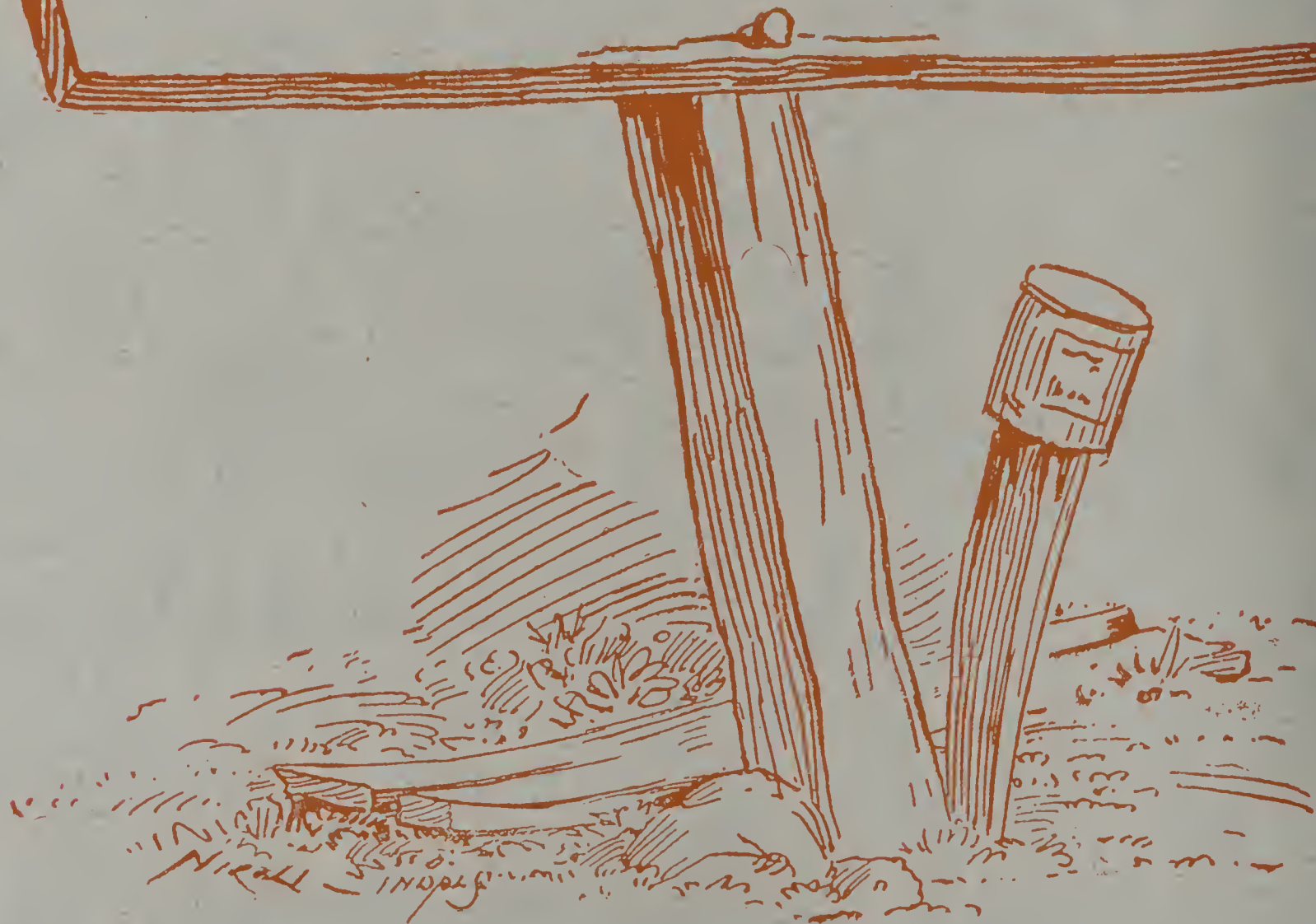
LARGEST SINGLE ORDER EVER PLACED

went to The Stevenson Company, at Wellsville, Ohio.

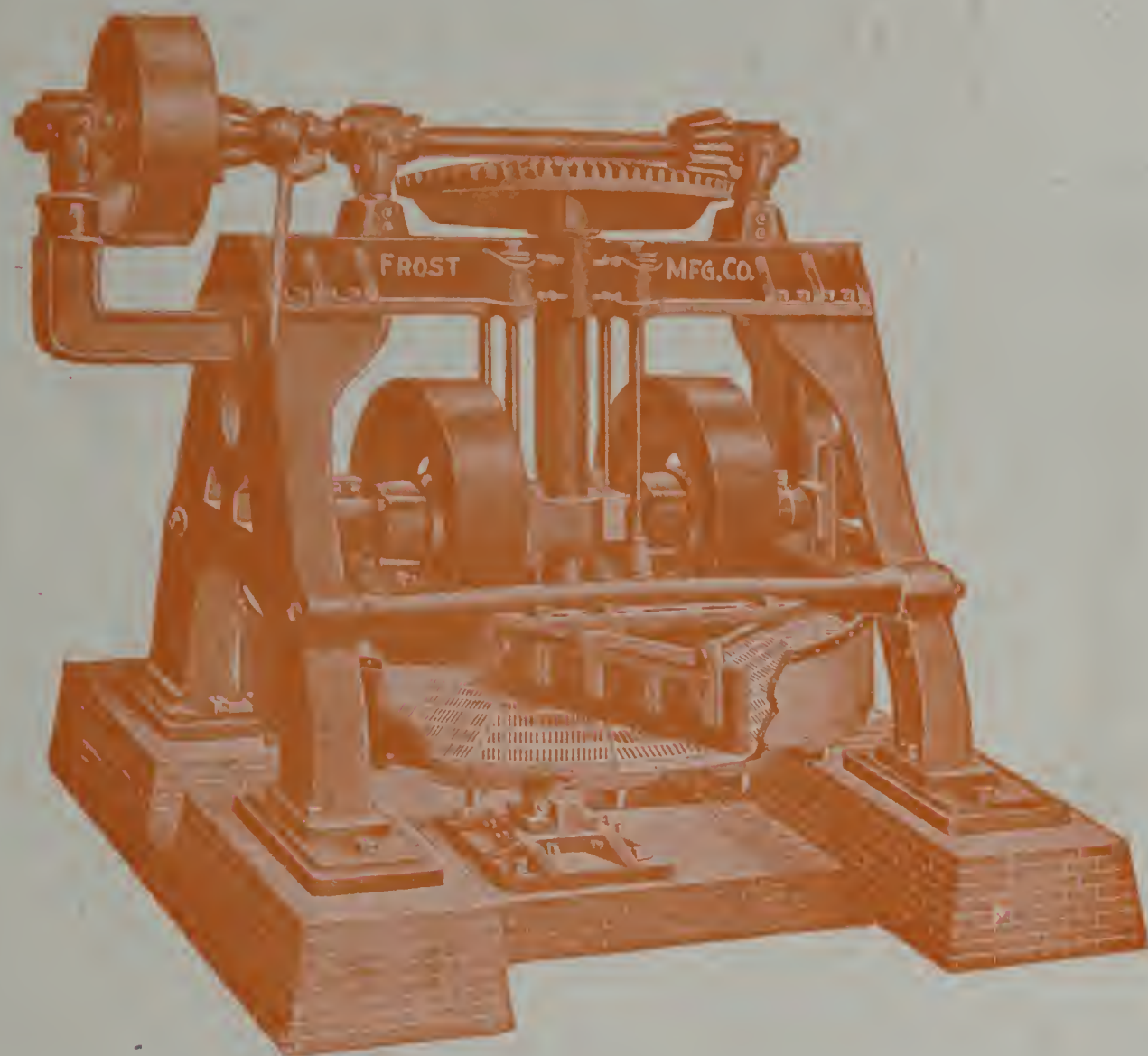
[By the way, our competitors are saying all manner of untruthful things in explanation of their failure to land the order. Ask Robinson Company.]

NOW The Stevenson Co. doesn't ask anybody to take the Robinson people's word for it, the most expert of experts though they be, but say to doubters or inquirers—“Come, and we'll show and convince YOU too, if you are competent to judge.”

ANOTHER significant thing is—you never see any of Stevenson's machinery offered for sale unless the owner is going out of business.



FROST DRY PAN



When you buy a Pan buy a FROST Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.

SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago.



Bricks taken from the "A B C" Waste Heat Dryers are thoroughly **bone dry**. This eliminates the necessity for "water smoking," saving anywhere from two to four days' time. Further, the bricks being dry, the temperature of the kiln can be raised more quickly and the time required to burn is thus reduced. Again, drawing away the heat as radiated from the cooling bricks in the kiln, reduces the time ordinarily needed to cool a kiln. The collective saving of time for the different operations increases the output of the entire plant very materially.

Ask for Bulletin No. 159 C.

American Blower Co.,

DETROIT.

New York. Chicago. Atlanta. London

REMEMBER THIS

After having tried one of the contrivances which appeals to you for screening your clay on account of cheapness and small space required, **You** will come to us to solve your **Screening Troubles**. We have outlived a hundred of such repeated attempts, and are at present removing these make believe screens. As soon as the user can get over the shock of having been deceived, **The Perfect Clay Screen** can be adjusted according to requirements. **Can you do this with any other screen?** We Positively Guarantee It, and allow you to be the judge before you pay for it. Dunlap's Rolling Fire Box Door Has Equal Merits.

Write today for information.

Dunlap Mfg. Co.

Bloomington, Ill.



Havoc Wrought by the Fire at the Factory of the Ohio Ceramic Engineering Co.

TEMPORARILY EMBARRASSED BUT STILL IN BUSINESS.

To the Trade:

A fire on the night of February 12th destroyed our main factory but **not** our business. We have put up temporary buildings and are turning out work about as usual. Factory will be rebuilt better and larger than before.

We are able to handle all new business, so send along your inquiries and orders—for cars, represses and dryers.

The Ohio Ceramic Engineering Company,
CLEVELAND, OHIO.

THE CLAYWORKER

PUBLISHED MONTHLY BY
T A RADDALL & CO
INDIANAPOLIS..



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APRIL, 1907.

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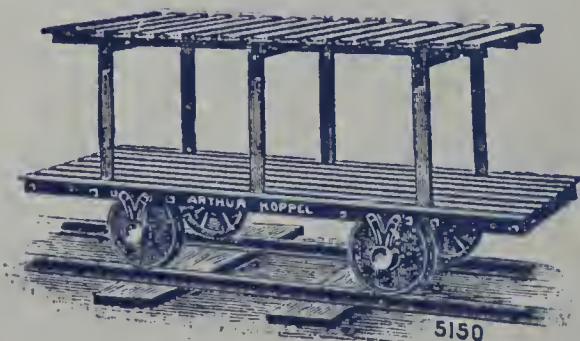
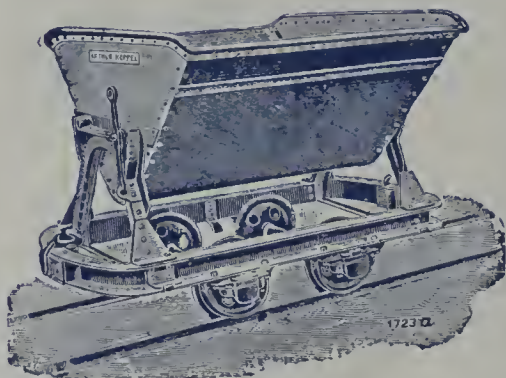
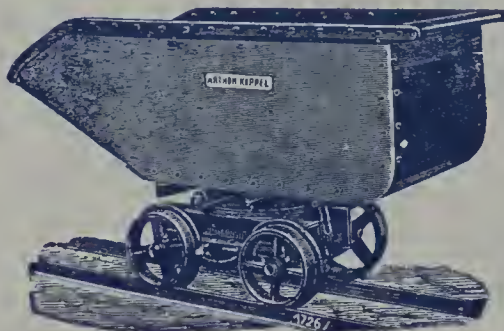
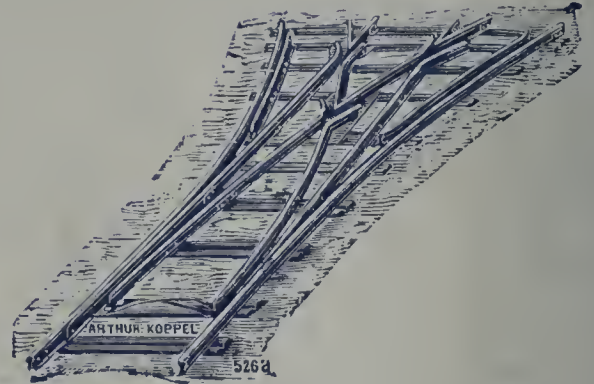
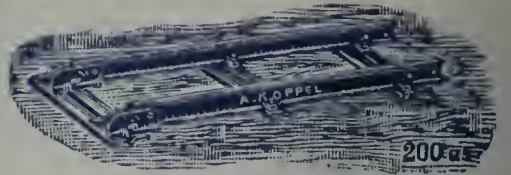
Works at



OUR COMPLETE INDUSTRIAL RAILROADS

FOR MINES, QUARRIES AND BRICKYARDS, INCLUDING RAILS, STEEL TIES, PORTABLE TRACK, SWITCHES, FROGS, TURNTABLES, CROSSINGS, WHEELS, AXLES, SPARE PARTS, PLATFORM CARS, STEEL DUMP CARS, DRYER CARS, LOCOMOTIVES, ETC.

WRITE FOR CATALOG "C."



A LARGE STOCK

ALWAYS ON HAND AT OUR WAREHOUSES READY FOR PROMPT DELIVERY. CATALOGUE "C" WILL INTEREST YOU. IT DESCRIBES EVERYTHING WE MANUFACTURE.

ARTHUR KOPPEL COMPANY

66-68 BROAD STREET, NEW YORK
53 OLIVER STREET, BOSTON
1639 MONADNOCK BLOCK, CHICAGO
MACHESNEY BLDG., PITTSBURG
515 MARKET ST., SAN FRANCISCO

Works at

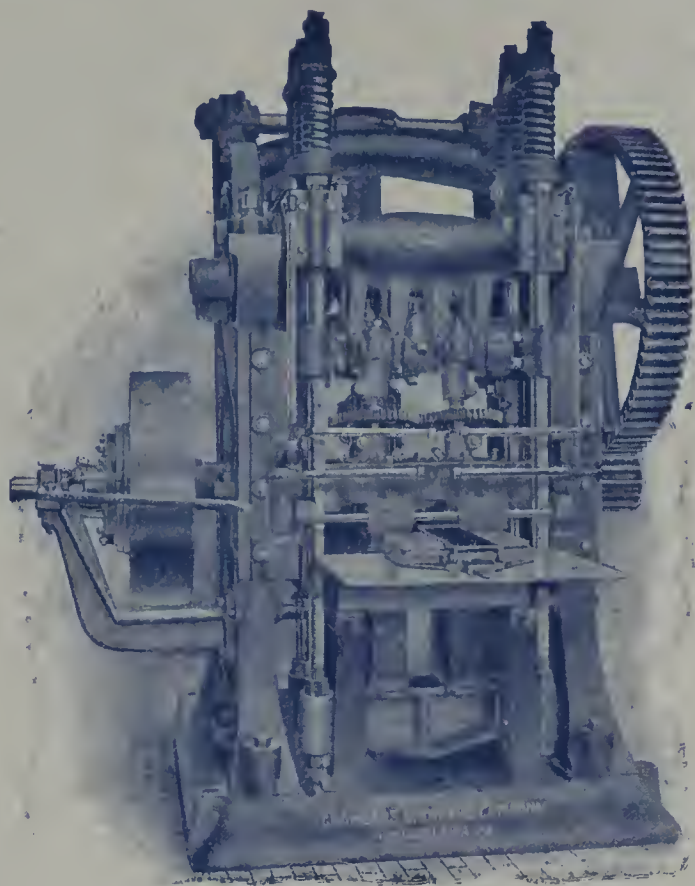


P. O. Address, HOMEWOOD
Beaver County, PA.

Trade-Mark.

THE CHAMBERS BRICK MACHINERY.

Weight about 11000
pounds
Capacity 2000 bricks
per hour.



Single Crank move-
ment. Working
Machinery all above
the Mold Box.

Philadelphia Repress, No. 2.

Automatic End-Cut and Side-Cut Auger Machines.



Capacity—Strength—Materials—Workmanship—Design, all of the best
and all are factors in the satisfaction given users of our machinery.

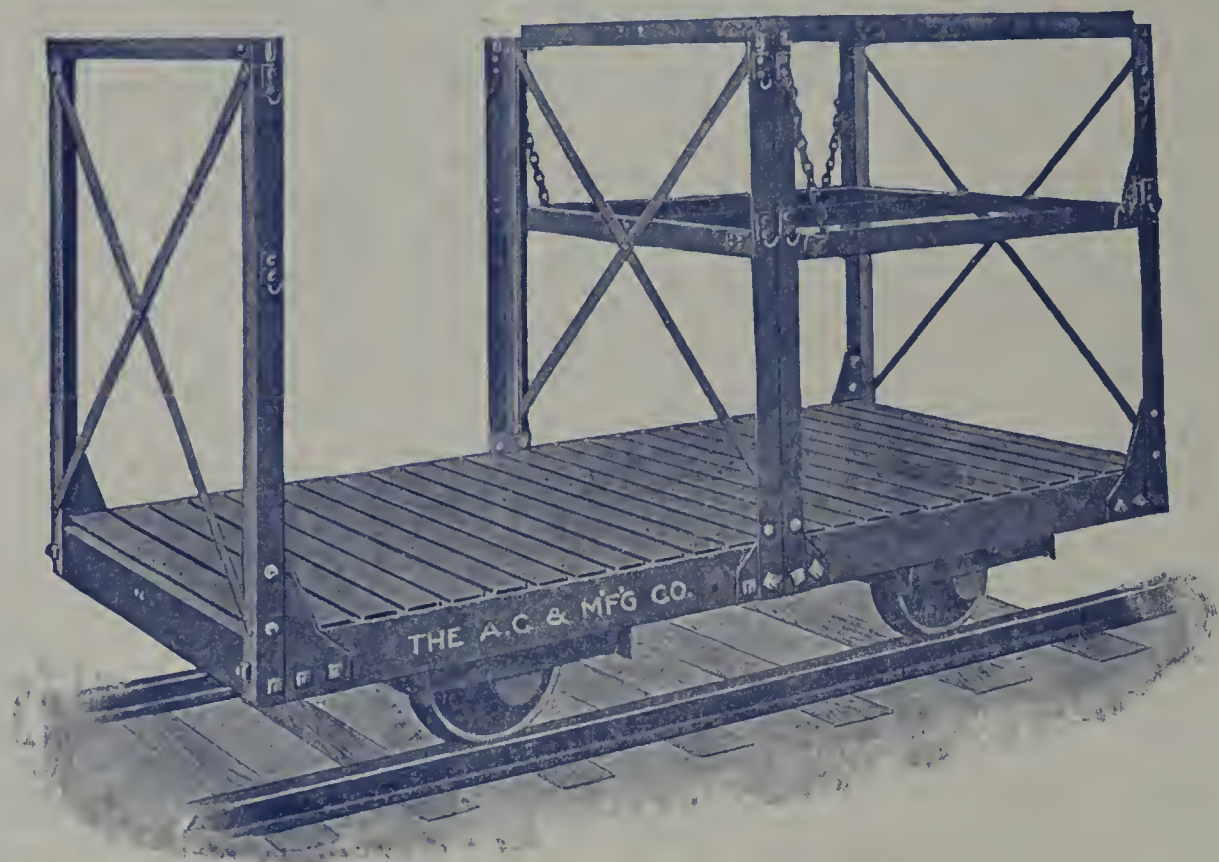
CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets

Chicago Office:
E. R. FRAZIER, 59 West Jackson Blvd.

PHILADELPHIA, PA.

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 697.)

G. E. LUCE ENGINEERING CO.,

601 Plymouth Building,
CHICAGO, ILL.



Practical Design and Supervision of Brick Plant Construction.



From our long experience in various clayworking fields we are able to offer suggestions which will bring your old plant to its highest efficiency or start your new one a little better than the best.

A careful study of the drawings we exhibited at the St. Louis Convention would convince you OUR PLANTS MAKE BRICK. If you were not there send for copy of one of the most complete Brick Plant drawings ever exhibited.

THE HARRINGTON AND KING PERFORATING CO.



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,

CHICAGO, ILL., U. S. A.



INTERESTING, ISN'T IT,

(though strenuous) this daily pursuit of the "ALMIGHTY DOLLAR?" It's a race, however, that is constantly becoming more difficult to run and he who would win must be ever watchful and quick to grasp every advantage.

In the brick manufacturers' race to the goal of wealth, the would be winner has only to take advantage of the

RODGERS WASTE HEAT SYSTEM

of drying brick to find himself in the lead.

DON'T WAIT TO RUN TOMORROW'S RACE—RUN TODAY'S.

L. E. RODGERS ENGINEERING CO.

Waste Heat Dryer Specialists,
Brick Works Engineers.

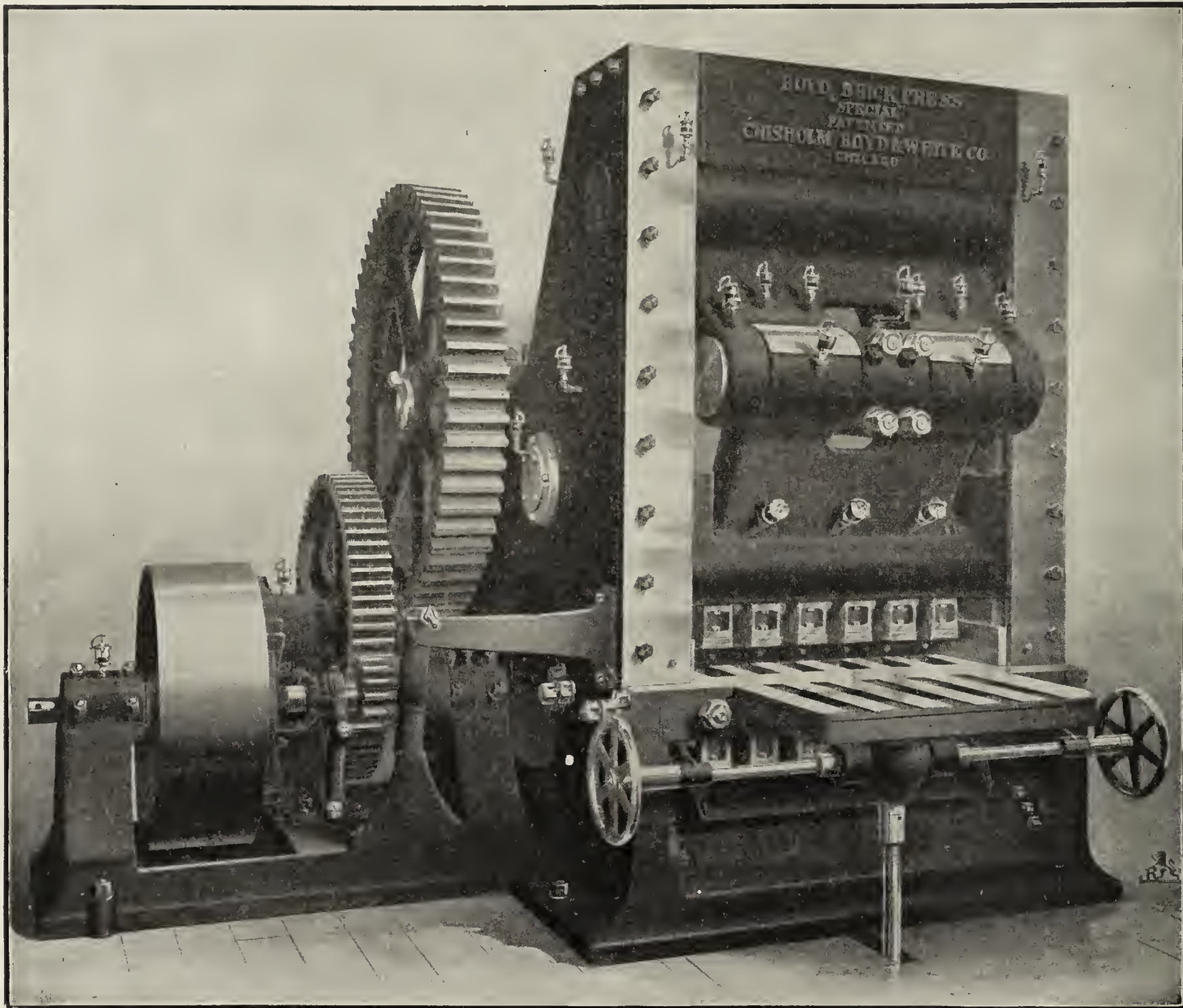
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Six-Mold "Special."



The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles to the art of brickmaking. Correspondence solicited.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts

CHICAGO, ILL.

SAND=LIME BRICK MACHINERY.

BOYD QUALITY.

MODERN METHODS.

NO EXPERIMENTING.

More Boyd Presses making sand=lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand=Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation. Machinery and product guaranteed.

Correspondence solicited.

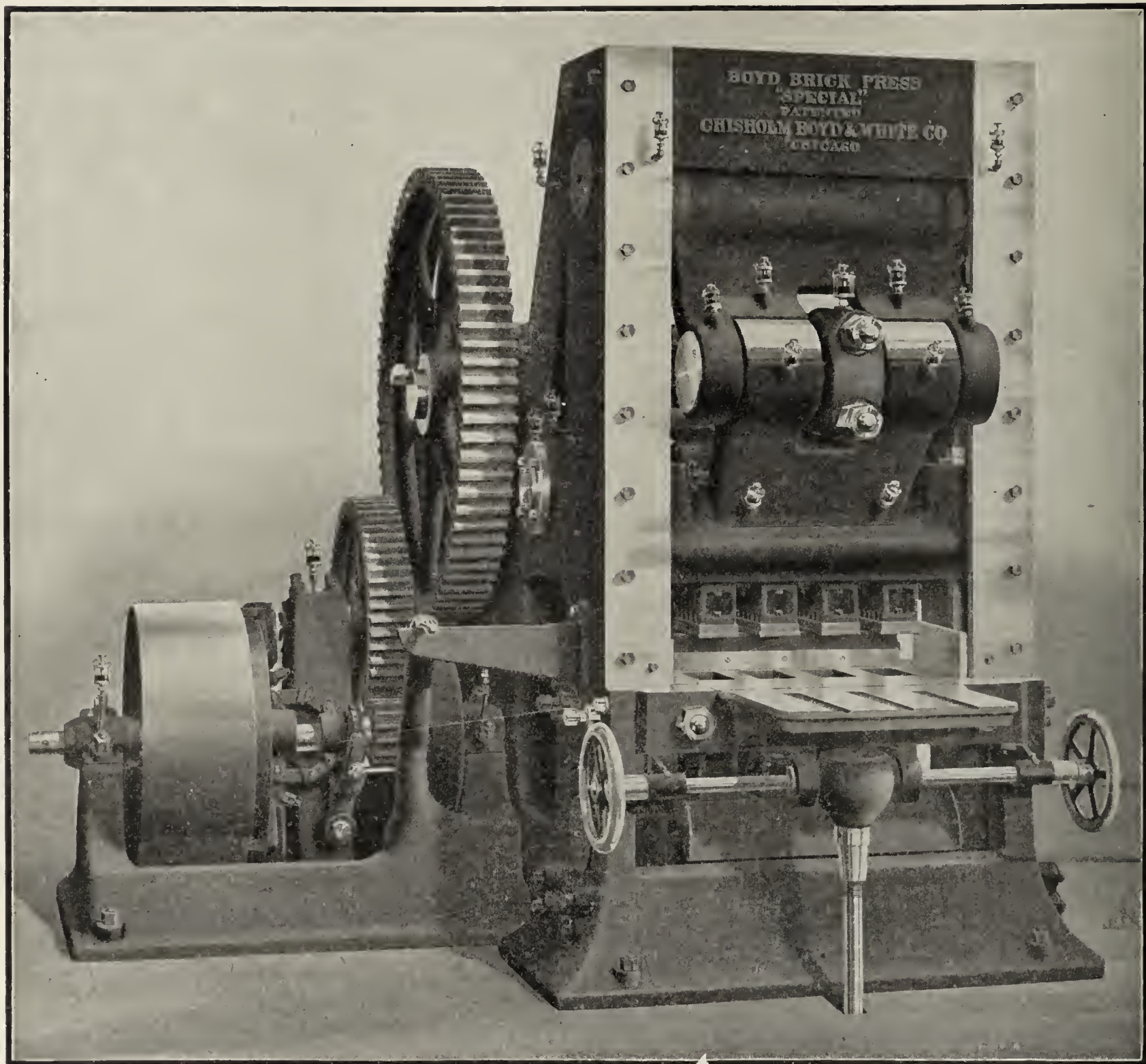
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Special."



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for General Catalogue No. 15.

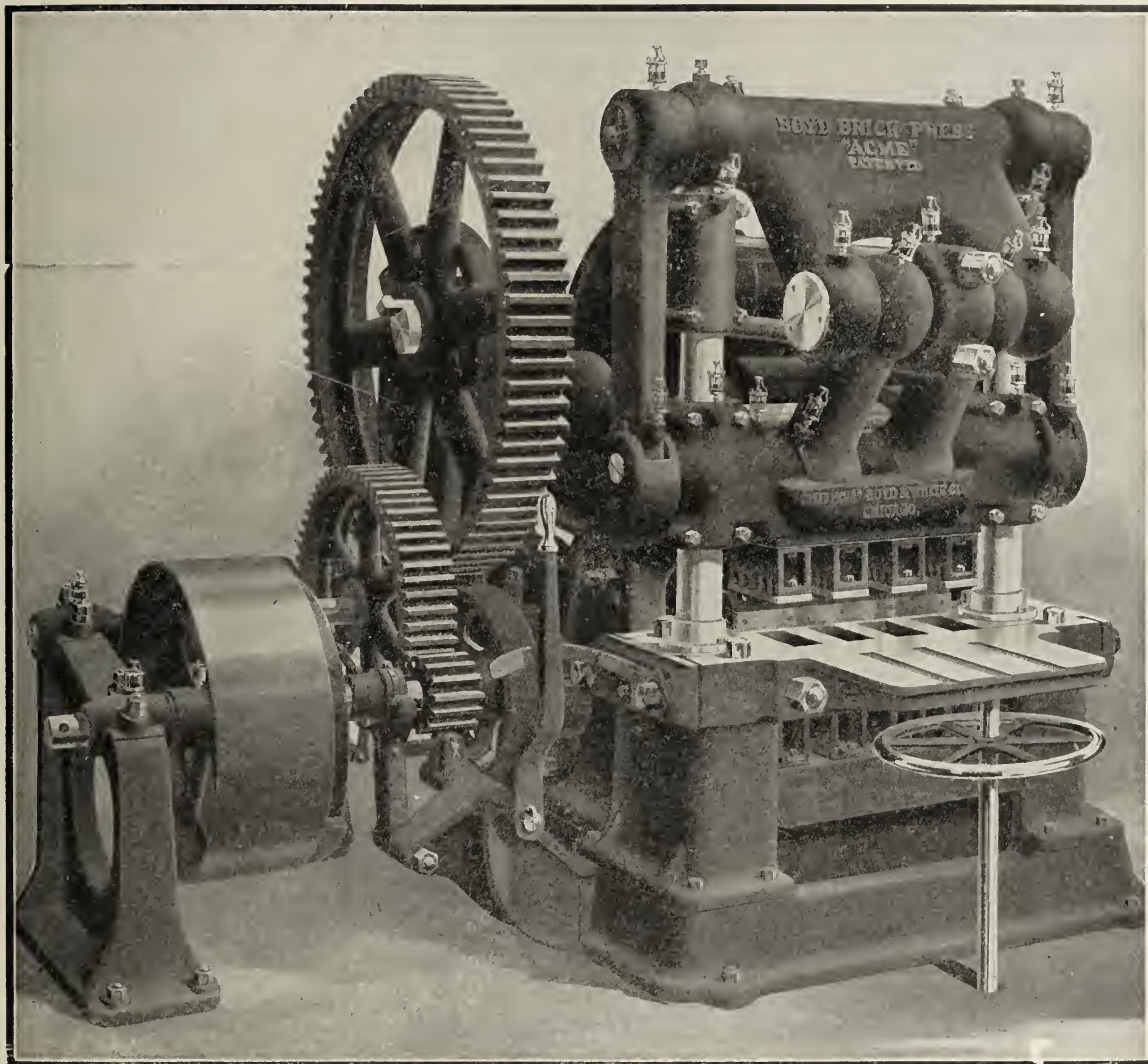
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Acme."



ITS NAME A GUARANTEE.

The Four-Mold Press above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

THE BOYD BRICK PRESS was the standard at the start, and is the standard now. Steady progress, merit and improvements have kept it at the front.

We will send to any responsible party a BOYD BRICK PRESS ON TRIAL, under the broadest and safest guarantee. We take the machine back if not satisfactory.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

THE ONLY PERFECT BRICK PRESS

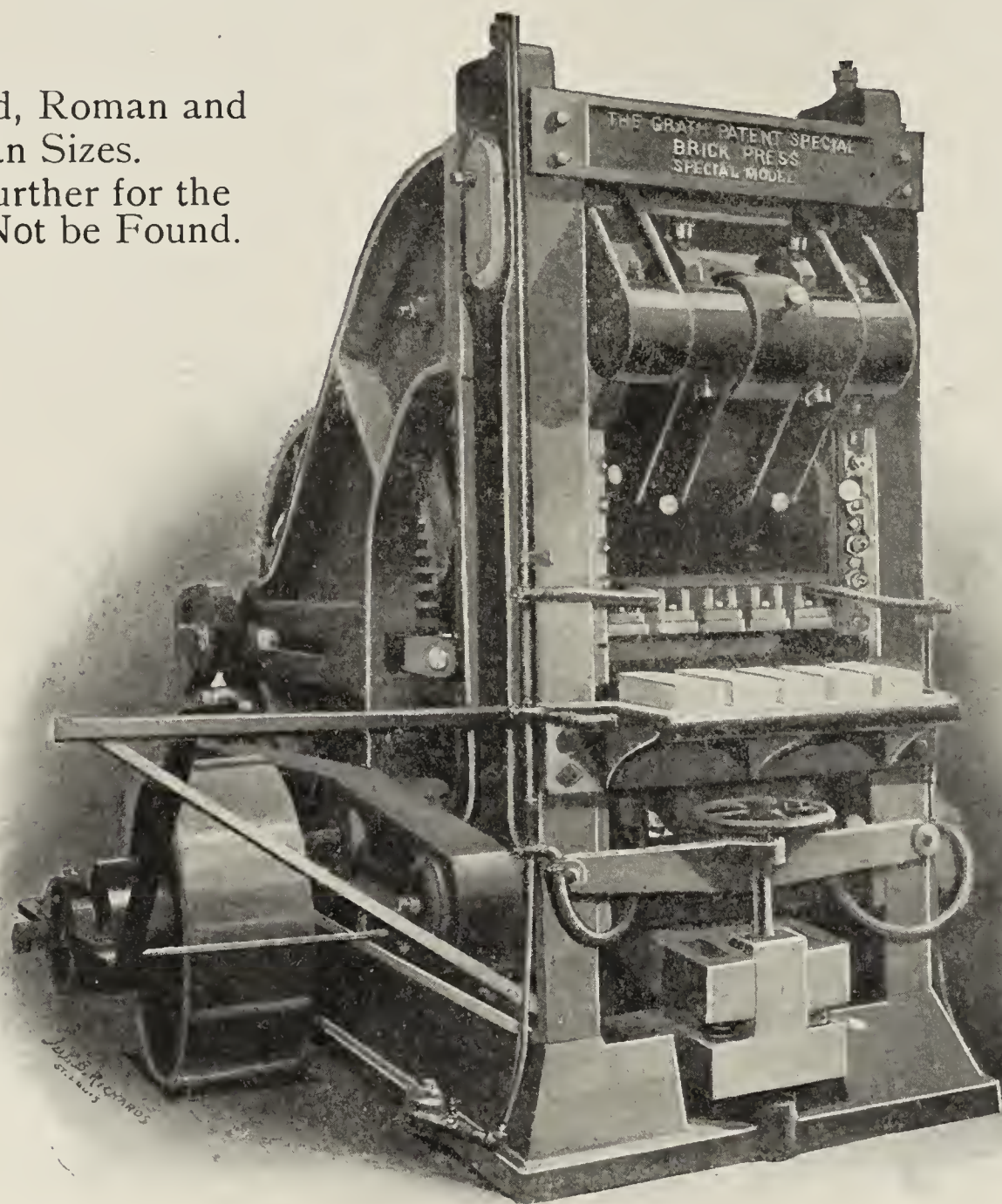
For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

Special Large Model Making Five Standard Size Brick.

For Standard, Roman and
Norman Sizes.

Seek No Further for the
Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufac-
turer
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not top heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

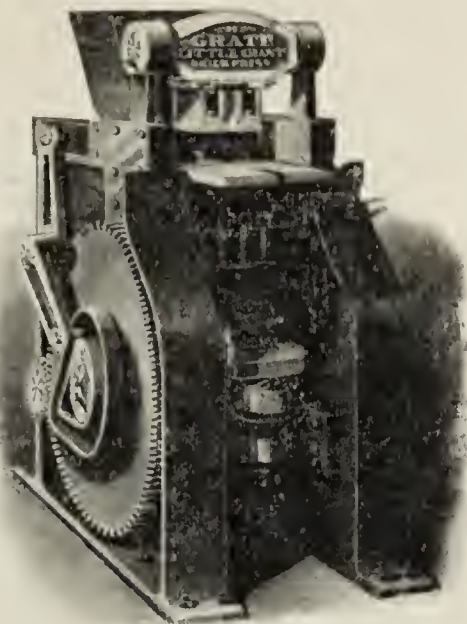
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

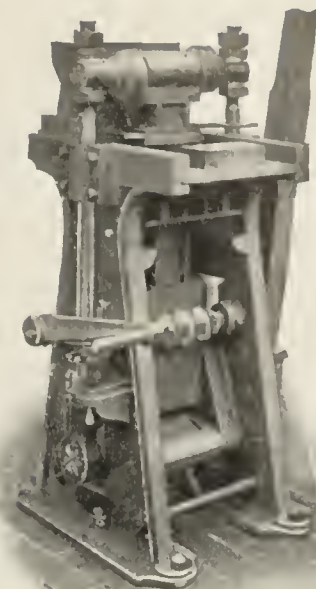
St. Louis, Mo., U. S. A.



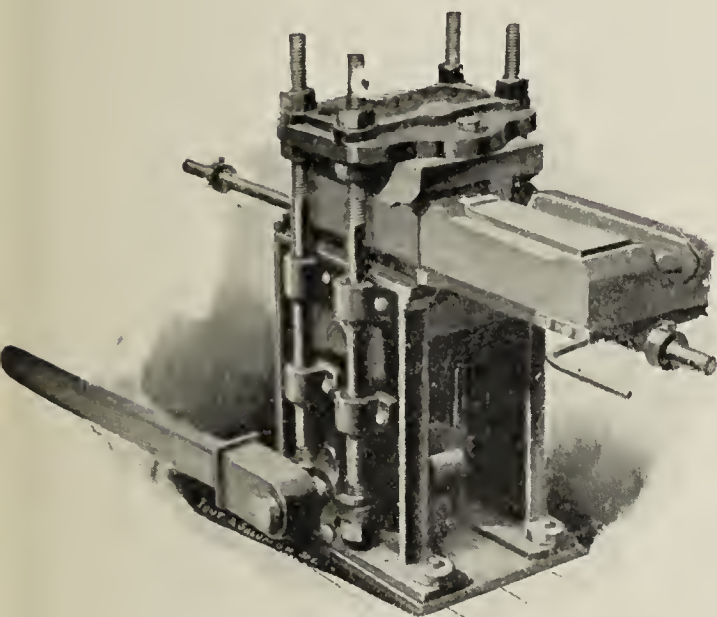
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



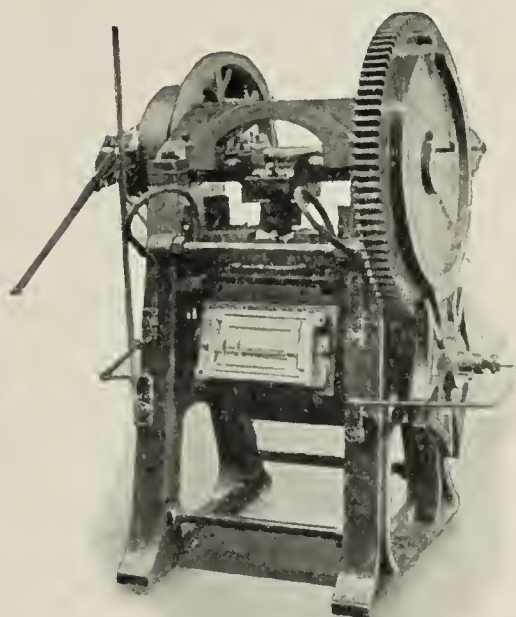
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



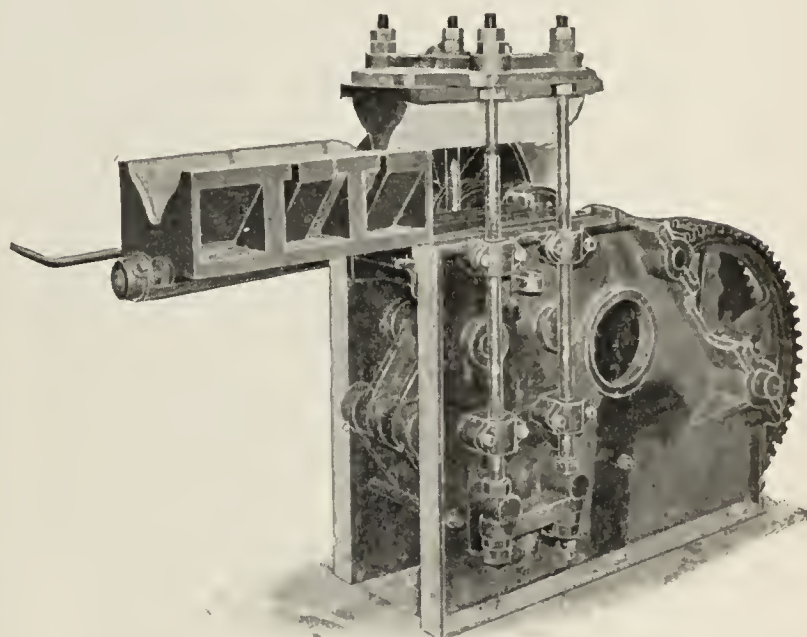
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
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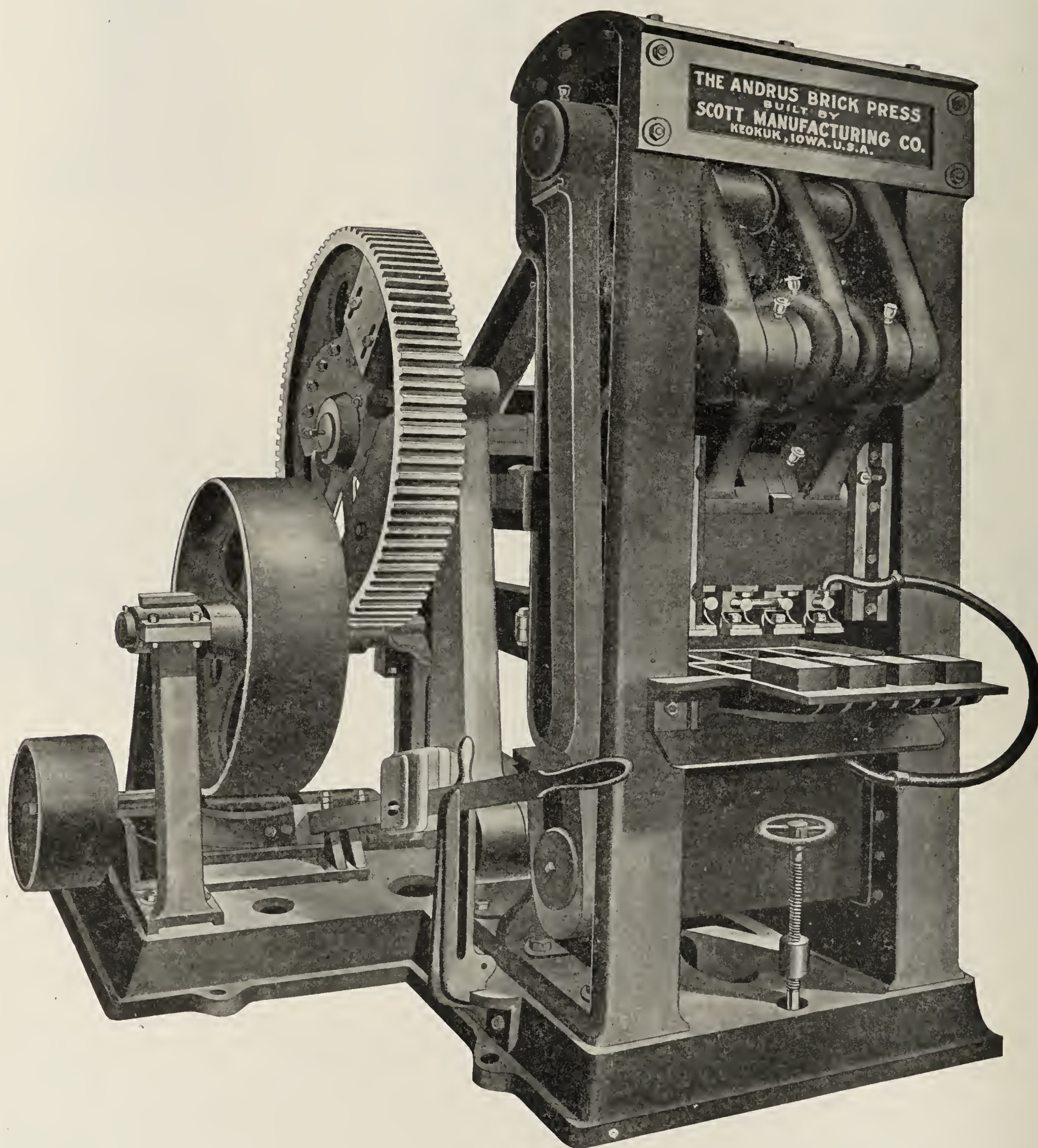
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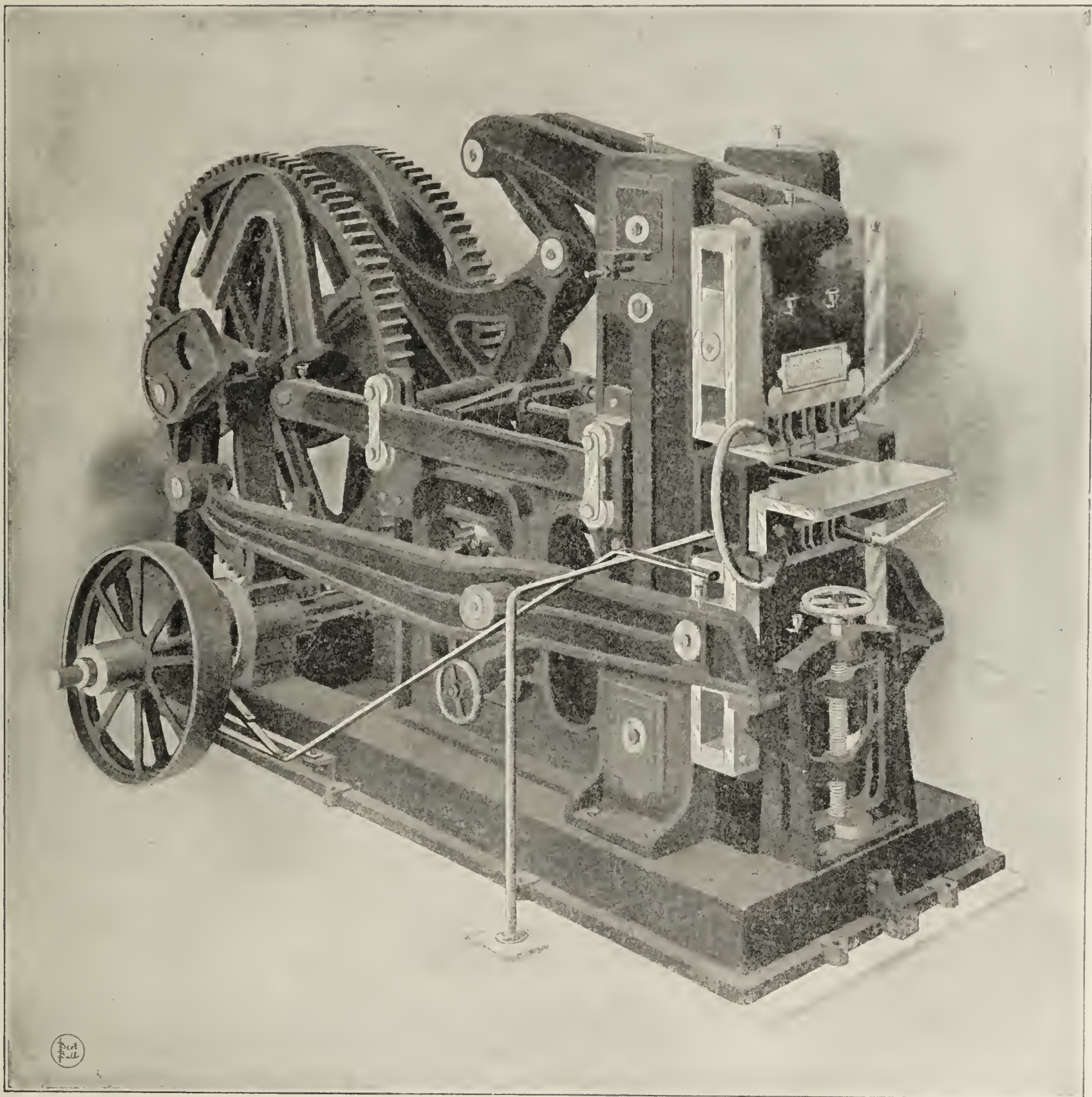
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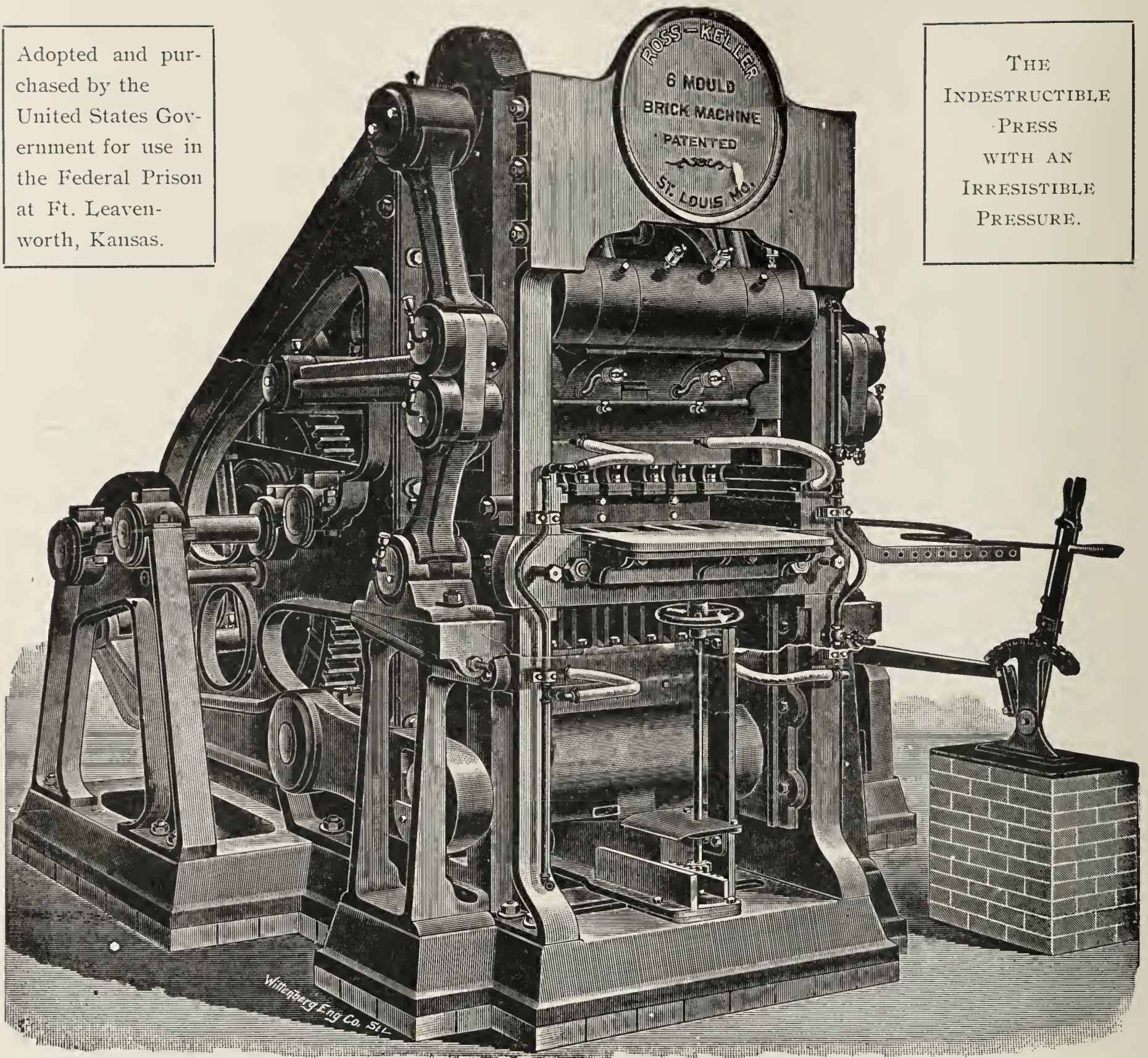
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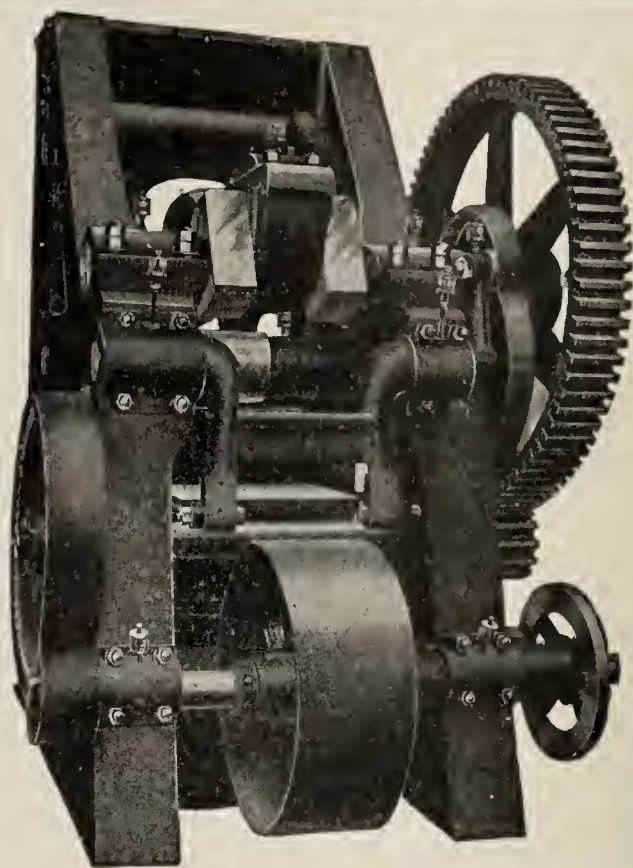
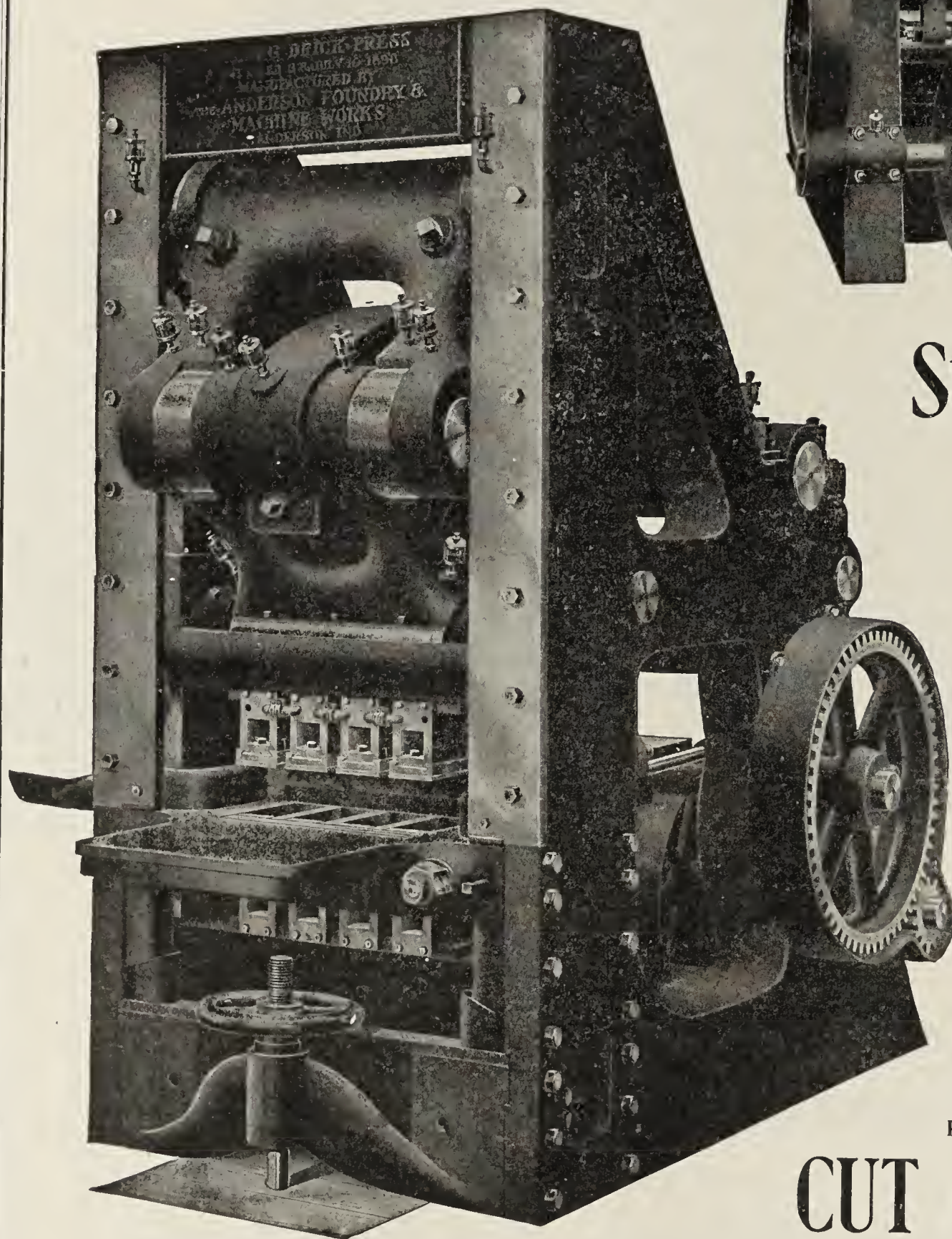
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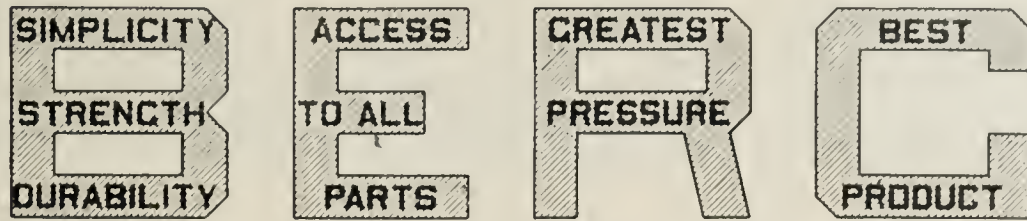
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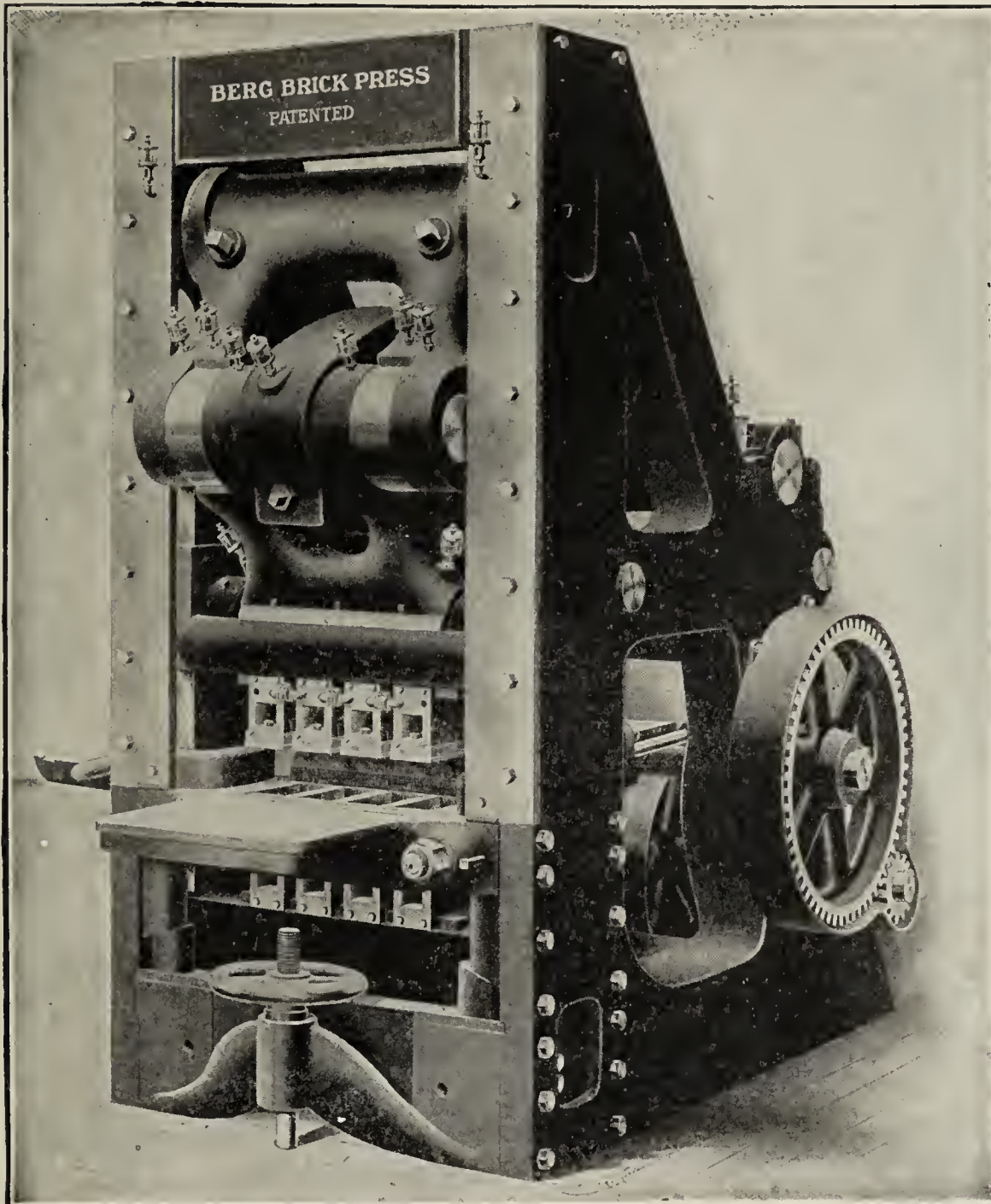
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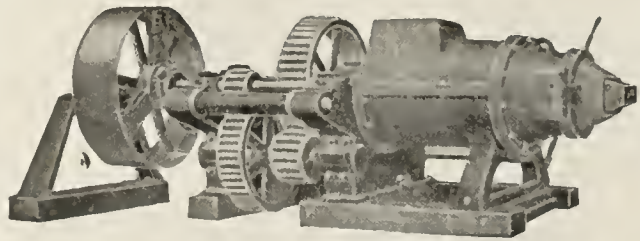
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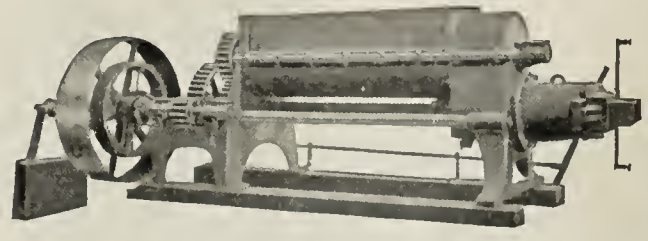
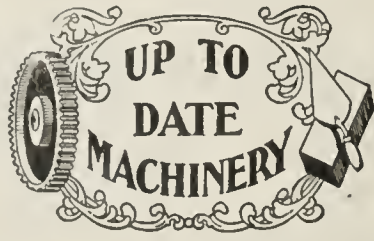
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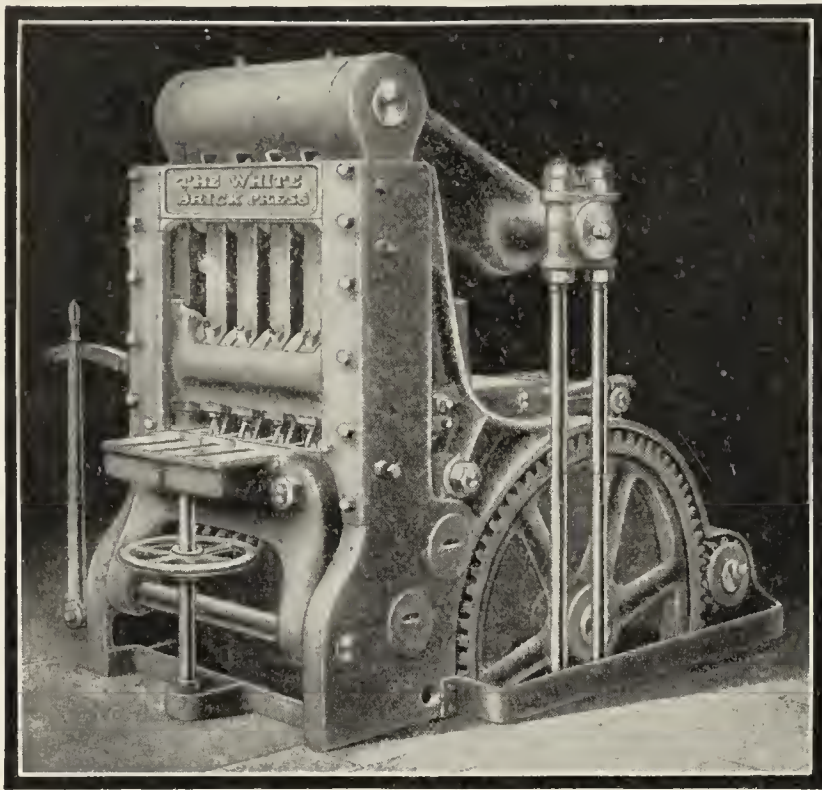
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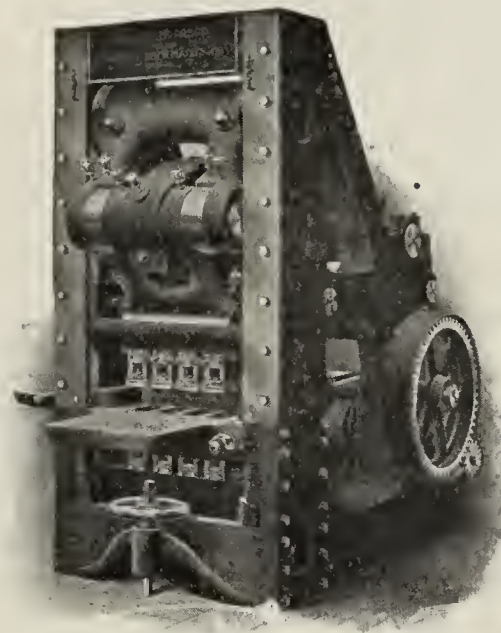
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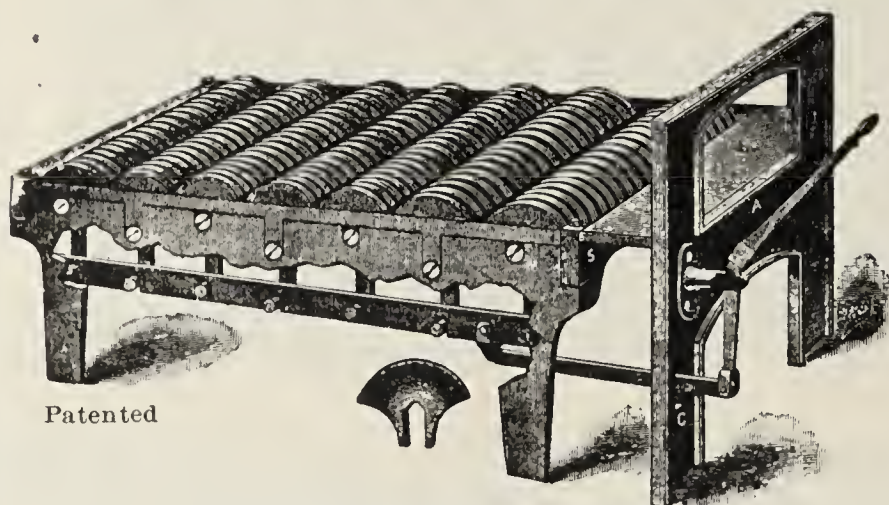


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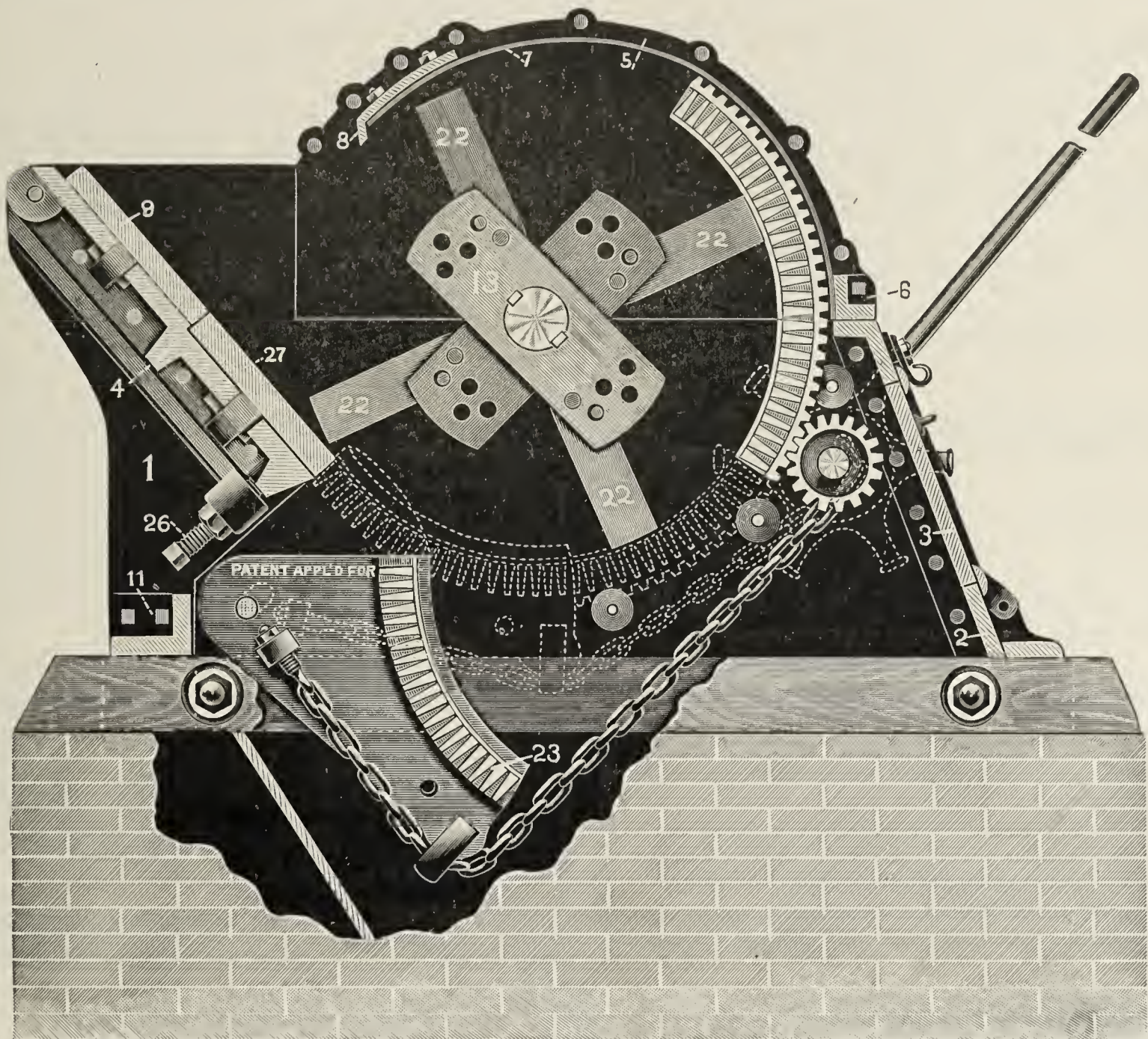
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THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVII.

INDIANAPOLIS, IND., APRIL, 1907.

No. 4.

BRICKS AND BRICK WORK IN ARCHITECTURE.

By Arthur Peabody, Supervising Architect, University of Wisconsin.

An illustrated lecture delivered before the Wisconsin Clayworkers' Convention March 28, 1907.

IN SPEAKING to you gentlemen who are practical brick-makers I feel there are many things about bricks that you know and I do not. The point of view from which I know bricks and from which I can speak, is that of the architect only. The architect knows of them as the finished product. He is acquainted with their value in architecture. How architecture is sometimes misunderstood by the casual

observer. It is closely bound up with building. The architect expresses himself in buildings and yet he is not a builder. In fact, some architects limit their work to preliminary designs, or schemes of buildings, and do not produce the actual building at all, leaving that to what may be called the ordinary practitioner. Their work is purely advisory and general in its nature and stops with the arrangement of the main elements of the plan and the architectural treatment of the exterior and interior, without considering in detail with what materials the work shall be executed, nor at what cost. Their work, however, is supremely important, being, in fact, that which makes the building excel another of similar capacity and cost.

Architecture is the human element in building. It is what



The Church of San Ambrogio, Milan, a Strictly Brick and Tile Structure.

gives dignity, grace, harmony, or we may say character, to an otherwise uninteresting pile of masonry. Beauty is said to be only skin deep, but who can endure the sight of a creature without that external covering which is so closely knit upon it, that to lose it, means certain death?

For this reason such qualities in brick as color, texture, form, are of the highest architectural value. A brick possessing great durability, high resistance to crushing and other good elements, may fail architecturally because it will not give to a building the higher qualities above enumerated.

One of the advantages of clay bricks is the great number of pleasing colors produced in burning. Another is the possibility of treating the face of the brick with another clay capable of burning to a good color, although the body of the brick is poor in this regard.

Some years ago great effort was made to produce bricks of absolutely even color and perfect geometric form. The results in the wall were monotonous in the extreme. Especially was this the case where the joints were thinned to one-eighth of an inch.

It is recognized today, that not one brick, but the whole number of them when built into the wall, together with the coloring produced by the mortar joints, is what gives the color value in the building. To this end the effect of dark headers is considered carefully by the architect, and the brick are laid in such a bond as will best accentuate the work.

So also the stone trimming about windows, entrances, and other parts, goes to modify the general tone of the building.

Besides color, the important thing is texture. In some parts of the country bricks known as "rain drops" are produced by weathering the bricks to a rough surface before burning. The resulting wall has a very pleasing rustic or rough texture. This is quite opposite to the glassy surfaces of some paving bricks, which are very difficult to manage, architecturally. Aside from this, paving bricks are quite satisfactory on account of the variety of quiet colors and their impervious surface that is free from efflorescence. This matter of efflorescence or "whiting" is wholly dependent upon a porous structure of the brick that absorbs the rain water and gives occasion for it to dissolve various salts from the mortar. Upon the evaporation of this water the salts crystallize upon the surface of the brick.

Proof of this has been shown by chemical analysis of the brick that exhibit no internal trace of the salts deposited upon their surface. Further proof is shown from the fact that sandstone of a porous nature will show the same sort of efflorescence, although no such salts are natural to the stone itself. So, too, floor tile will "bloom" when relaid in fresh mortar.

Form is important, as between the "standard" shape and the long thin Roman brick. Absolute accuracy of form is very much less important, especially when thick joints are used.

The matter of joints is subject to fashion or "vogue," varying from one-eighth of an inch to one and one-fourth

inches thick, as shown in some Italian work.

Brick work as an accentuated feature of a building design is a modern use of the material. In Roman buildings, bricks were used only for the wall mass, and most frequently were covered with a cement or stone facing. They were common brick.

Their excellence is attested by the solid character of Roman ruins, such as the baths of Caracalla and other similar buildings. It is but fair to say, that much of this solidity is due to the Roman cement or Puzzollana, in which the bricks



An Ancient Brick House at Bruges, Belgium.

were laid. This deposit, laid down in past ages by the volcano Vesuvius, was the Portland cement of the Roman world. Its exact nature was unknown until long after the invention of artificial "Portland."

Today, blast furnace slag, essentially the same thing as lava, is made the basis of some of our best cements. In the West also, where the United States Government is constructing dams for irrigation purposes, the same Puzzollana is found and is made into "Portland" right on the ground.

From the Roman world to medieval times is but a step, architecturally. Bricks have been burned in Italy ever since Roman days. In Northern Italy their use in architectural design reached a high development, culminating in the brick and terra cotta of the Certosa; the famous monastery at Pavia. Notable brick buildings are found in Pisa, Milan, Sienna, Bologna, and other Italian cities.

Farther north, in Germany, the old town of Nuremberg is a fine example of a brick built city, with quaint roofs of tile, picturesque gables and fanciful towers, dear to the German

the art was learned.

The Dutch architecture is important to us on account of its effect on English work at the time of William and Elizabeth. During Elizabeth's long reign many fine manor houses were built in England, and English brick architecture reached its greatest glory. The architects of this period worked to a great extent in brick and timbered work, and in brick with stone reinforcements and decoration.

The English recognized the possibilities and limitations of brick work as perhaps no other nation has. One of their cardinal principals was, brick for the wall mass, stone for accentuated parts. They required brick of good quality, good workmanship, close attention to such details as color, form and texture. Various bonds were employed which have become well known in America and there is an avoidance of the fantastic shapes and intricate decoration that sometimes defeats the Italian and German, not to say the French brick architecture.

Brick work in this country has made great advances in recent years. This is due primarily to improvement in the artistic quality of brick. The right appreciation of this by architects has resulted in greater demands upon the workmen for skill in laying, and so the brick building which forty years ago was classed as secondary, compared to those of stone, has taken at least equal rank with them.

Examples of monumental buildings of brick can be cited in any of our great cities. Probably the best models are to be found among the palatial houses of rich men, along with university buildings, churches, and some of the bank buildings in our eastern cities.

Not only is there today an excessive demand for brick of first quality for all ordinary purposes, but brick has now a vogue, a prestige that it never enjoyed before.

It is the material against which least can be said, either from the artistic or the practical side. Of course, this applies only to the wall mass.

For mouldings, cornices, etc., in short, all distinctly decorative features, stone or terra cotta is necessary. With brick goes also tile, a natural complement as regards the roof. The same qualities that recommend one apply to the other.

Color, texture, form, all variable at the will of the maker. Useful, that is to say, "working values," equal to brick.

In all this discussion, wearing and enduring qualities have been pre-supposed, just as honesty and morality are taken for granted in the consideration of a man's fitness for places of dignity and honor.

Clay materials must, of course, conserve such elements as durability and strength, before claims for other or higher qualities are made.

This much taken for granted, there is no limit to the usefulness of them other than imposed by the nature of the clay and the skill applied in its manufacture. No prejudice remains to hamper the clayworker in favor the worker in stone. There is room for both men and an amount of work in sight for each that calls forth the energies of both up to the limit of their capacity for production.



Interior Court of the Certosa Monastery, Pavia.

heart.

Other cities farther north, on the flat plains of Holland, are underlaid with splendid clay, and so Leyden, Amsterdam and Haarlem, show to what perfection the art of brick making was brought. Here stone was scarce and expensive, while clay products were low in price and of the best quality.

It is interesting to study the various national temperaments in the architectural treatment of brick by the Germans and Dutch as differentiated from the Italians, from whom

Written for THE CLAY-WORKER.

THE USE OF FUEL OIL IN TEXAS BRICK PLANTS.



OW FAR oil can be effectively and economically used as fuel in clay-working plants is a question which is full of special interest just now, since the recent discoveries of fresh oil fields in Oklahoma, Kansas and Illinois.

For four or five years the crude Beaumont oil has been in use, in south and central Texas, for firing brick and other clay products, and under the boilers of the clayworking plants of this region, as, indeed, in many other industries throughout this part of the State. I have visited many of these plants, along the lines of the Texas & New Orleans and Houston & Texas Central railroads, and the experience of the Texas brickmakers may well be of interest to those who may wish to install oil-burning outfits elsewhere; for some of these men sank a good deal of money in elaborate and complicated burners, while they learned, by actual experience, that a very simple arrangement of pipes and fittings, if constructed on scientific principles, gives the best results.

Most of the clayworking plants in Texas—with a few important exceptions—lie within a rather narrow belt, which you may trace on the map if you draw your finger from Texarkana to Laredo, through Austin. The reason is, of course, geological; it is in the eocene formation that outcrops here that the shales and ball-clays are found, which make pressed brick in great variety, fire brick and stoneware. Further south, in the alluvial deposits about Houston and Beaumont, the clays are more mixed, but some excellent brick are made in these regions.

Now, in the greater part of this country, wood is plentiful and cheap. I know that many people who have never been in Texas think of it as an open, treeless plain, or at least, as poorly timbered. But this is true only of the western and southern and far northern portions of the big State. Central Texas is well supplied with fire wood, from its post oaks and blackjack timber, which is cheap because it is not worth much for any other purpose. And East Texas is as well wooded as South Georgia or Mississippi.

So, for water-smoking, we find most of the plants in Texas use wood.

Where the shale clays are found, lignite is apt to occur just above or near by; and in the plants near Dallas and Austin, we find lignite largely used for fuel under the boiler and for firing the kilns.

But throughout South and Central Texas the use of oil for firing both kilns and boilers has been general ever since shortly after its discovery, five years ago last January.

The results in cost of fuel, economy and ease of handling, and uniformity of product, have justified the experiment; and under the stimulus of this cheap and convenient fuel, new clayworking plants have sprung up in the oil region, whose clays have heretofore been neglected. Similar results are likely to follow the discoveries of oil in the mid-continent field. So it will be worth while to see how they have handled fuel oil in Texas.

In the Texas territory, then, we find the oil shipped in to the plants in tank cars—except at Corsicana, where it is piped from the refineries—and piped off into steel storage tanks, from which it is usually pumped into pipes running to each kiln-eye. These pipes are fitted with burners which atomize the oil by the admixture of steam, or, in a few cases, air. Usually, we find one burner to each "eye" or furnace; and, though there are many types of manufactured burners on the market, the Texas manufacturer of brick is apt to use

a simple home-made arrangement of pipes and fittings; and he gets, he reports, better results from these than from some of the more expensive complicated outfits which he spent money on at first.

I had a long talk with an engineer in the employ of A. M. Lockett & Co., Ltd., a contracting engineering company of New Orleans, who have probably put in more fuel-oil installations in this region than any other firm. From this gentleman I obtained the following results of his experience and observation:

"The first thing to be decided," he says, "when taking up the matter of changing from some other fuel to oil, is the saving in the fuel bill which may be expected from such a change.

"To decide this, we must consider the relative heat values of the various fuels, which, given in British thermal units, are about as follows:

"Texas oil, 19,000 B. T. U. per lb.
 "Alabama coal, 13,500 B. T. U. per lb.
 "Ohio coal, 13,000 B. T. U. per lb.
 "Texas lignite, 10,000 B. T. U. per lb.
 "Wood, 8,000 B. T. U. per lb.

"In actual firing, however, the difference is more in favor of the higher grade fuel than these figures would indicate. For instance: Oil may be burned under almost ideal conditions, with no loss in ashes, while lignite, on account of its slacking in the fire and falling through the grate, leaves a large amount of unburnt material in the ashes. For practical purposes, therefore, the following figures are more serviceable:

"3½ bbls. Texas crude oil = 1 ton Alabama coal.
 "2 bbls. Texas crude oil = 1 ton Texas lignite.
 "1¾ bbls. Texas crude oil = 1 ton oak cord wood.

(One bbl. Texas crude oil is 42 gallons, and weighs approximately 318 lbs.)

"For convenience, and to save figuring, we have used the following table showing the relative value of Alabama coal and Texas oil:

Coal, price per ton.	Oil, price per bbl.
\$5.00	\$1.40
4.75	1.34
4.50	1.27
4.25	1.20
4.00	1.12
3.75	1.05
3.50	.99
3.25	.91
3.00	.84
2.75	.77
2.50	.70
2.25	.63
2.00	.56
1.75	.49
1.50	.42
1.25	.35
1.00	.28

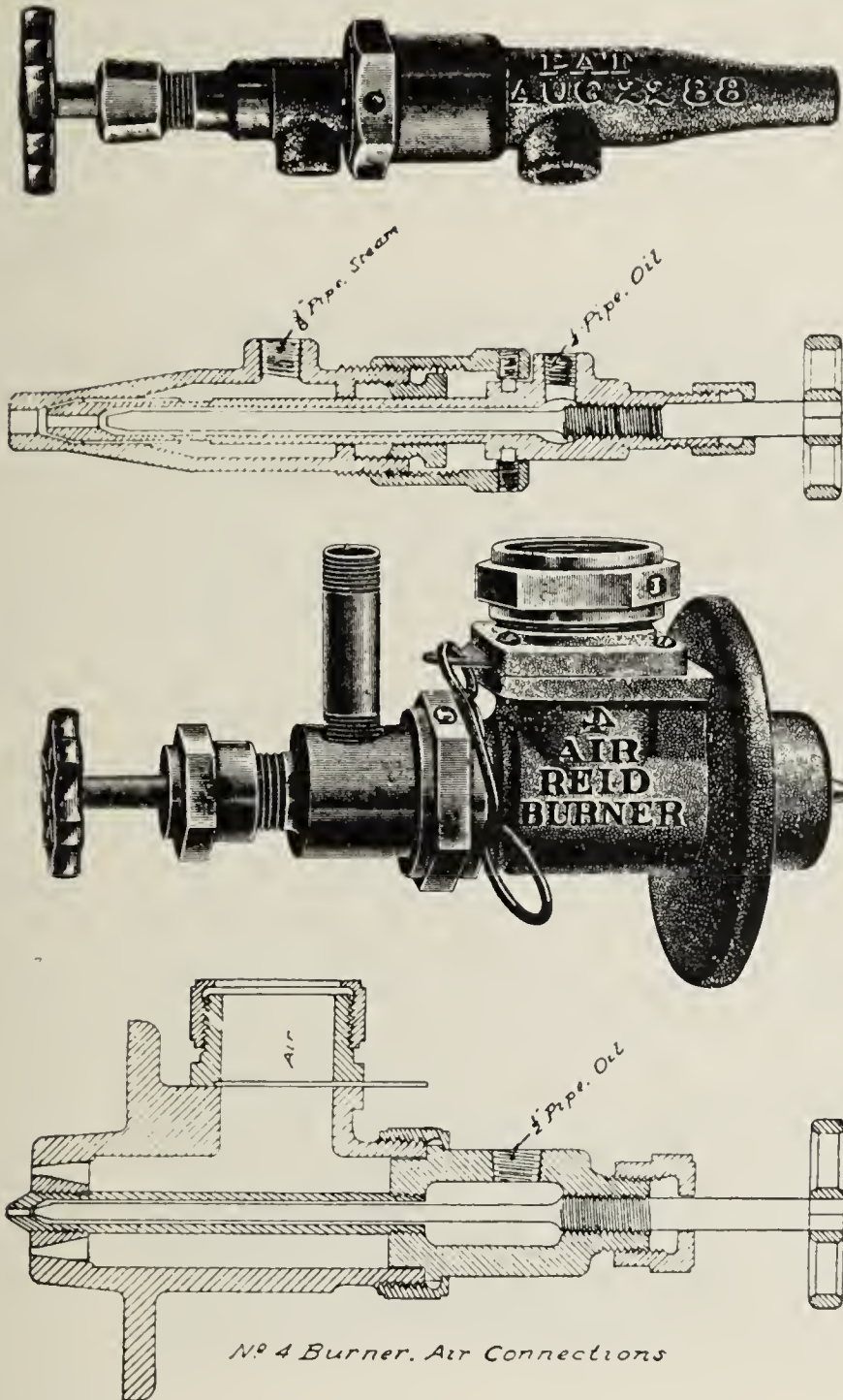
"There are other advantages besides the saving in cost of fuel, which induce many plants in this part of the country to burn oil, even when its cost is slightly above that of other fuels. The most important of these to the brickmaker is the saving in labor. One firetender can look after almost any number of burners, while with wood or coal, the item for firing increases with the number of tons of fuel fired. The saving from this cause is easily computed, for each particular plant. Any one of ordinary intelligence can be made, with a little instruction, into a good oil fireman.

"Another advantage of oil, which is largely a controlling factor in its use in steam plants, is the ease with which the fires can be forced, in an emergency. There are many electric plants which would have to install additional boilers to carry their plant during the peak of the load should they

change back from oil to coal. This ease of control is plainly of great value in burning pottery. With properly designed burners, the fire can be controlled with great nicety, and reduced or increased by the turning of a valve.

"There is also a great saving of labor in handling oil fuel, to and from storage, over handling either coal or wood. This is all done with pumps, or by gravity, and without the employment of any extra labor. There is no charge for handling ashes. In this respect it resembles natural gas; but it has this advantage over natural gas, that a stored supply can be kept on hand, so that you are not wholly dependent on pipe-line facilities.

"The only disadvantage which has been urged against the



Courtesy of A. M. Lockett & Co., New Orleans.

use of oil is the danger of fire; and one of the first things to be done when planning to install oil fuel is to learn the local insurance requirements. The experience in Texas and Louisiana has been that with the oil found in this territory, which is of about 22 to 28 gravity, there is less danger of fire with oil, when properly handled, than with other fuels; and the insurance companies have made very reasonable requirements. Within city limits the oil is usually stored in tanks buried underground, and fifty or a hundred feet from any building. These tanks have manholes which are securely fastened, and a vent-pipe, extending fifteen or twenty feet in the air. Usually, two tanks are installed, so that the oil when received may be measured in a tank from which no oil is being drawn for use.

"One of the most important insurance requirements is that there shall be no storage of oil in any tank connected with the pipe system supplying the burners. In other words, a 'gravity feed' to the burners is not allowed; the reason for this being that, should there be a leaky valve in the engine room, a pool of oil might leak through in the night, after the fires have been turned out, and catching fire from some cause, set fire to the building. The oil is usually fed to the burners by a small pump which lifts the oil by suction from a tank outside the building.

"This pump should be amply large, and the suction lift should not be too great, for the gasoline in the crude oil renders it very similar to hot water when it comes to lifting it by suction; that is, the suction pipe is apt to become full of gas, and the pump must be large enough to get rid of this before the oil will be lifted.

"The oil feed pumps should by all means be in duplicate, as one of them can then be packed or repaired without shutting down the plant. It is very necessary that the oil pressure shall be constant, as otherwise the fires will vary and you will not be able to get the results desired. This may be accomplished in several ways, one of which is to put a relief valve on the discharge of the pumps and pipe the surplus oil back to the supply tank. We consider this rather poor practice, as the pump runs at an excessive speed, and wears out before it should; the relief valve may become choked with the impurities in the oil, and it will eventually be cut out by the sand which the oil carries, and leak to such an extent that the pump can not keep up the supply.

"The practice we follow is to put in a pressure governor on the steam supply of the pump, thereby controlling the speed of the pump to give the pressure desired. It took some experimenting, however, before we found a governor suitable for this work; for, to our surprise, the same make of governor which was most successful in controlling water works and fire pumps, proved a failure on an oil pumping outfit.

"We now manufacture several types of feed outfits, suitable for various conditions. In all of them we use Worthington duplex pumps, with Tobin bronze piston rods and special packing.

"With heavy oil, such as that found in California, and with the residuum from refineries (which is used by the Corsicana plants), it is necessary to heat the oil before attempting to atomize it; and it is considered a good practice to do this with the Beaumont crude. For this purpose a small coil heater is installed as part of the oil pumping outfit, the exhaust from the pumps being used to heat the oil.

"Oil burners are simply instruments to atomize the oil, and blow it into the furnace, thereby breaking it up into such fine particles that it burns as if it were gas. This may be done either with steam or with air; but steam is more generally used.

"There are almost as many oil burners on the market as there are patent churns; and nearly every steam engineer or fireman has designed one at one time or other. They may be divided, however, into two general classes—inside mixers and outside mixers.

"In the inside mixers the jet of steam comes in contact with the oil inside the burner and drives it out through the nozzle.

"The outside mixers have both the steam and the oil nozzle at the end of the burner, and the steam and oil come in contact directly after leaving the burner.

"The inside mixers usually require the oil to be fed to them under a pressure, as the restricted nozzle, through which the steam and oil pass, creates a certain amount of back pressure which has to be overcome. The outside mixers may be gravity burners, but are usually fed from the pump to comply with insurance requirements."

I have obtained some cuts of typical oil burners. The one shown above is the Reid No. 3, which requires about 30 lbs. oil pressure to feed it, and is an excellent burner for brick plants, as it admits of an easy adjustment of the supply of oil and steam.

The advocates of different burners vie with each other in making extravagant claims for evaporation when using their burners. As a matter of fact, the oil has so many heat units

which it will give off when completely burned; and it will burn completely when properly atomized and given the proper amount of air. "The only real advantage of one burner over another," says the engineer above quoted, "in point of economy is that some require less steam than others to do the work of atomizing; and this is of more importance than most oil users realize. The burners in general use, in blowing the oil, use from 10 to 15 per cent. of the steam generated by the boiler. I know of one plant where 25 per cent. of the steam generated was used by the burner; and there are probably many more like it.

"About two years ago, a series of tests of different burners was made in New Orleans, by Mr. E. H. Peabody, an engineer employed by the Babcock and Wilcox Company, who is an expert on boiler testing. More than three months was required to make these tests; and a dozen or more different burners were tried. The best net results were obtained when using about 8 per cent. of the steam generated, in blowing the oil.

"Since that time, after more than a year's continued scientific experimenting in Louisiana and California, Mr. Peabody

the Peabody burner exclusively under boilers, and I have described the way it was developed in order to encourage such experimental work in other industrial operations.

"In burning oil under boilers, we wish to obtain exactly opposite results from those usually desired in a kiln or other furnace for metallurgical purposes. Under a boiler the object is to obtain as short a flame as possible, to avoid the flame coming in contact with the relatively cold surfaces of the boiler before complete combustion has taken place.

"In kilns, on the other hand, a long flame is usually desired, in order to get a uniform heat. With the proper oil burner, and with proper regulation of steam and air, the desired results can be obtained in each case.

"In burning brick, by regulating the supply of air, either an oxidizing or a reducing flame may be obtained, so that the color of the brick may be regulated at will. This can not be done so well with either coal or wood, as the amount of fuel on the grate bars, and the irregularity of firing, will cause the flame to vary considerably."

The oil of the mid-continent field is said to be lighter than that of Beaumont, which is itself lighter than the California



Section of Chestnut Street, St. Louis, Between Broadway and Twentieth Streets. Recoated With Bitulithic Paving, July, 1905. Photographed for The Clay-Worker in March, 1907.

has perfected a burner and furnace which operates on from 2 to 3 per cent. of the gross output of the boiler.

"The result of his work illustrates emphatically the value of careful experimenting with the use of instruments for measuring the quantities of all materials going into an industrial operation. In those experiments, accurate measurements are taken of the air, steam and oil which entered the furnace, and the records of these tests enabled Mr. Peabody to eliminate the unsatisfactory burners and to develop a burner which was an improvement on any used, up to that time.

"A change from the older type of burner to the Peabody burner effects a saving of from 8 to 10 per cent. in fuel; and this in a plant burning, say 100 bbls. of oil a day, at \$1.25 a bbl. means a saving of from \$10 to \$12 a day. We now use

product. Of course, the risk of explosion increases as the oil becomes lighter, and if the mid-continent oils are used for fuel crude, extra precautions must be taken. The flash point of the Texas oil is considerably above any temperature which it would attain under natural conditions, and a lighted torch may be quenched in an open pool of "Texas crude" without setting fire to it. The fires which have occurred from Texas oil in storage have been due either to lightning striking storage tanks, or to some one examining a covered tank with a lantern.

ETHEL HUTSON.

It is generally conceded that a man is not worth much who has not some selfish end to serve, but this should never be taken as a license for turning loose unrestrained the hog element of humanity.

Written for THE CLAY-WORKER.

FAILURE OF BITULITHIC PAVING IN ST. LOUIS.

SECOND EXHIBIT.



IN THE THEORY that photographs are sometimes more convincing than words, the St. Louis correspondent of the CLAY-WORKER caused to be photographed in March, 1907, some of the holes then existing in the bituminous macadam (bitulithic) paving with which Chestnut street, between Broadway and Twentieth street, was re-coated June and July, 1905.

The correspondent accompanied the photographer, Mr. H. V. B. Crain, and can vouch that no hole or other defect appears in more than one of the photographs, and that none of the photographs have been "doctored." They show some of the holes (not all of them) then

March, April and May, 1904. A year later it was in ruins, as photographs taken in June, 1905, at the instance of the National Paving Brick Manufacturers' Association, clearly show. So utterly beyond salvation was the paving, that few attempts were made to repair it, except temporarily, and in June and July, 1905, a re-coating was laid. All the photographs taken in March, 1907, are consequently of this re-coating.

As the bitulithic on Chestnut street disintegrates, so does the bitulithic on other St. Louis streets. The life of bitulithic pavements in residential districts is longer than that of Chestnut street, only because of less traffic.

The repairs on bitulithic streets in St. Louis have been many, but how many, only city officials and the bitulithic people know.

The CLAY-WORKER's correspondent applied at the street department for figures showing the amount of bitulithic repairs, and obtained the positive promise that the information would be mailed on a certain day. After allowing a week's grace, the correspondent called again and was informed that



CLAY WORKER

Another Section of Chestnut Street.—An Actual Photographic Reproduction of the Condition of the Bitulithic Pavement in March, 1907.

existing. The photographer and the correspondent returned to Chestnut street together, a few days after the taking of the first batch of photographs, to record some other holes, the photographing of which on the original visit had been prevented by a combination of circumstances, including rain. But all the holes had vanished. The bitulithic people had sent the repair outfit over the street.

Be it said, out of justice to the bitulithic people, that they work earnestly and almost continuously repairing this street. And be it said, out of justice to the public, that these frequent repairs obstruct traffic.

The bitulithic people have had two trials on Chestnut street and both times have failed to "make good." Bitulithic was originally laid on Chestnut street between Broadway (Fifth street) and Twentieth street, during the months of

the matter had been "put up" to the street commissioner, Frank W. Valliant, and that he had not thus far authorized that the information requested, be granted.

The correspondent wrote to the street commissioner a courteous letter, requesting the information, but received no reply. He wrote again; still no reply. After waiting more than a month, he called at the offices of the street department and asked why his letters had been ignored. The commissioner's secretary admitted that the letters had been received, and that they should have been answered. His only explanation was that the answering of them had been "put off from day to day."

Formal written request for the figures having proven futile, the correspondent applied for them verbally.

"We refuse to give out those figures," the street commis-



Section of Chestnut Street, St. Louis, as it Appeared in March, 1907. Photographed by H. V. B. Crain.

sioner's secretary replied. "You'll have to go to the bitulithic people for them."

The correspondent had gone to the city authorities in order to get absolutely unbiased figures. He was amazed that he should be referred to a private corporation which is vitally interested in the size of those figures.

That the true figures do not reflect credit upon bitulithic paving, the correspondent is satisfied. He is further satisfied that a business corporation will not, except when compelled to do so, give out facts opposed to its own interests; that he has not the power to compel the bitulithic people to give out the facts; and finally, that the facts will remain secret.



One of a Dozen Photographs, Not "Retouched," of Chestnut Street, St. Louis. Paved with Bitulithic in 1904 and Recoated in 1905.

Within a few weeks, judging from previous experience, perhaps before this issue of the CLAY-WORKER is off the press, Chestnut street will again be full of holes. In this instance, it is clearly proven that bitulithic paving is not durable and that the cost of repairs make it a very expensive luxury.

METHODS AND ESTIMATES OF COST OF HANDLING CLAY AND CLAY MATERIALS.*†

By Jos. K. Moore and H. R. Straight, University of Illinois, Urbana, Ill.

In the majority of cases the most simple means of handling clay and clay materials is the most effective.

Scrapers have been found to be both the simplest and cheapest means of excavating clay, but this is so only for small plants. In some cases it is absolutely necessary to resort to hand-digging, and when this is the case a greater facility in the work is obtained by watching closely the laborer. What is the difference between a poor and a good shoveler? Why is it one man is able to load faster than another? Is it indolence entirely?

The method of work has a great deal to do with it. Some men bend over and use their arms and shoulders in forcing the shovel into the soil. This is a waste of energy which is costing you dollars. Labor is the most expensive factor of production as expressed by curves to be shown later. The correct way to dig is to have the arms free to guide the shovel, and the force used to propel it downward should be the foot, and the handle should be as nearly perpendicular as possible. It is often well to put your good shovelers together and require that their pace be kept, or at least be a goal for which the others must strive. Walking on the ground tramps it, hence the cars and wagons should be brought as close as possible. Require the shovelers to keep the digging-floor level; an Irishman is the only laborer who will do this without being watched; as this aids when shifting the tram track it is necessary. The most economical number to shovel into a wagon is three or five, and when shoveling to a tram-car, two are used.

In large plants the steam shovel is employed for excavating. The size of the shovel and its power is regulated by the capacity of the plant and the kind of material to be handled. Large steam shovels of the 95-ton variety handle material at the rate of 200 tons per hour at their best. For some kind of work as low as 25-ton shovels are used. Where drainage is good and a sufficient water supply is at hand, stripping on a large scale may be carried on by hydraulic means. In this way, 1,200 cu. yd. of boulder clay has been removed in 10 hours by two men using a 1½-inch nozzle and 80-lb. pressure.

The material after being excavated must be carried to the plant for this purpose. The cable tramway has during the past few years come into very general use. This consists of a winding drum, cars and connecting cable. The winding drum generally is one of the paper-friction type, with a reduction of six or eight between the friction and cast-iron wheel against which it works, thus giving a good arrangement, easily controlled, by which the load may be accelerated without extreme stresses in the belt or any of the parts of the drum. The cable required for such haulage may vary from ⅜ to ¾ inch, depending upon the grade, number of cars and their capacity. They are made of six strands, seven wires to the strand, with hempen centers. The kind of cars used depends a great deal upon the method of loading. When this is to be done by hand,

they should be designed as low as good practice would allow; while on the other hand if a steam shovel is employed an advantage is gained by the use of a higher car, from the fact that the distance through which the shovel arm must travel is less. In loading from a bridge both kinds of cars are often seen. The cars used for steam shovel loading is by necessity side or end dump, because of the difficulty of making the mechanism of a bottom dump car sufficiently strong to withstand the shock due to the quantity of the falling load from the dipper. The cars employed where hand loading is resorted to should be side-dump also, as the men are required to elevate the material a shorter distance. End-dump cars are seldom used except when the construction of the plant demands it, and these are to be avoided if possible as they are very poorly balanced. The capacity of said cars vary from 1½ to 3 yards, depending upon the size of plant.

Where hauls are long three other methods are resorted to. These are the use of wagons, the dinkey locomotive, and the aerial tramway. The first are used in smaller plants where the cost of installation and operation of more elaborate methods can be ill afforded; the second is usually operated in conjunction with the tramway, thus increasing the capacity of the tracks; the third is used where the country is rough and grading expensive.

In the plant proper the conveying is best carried on by means of belt conveyors where the direction is horizontal, and cup elevators where the direction is vertical. However, we know of the successful elevation of material by means of smooth belt conveyors at an angle of 25 degrees.

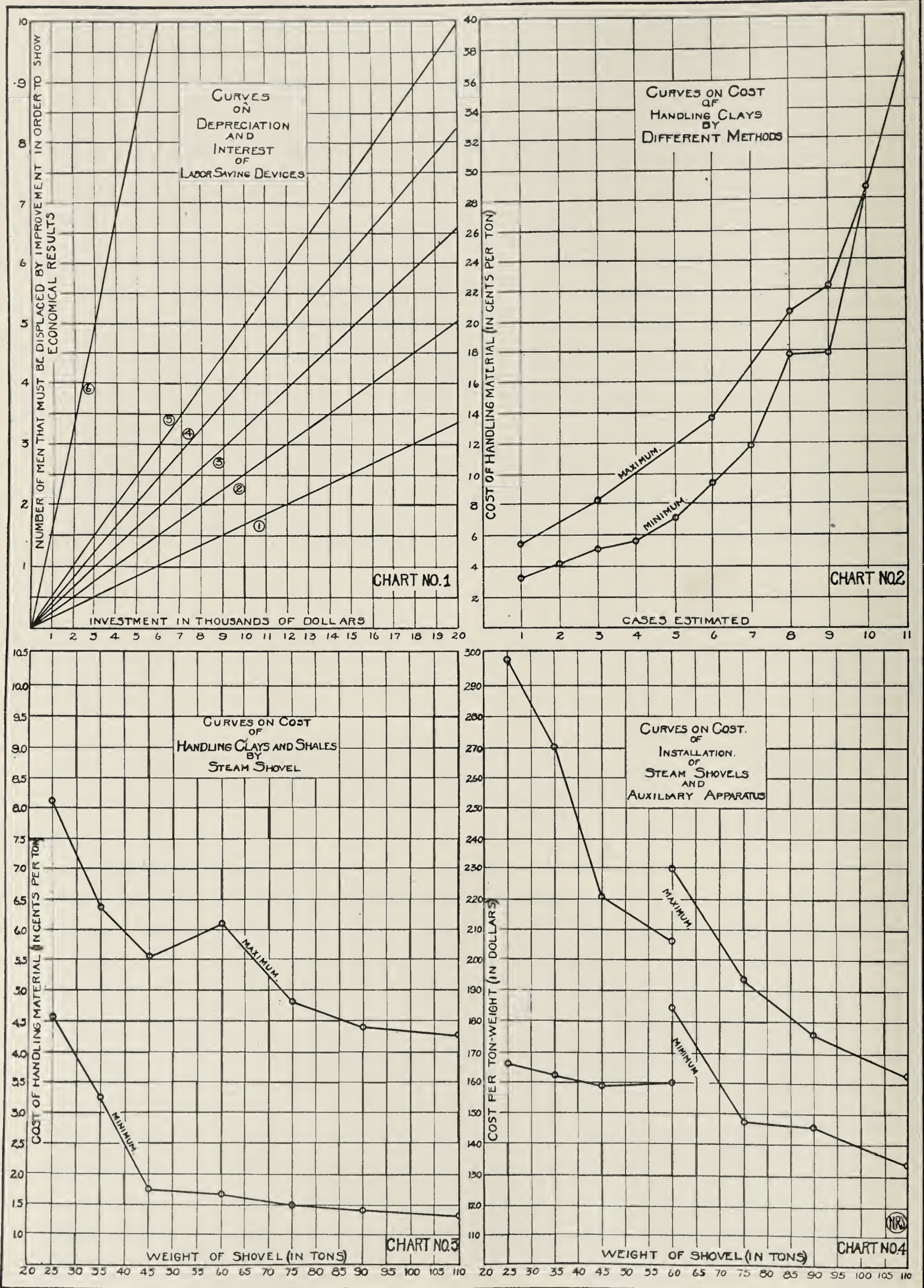
The green and dry products are best handled on flat belt conveyors, such as the Scott system or others. The practice of loading and unloading the kiln by means of conveyors is both practical and economical. Where the plant is compact the conveyor can carry the burned ware to their respective stacks, the sorting being done in transit. For handling finished products and distributing the brick from yard to car or wagon the Barney conveyor system is especially adapted. This consists of an endless chain along which are suspended hooks that hold five bricks each, and are built in such a form that the bricks are readily grasped by the unloader. If dry material is to be conveyed, for example, from bins where cars are dumped, to various bins connecting with the dry pans, a belt conveyor can be used and the material taken from the belt at any point by a self-propelling tripper. This apparatus is manufactured by Stephens-Adamson Co., Aurora, Ill., and is especially suited to plants where the material is shipped in by railroad. Having discussed the methods in use let us now try to answer the question, when does it pay to install labor-saving devices in handling clay and clay products?

The possibility of eliminating hand labor increases proportionally with the capacity and output of a plant. In plants of small capacity for example, the winning of the clay is most economically accomplished in some instances by pick or shovel and wheelbarrows, and as the capacity increases the method of winning may pass in succession from the wheelbarrow, scraper, clay gatherer and finally to the steam shovel. Local conditions such as quantity and character of stripping, vertical variation in the quality of the clay, kind and mode of occurrence of detrimental material, such as niggerheads, sulphur balls, the difference in level of factory and floor of clay pit, etc., influence greatly the adoption of methods of winning, whether the plant has large or small capacity; but the fact remains that the smaller the capacity of the plant, the more dependent must be the operators on hand labor to gather and deliver clay to the machines. What is true in case of winning of clay is true throughout the whole process, even to loading the finished product.

Practically, the only considerations, aside from those of local conditions, that limit the use of labor-saving devices to the plants of comparatively large capacity are those of in-

*Paper presented to the Illinois Clayworkers' Association, at Champaign, Ill., Jan. 22-24, 1907.

†This part of the paper was presented by Jos. K. Moore, University of Illinois, Urbana, Ill.



CURVES ON COSTS OF HANDLING MATERIAL.

terest on capital invested in a particular device, its cost of maintenance, and amount of depreciation, compared with the wages that would have to be paid for the execution of the same kind and amount of service. As a matter of fact, similar considerations affect the adoption of small as against large kilns, steam heat dryers as against waste-heat dryers, installation of a car system as against the oldtime track and barrow methods, etc.

After having given some time to the study of efficiency of clayworking machinery and appliances, both from practical observation in a large number of clayworking plants of varying capacities, and of published data concerning the cost of installation, repair and estimated depreciation and efficiency of similar devices in other industries, the writers have developed a scheme by which, it is believed, the question of economy effected by the installation of any labor-saving device can be readily determined.

We have based our calculation on the average working capacity and wages of the class of laborers that would be supplanted in each case. In this it is realized that we are using as a basis of our calculations a factor that varies greatly, according to the skill of the laborer and the ability of the foreman. The watching of the diggers, as we have before cited, is evidence of this.

These items concerning the relative efficiency of hand laborers have been a subject of study and calculation by railroad engineers. Having had opportunity to study the subject of pick and shovel laborers on railroad construction where every item affecting efficiency of hand labor is considered, we feel that we have used as a basis of calculation figures that represent the average wage and working capacity of a common laborer. Where more skilled labor is effected by the installation of mechanical devices, merely wages have been taken into consideration.

The estimate of cost for the installment of some of these different labor-saving devices, and of handling materials with the same, we have attempted to show by curves, which Mr. Straight will now explain, and should they prove as interesting to you as they have been instructive to us during their preparation, I am sure the time taken to prepare them shall have been well spent.

[Editorial Note.—The explanation of the accompanying curve-sheets and tables of estimation was then effectively made by H. R. Straight, University of Illinois, Urbana, Ill.]

The following details show the conditions encountered in Curves 1 to 6 on Curve Sheet No. 1:

Curve No. 1. (5% interest, 5% depreciation.)

Rails, spikes, flanges.

Engines.

Winding Drums.

Curve No. 2. (5% interest, 10% depreciation.)

Boilers.

Outside clay cars (no very heavy shocks).

Dinkey locomotive and steam shovel in clay..

Crushing machinery.

Ties.

Curve No. 3. (5% interest, 15% depreciation.)

Transmission belts (protected), also in No. 2 class.

Curve No. 4. (5% interest, 20% depreciation.)

Outside clay cars, heavy service.

Steam shovels in shale.

Conveyor belts.

Kiln brick conveyor.

Elevators.

Transmission belts (not protected.)

Clay gatherers.

Curve No. 5. (5% interest, 25% depreciation.)

Plows and scrapers.

Curve No. 6. (5% interest, 100% depreciation.)

Cables.

EXAMPLES OF USE OF INVESTMENT CURVES.

(See Curve Sheet No. 1.)

A man is using teams and wagons for hauling his clay from pit to crusher. He uses 200 tons per day, and it cost him the pay of the equivalent of 10 men, at \$2.00, to handle it.

He uses a steam shovel at \$5,000 which, being included in curve No. 4, must displace one man.

He uses 1000 feet of track at 50 cents per foot, which is fully covered by case in curve No. 2 and must displace $\frac{1}{2}$ man.

He uses eight cars at \$150 as in curve No. 2 and must displace $\frac{3}{10}$ man.

He uses 1,000 feet of $\frac{1}{2}$ -inch cable at $7\frac{1}{2}$ cents, as in curve No. 6, and must displace $\frac{5}{10}$ man.

He uses a winding drum as in curve No. 1, at \$200, and it must displace $\frac{1}{10}$ man.

He uses power to the approximate extent of $\frac{1}{2}$ man's wages. (For winding drum.)

Total men to be displaced=3 (approx.)

Total men to run shovel and cars and other machines need not be over 5, with an average wage of \$2.00 for so small a shovel; therefore he has saved the wages of $(10-3)=5=2$ men.

Note.—Man's labor is rated at \$2.00 in curve sheet.

Working days of the year taken as 300.

Table showing approximate cost per ton of handling clays by different methods arranged in order of economy for medium sized plants. (See Chart No. 2.)

1. 35-ton steam shovel handling clay.

Capacities, etc., as in table No. 2. Cost per ton—3.23 to 5.51 cents.

2. One team scraping into car bridge with wheel scraper in loose material. Team at \$3.50 per day.

Car man at \$2.00 per day.

Drum boy at \$1.50 per day.

Cost of 10 h. p. used in drum at \$35.00 per h. p. per year=\$1.16.

Capacity 200 tons per day. Cost per ton, 4.08 cents.

3. 25-ton steam shovel handling clay.

Capacities, etc., as in table No. 2. Cost per ton, 4.54 to 8.14 cents.

4. Two teams with slip scraper scraping into car bridge. Teams at \$3.50 per day.

Car man at \$2.00 per day.

Drum boy at \$1.50 per day.

Cost of h. p. used on drum same as above, \$1.16.

Capacity, 200 tons. Cost per ton, 5.83 cents.

5. One team scraping into wagon loading inside bridge with wheel scraper.

Two teams hauling 1,000 to 2,000 feet with wagon.

Three teams at \$3.50 per day.

One bridge man at \$2.00 per day.

Plowing and bunching, \$1.75.

Capacity, 200 tons per day. Cost per ton, 7.1 cents.

6. 25-ton shovel loading into wagons.

Five to seven teams at \$3.50 per day.

Other expenses practically the same.

Capacity, 225 tons. Cost per ton, 9.6 to 13.75 cents.

7. Two teams scraping into wagon loading bridge with slip scrapers. Two teams hauling.

One bridge man at \$2.00.

One slip man at \$2.00.

Plowing, \$1.75.

Capacity, 200 tons. Cost per ton, 9.87 cents.

8. Five men shoveling in plowed material.

Three to four teams at \$3.50 per day. Haul 1,000 to 2,000 feet.

Five men at \$2.00 per day.

Plowing, \$1.75.

Capacity, 125 tons. Cost per ton, 17.8 to 20.6 cents.

9. Three men shoveling in plowed material.
Two or three teams at \$3.50 per day. Haul 1,000 to 2,000 feet.
Three men at \$2.00 per day.
Plowing, \$1.75.
Capacity, 80 tons. Cost per ton, 17.8 to 22.2 cents.
10. Four men spading into two cars and picking material.
One car man at \$2.00.
Four spaders at \$2.00.
Drum boy at \$1.50.
Capacity, 40 tons. Cost per ton, 28.7 cents.
11. Four men picking and loading into two wagons.
Two teams at \$3.50.
Four men at \$2.00.
Capacity, 40 tons. Cost per ton, 37.5 cents.

Notes on above data.—Depreciation of wagons, cars, cables and tracks not figured in the above. Slip scrapers, capacity estimated at $\frac{1}{2}$ ton or $\frac{1}{2}$ yard. Wheelers at twice capacity of slips.

COST OF HANDLING CLAY OR SOFT SHALE WITH A 25-TON STEAM SHOVEL AND CABLE HAULAGE.
(Consult Chart No. 3.)

Item.	Machines and Materials Used.	Per 10-hr. Day.	
		Min.	Max.
1	Interest on shovel. Investment \$3,500 to \$5,000	.46	.67
2	Cost of coal for shovel at \$1.40 per ton, $\frac{1}{2}$ to 1 ton.....	.70	1.40
3	Oil, repairs, etc	.15	.30
4	Labor at \$2.00 per day, 4 to 6 men.....	8.00	12.00
5	Interest on 4 to 8 cars at \$125 each....	.06	.12
6	Interest on track 800 to 2,000 feet.....	.04	.10
7	Depreciation of ties at life of 8 years..	.08	.21
8	Depreciation of rails, spikes, etc., (practically 0)	...	...
9	Interest on 900 to 2,100 feet $\frac{1}{2}$ -inch cable, at 7 $\frac{1}{2}$ cents per foot.....	.01	.02
10	Depreciation of cable at life of 600 days	.11	.26
11	Interest on hoisting drum (practically 0)	...	...
12	Depreciation of hoisting drum, oil, etc.	.02	.04
13	Cost of power for drum at \$35.00 per h. p. per year, 5 to 10 h. p. used.....	.58	1.16
Total		10.21	16.28

Minimum cost per ton with probable maximum output of 10.21

$$225 \text{ tons} = \frac{10.21}{225} = 4.54 \text{ cents.}$$

Maximum cost per ton with probable minimum output of 16.28

$$200 \text{ tons} = \frac{16.28}{200} = 8.14 \text{ cents.}$$

COST OF HANDLING CLAY OR SOFT SHALE WITH A 35-TON STEAM SHOVEL AND CABLE HAULAGE.

Item.	Machines and Materials Used.	Per 10-hr. Day.	
		Min.	Max.
	Interest on shovel. Investment \$5,500 to \$7,000	.73	.93
1-13	Items from 1 through 13 practically the same as above	9.75	15.61
Total		10.48	16.54

Minimum cost per ton with probable maximum output of 10.48

$$325 \text{ tons} = \frac{10.48}{325} = 3.23 \text{ cents.}$$

Maximum cost per ton with probable minimum output of 16.54

$$260 \text{ tons} = \frac{16.54}{260} = 6.37 \text{ cents.}$$

COST OF HANDLING CLAY OR SOFT SHALE WITH A 45-TON STEAM SHOVEL AND CABLE HAULAGE.

Item.	Machines and Materials Used.	Per 10-hr. Day.	
		Min.	Max.
1	Interest on shovel. Investment \$6,000 to \$7,500	.80	1.00
1-13	Items from 1 through 13 practically the same as above	9.75	15.61
Total		10.55	16.61

Minimum cost per ton with probable maximum output of 10.55

$$600 \text{ tons} = \frac{10.55}{600} = 1.75 \text{ cents.}$$

Maximum cost per ton with probable minimum output of 16.61

$$300 \text{ tons} = \frac{16.61}{300} = 5.53 \text{ cents.}$$

COST OF HANDLING A HARD SHALE WITH A 60-TON STEAM SHOVEL AND CABLE HAULAGE.

Item.	Machines and Materials Used.	Per 10-hr. Day.	
		Min.	Max.
1	Interest on shovel. Investment \$8,000 to \$9,000	1.06	1.20
2	Cost of coal, 1 to 2 $\frac{1}{2}$ tons, at \$1.40 per ton	1.40	3.50
3	Oil, repairs, etc.	.25	.50
4	Labor, 6 to 8 men at \$2.00 per day....	12.00	16.00
5	Interest on 8 to 12 cars, at \$150 each..	.16	.24
6	Interest on tracks of 800 to 2,000 feet or same construction as in 25-ton case	.04	.10
7	Depreciation of ties at life of 8 years..	.08	.21
8	Depreciation of rails, practically nothing	...	...
9	Interest on 900 to 2,100 feet $\frac{3}{4}$ -inch cable, at 16 cents per foot	.02	.05
10	Depreciation of cable at life of 300 days	.50	1.10
11	Interest on hoisting drum, at \$2.00.....	...	...
12	Depreciation of hoisting drum, oil, etc.	.03	.05
13	Cost of power in hoisting 10 to 25 h. p. at \$35.00 per h. p. per year.....	1.16	1.74
Total		16.70	24.69

Minimum cost per ton with probable maximum output of 16.70

$$1,000 \text{ tons} = \frac{16.70}{1,000} = 1.67 \text{ cents.}$$

Maximum cost per ton with probable minimum output of 24.69

$$400 \text{ tons} = \frac{24.69}{400} = 6.14 \text{ cents.}$$

COST OF HANDLING A HARD SHALE WITH A 60-TON STEAM SHOVEL AND DINKEY LOCOMOTIVE WITH CABLE HAULAGE ON INCLINE.

Item.	Machines and Materials Used.	Per 10-hr. Day.	
		Min.	Max.
1-5	Items from 1 through 5 inclusive, practically the same as in 60-ton case above	14.87	21.44
6	Interest on tracks using 35-lb. rails instead of 25-lb. as above for cable haulage only	.06	.16
7-8	Items 7 and 8 practically same as above 60-ton case	.08	.21
9	Interest on $\frac{3}{4}$ -in. cable, at 16 cents per foot, 200 to 300 feet, practically nothing	...	...
10	Depreciation of cable at life of 300 days	.12	.18
11-12	Items 11 and 12 practically same as above 60-ton case	.03	.05
13	Cost of power in hoisting, at \$35.00 per h. p., 5 to 10 h. p. used.....	.58	1.16
14	Interest on locomotive investment \$1,200	.16	.16
15	Engineer on locomotive at \$2.25 per day	2.25	2.25
16	Coal used in locomotive, $\frac{1}{2}$ -ton, at \$1.40	.70	.70
17	Repairs, oil, etc., on locomotive.....	.10	.25
Total		18.95	26.56

Minimum cost per ton with probable maximum output of 18.95

$$1,100 \text{ tons} = \frac{18.95}{1,100} = 1.70 \text{ cents.}$$

Maximum cost per ton with probable minimum output of 26.56

$$430 \text{ tons} = \frac{26.56}{430} = 6.18 \text{ cents.}$$

COST OF HANDLING A HARD SHALE WITH 75-TON STEAM SHOVEL AND DINKEY LOCOMOTIVE WITH CABLE HAULAGE ON INCLINE.

Item.	Machines and Materials Used.	Per 10-hr. Day.	
		Min.	Max.
1	Interest on shovel. Investment \$9,000 to \$10,000	1.20	1.33
2	Cost of coal, at \$1.40, 2 to 4 tons.....	2.80	5.60
3	Oil, repairs, etc.	.20	.50
4	Labor, at \$2.00 per day, 5 to 8 men....	10.00	16.00

5	Interest on cars, at \$150 each, 8 to 12 cars	.16	.24
6-17	Items from 6 through 17, practically the same as second 60-ton case.....	4.08	5.12
Total		18.43	28.79

Minimum cost per ton with probable maximum output of 18.43
 1,250 tons = $\frac{1,250}{18.43} = 1.47$ cents.
 Maximum cost per ton with probable minimum output of 28.79
 600 tons = $\frac{600}{28.79} = 4.80$ cents.

COST OF HANDLING HARD SHALE WITH 90-TON STEAM SHOVEL WITH DINKEY AND CABLE HAULAGE ON INCLINE.

Item.	Machines and Materials Used.	Per 10-hr. Day.	Min.	Max.
1	Interest on shovel. Investment \$10,000 to \$11,000	1.33	1.46	
2-3	Items 2 and 3 practically same as in 75-ton case	3.00	6.10	
4	Labor, at \$2.00 per day, 7 to 10 men....	14.00	20.00	
5-17	Items from 5 through 17 practically the same as previous case.....	4.24	5.36	
Total		22.56	32.92	

Minimum cost per ton with probable maximum output of 22.56
 1,600 tons = $\frac{1,600}{22.56} = 1.41$ cents.
 Maximum cost per ton with probable minimum output of 32.92
 750 tons = $\frac{750}{32.92} = 4.39$ cents.

COST OF HANDLING A HARD SHALE WITH 110-TON STEAM SHOVEL WITH DINKEY LOCOMOTIVE AND CABLE HAULAGE ON INCLINE.

Item.	Machines and Materials Used.	Per 10-hr. Day.	Min.	Max.
1	Interest on shovel. Investment \$11,500 to \$13,000	1.53	1.73	
2	Cost of coal, at \$1.40 per ton, 3 to 5 tons	4.20	7.00	
3	Oil, repairs, etc.	.40	.60	
4	Labor, at \$2.00 per day, 8 to 12 men....	16.00	24.00	
5	Interest on cars, at \$150 each, 9 to 16 cars	.18	.32	
6-12	Items from 6 through 13 practically the same as above case of 90-ton.....	.29	.60	
13	Cost of power for hoisting, at \$35.00 per h. p. per year, 7 to 15 h. p.....	.82	1.75	
14-17	Item from 14 through 17 practically the same as above cases.....	3.21	3.36	
Total		26.63	39.36	

Minimum cost per ton with probable maximum output of 26.63
 2,000 tons = $\frac{2,000}{26.63} = 1.33$ cents.
 Maximum cost per ton with probable minimum output of 39.36
 925 tons = $\frac{925}{39.36} = 4.25$ cents.

Notes on above data:

All interest in table at 4 per cent. per annum.

Men's pay at \$2.00 per day of ten hours only a probable average.

Horse power used in hoisting drums taken as about the average between no load and full load.

No cost of grading for track estimated because of great variation.

Power for hoisting drum figured same as if bought at cost; therefore no depreciation or interest on power plant of factory estimated.

It will be noticed that the addition of the dinkey engine somewhat increases the capacity of the clayworking plant as shown in the second 60-ton case.

Rise of cost per ton in 60-ton case due to change from soft shale and clays to a hard shale, such as could not be handled satisfactorily with any shovel lower than a 60-ton.

COST OF INSTALLATION FOR DIFFERENT CAPACITY OUTFITS—25-TON SHOVEL.

(Consult Chart No. 4.)

	25-Ton Shovel.	Min.	Max.
A	Cost of shovel	\$3,000	\$5,000
B	Cost of cars at \$125 each, 4 to 8 cars..	500	1,000
C	Cost of tracks, 25-lb. rails, at \$31.00 per ton, white oak ties at 50 cents each, laid 2 feet between centers; spikes, bolts, etc., at \$1.50 per 100 feet, 800 to 2,000 feet used	415	1,036
D	Cost of $\frac{1}{2}$ -in. cable at 7 $\frac{1}{2}$ cents per foot, 900 to 2,100 feet.....	67	157
E	Cost of hoisting drum,	200	250
F	Cost of power plant for hoisting drum not included	...	...
Total		\$4,182	\$7,443

Minimum cost of installation per ton weight = $\frac{4,182}{25} = \$167.$
 Maximum cost of installation per ton weight = $\frac{7,443}{25} = \$298.$

35-TON SHOVEL.

	Min.	Max.
A	Cost of shovel	\$4,500
Items from B, through F practically the same as in above.....		1,182
Total		\$5,682
Minimum cost of installation per ton weight = $\frac{5,682}{35} = \$162.$		
Maximum cost of installation per ton weight = $\frac{9,442}{35} = \$270.$		

45-TON SHOVEL.

	Min.	Max.
A	Cost of shovel.....	\$6,000
B-F Items from A through F same as above.		1,182
Total		\$7,182
Minimum cost of installation per ton weight = $\frac{7,182}{45} = \$159.$		
Maximum cost of installation per ton weight = $\frac{9,943}{45} = \$221.$		

60-TON SHOVEL (CABLE HAULAGE.)

	Min.	Max.
A	Cost of shovel	\$8,000
B	Cost of cars at \$150, 8 to 12 cars.....	1,200
C	Cost of track, 1,000 to 2,000 feet.....	415
D	Cost of $\frac{3}{4}$ -in. cable, at 16 cents per foot, 900 to 2,100 feet.....	144
E	Cost of hoisting drum	200
Total		\$9,959
Minimum cost of installation per ton weight = $\frac{9,959}{60} = \$161.$		
Maximum cost of installation per ton weight = $\frac{12,422}{60} = \$207.$		

60-TON SHOVEL (DINKEY AND CABLE HAULAGE.)

	Min.	Max.
A-B	Same as above 60-ton case.....	\$9,200
C	Cost of tracks same as above except 35-lb. rails used	196
D	Cost of $\frac{3}{4}$ -in. cable at 16 cents, 200 to 300 feet	36
E	Cost of drum F (see 25-ton case).....	200
G	Cost of dinkey locomotive	1,200
Total		\$11,132

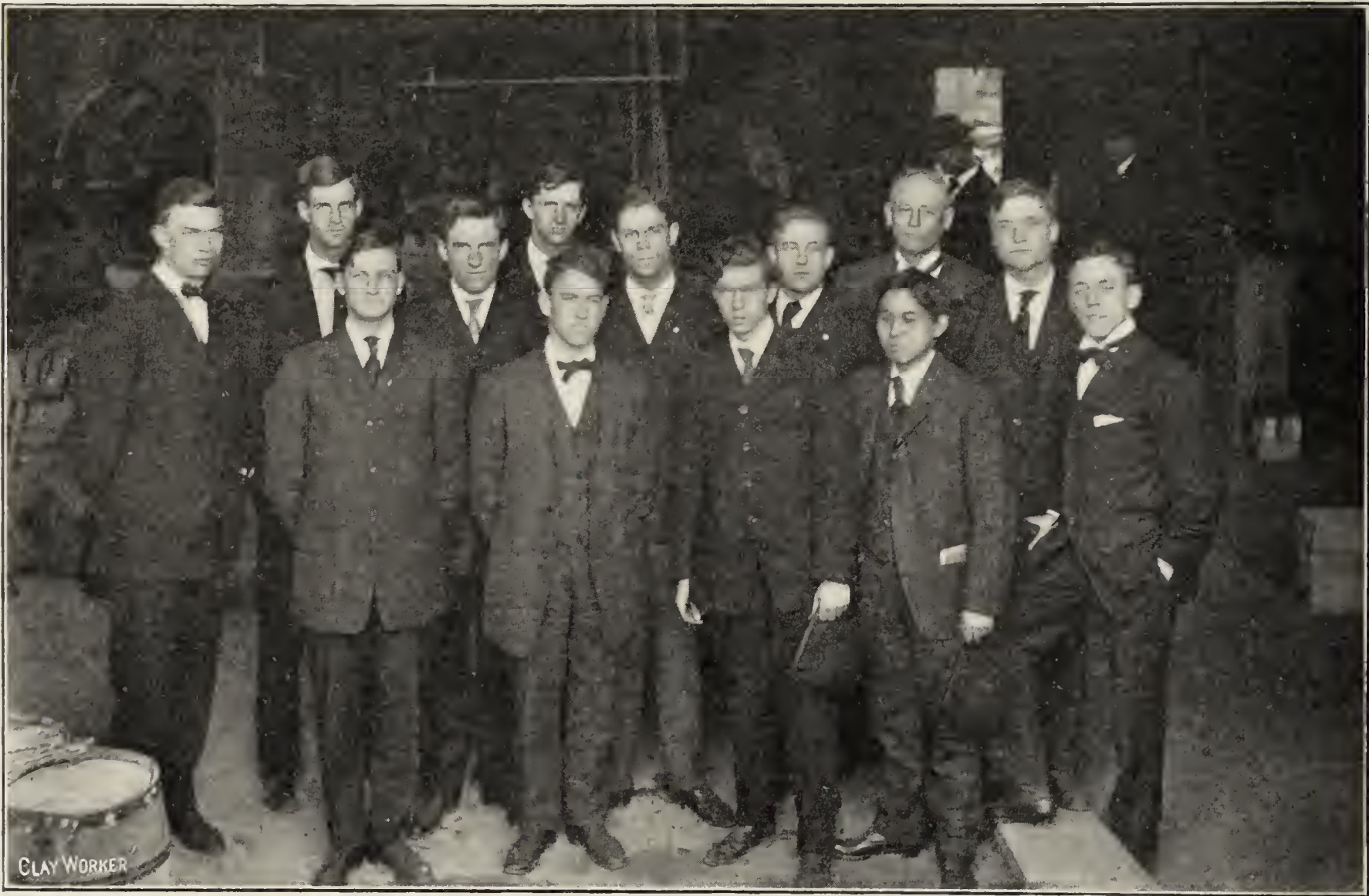
\$13,844

		11,132	
Minimum cost of installation per ton weight =		60	=
\$185.		13,884	
Maximum cost of installation per ton weight =		60	=
75-TON SHOVEL.			
		Min.	Max.
A	Cost of shovel	\$9,000	\$10,000
B-G	Same as 60-ton, second case.....	2,132	4,544
Total		\$11,132	\$14,544
Minimum cost of installation per ton weight =		11,132	=
		75	
\$148.		14,544	
Maximum cost of installation per ton weight =		75	=
\$194.			

C-G Items C through G, inclusive, same as			
above case		1,932	3,044
Total		\$13,132	\$15,844
Minimum cost of installation per ton weight =		14,782	=
		110	
\$134.		17,944	
Maximum cost of installation per ton weight =		110	=
\$163.			

CLAY STUDENTS ON A TOUR OF INSPECTION.

Through the courtesy of the American Clay Machinery Co., we are permitted to present to the readers of the CLAY-WORKER the accompanying group picture of the class in ceramics of the Ohio State University. Under the guidance



Prof. Edward Orton and the Ohio State University Class in Ceramics at the Factory of the American Clay Machinery Company, Bucyrus, Ohio.

		Min.	Max.
90-TON SHOVEL.			
A	Cost of shovel	\$11,500	\$13,000
B	Cost of cars, 9 to 16, at \$150 each.....	1,350	2,400
C-G	Items C through G same as above 90-ton case	1,932	2,544
Total		\$14,782	\$17,944
Minimum cost of installation per ton weight =		13,132	=
		90	
\$146.		15,844	
Maximum cost of installation per ton weight =		90	=
\$176.			
110-TON SHOVEL.			
		Min.	Max.
A	Cost of shovel	\$10,000	\$11,000
B	Cost of cars at \$150, 8 to 12 cars.....	1,200	1,800

of Prof. Edward Orton, Director of the School for Clayworkers, the class visited Bucyrus, Ohio, early in March and spent a very profitable day in inspecting the immense plant of the American Clay Machinery Co. Every feature of the great factory, from the office to the foundry, was visited and studied carefully, and it is safe to say that the students returned to school with enlarged ideas of the magnitude and importance of the clayworking industry. They were especially interested in the clay testing department of the factory, which is equipped with every known device and facility for making practical tests of clays, including not only the preparation of the clays, but the drying and burning of the wares. The party included Prof. Edward Orton, J. F. Knote, R. C. Cooper, A. E. Williams, J. D. Whitmer, R. L. Hare, H. A. Henry, H. Des Tardines, W. Stolp, J. Stolp, A. J. Ogle, G. D. Morris, W. H. Dittoe, and K. Takahashi, a Japanese.



DRAIN TILEMAKERS GATHER AT THE HOOSIER CAPITAL.

THE INDIANA Tilemakers' Association met in the parlors of the Grand Hotel in Indianapolis, April 9.

The following named tile manufacturers were present in addition to a number of others: P. P. Parnell, Goldsmith; James Luther, Terre Haute; W. C. Hoover, Portland; L. R. Whitney, Terre Haute; Samuel Cowgill, Montezuma; S. L. Lingaman, Brownsburg; Fred Boum, Orestes; Cal. Boum, Sweetzer; Jerry Casey, Colfax; W. B. Davis, Anderson; John Spurgeon, Sweetzer; J. B. Dixon, Whiteland; Wm. Arbuckle, Homer; M. J. Lee, Crawfordsville; Aly Williamson, Sweetzer; Lee Goodwin, Curtisville; G. S. Brubaker, Perrysburg. Many of these gentlemen are operating large factories.

This association has been organized a number of years and is expected to meet quarterly and report the condition of the tile trade in the different sections of the State and exchange experience in the methods of manufacturing drain tile.

Mr. S. C. Cowgill & Sons, together with L. R. Whitney, are perhaps the largest manufacturers of drain tile, so far as we know, in the world. They operate four large drain tile works—one at Summittville, one at Montezuma, one at Hillsdale, and one at Terre Haute, Ind. They ship thousands of cars of drain tile in the run of a year.

Mr. S. C. Cowgill & Son built a large factory on the Yazoo river, in the State of Mississippi, which they have been operating for a year or more. Quite recently, however, they sold the works to Southern capitalists, who are now operating same.

Mr. Cowgill, when called upon to give his experience in manufacturing tile in the Southland, said:

"Some things are very agreeable. The clays are changeable and require close attention to get the best results. The labor is a difficult problem; there are so few among the colored people that can be relied upon for the best service.

"Drainage is greatly needed. The land in the Yazoo section of the State is as good as any in the world, if underdrained. A 40-acre farm that had not been plowed for five years on account of its being too wet, was tile drained, and the following season it was the first that was in condition to be plowed. A piece of slough land, after being tile drained, was excellent for crop growing. The Yazoo country, when tile drained, will be a wonderful productive section of the State."

Mr. Arbuckle, of Homer, Ind., was requested to give his experience in the use of a new cut-off for drain tile, which he has been using in his works. He said it was the same in principle as that used on a grain binder in binding the grain. It works rapidly and is very satisfactory.

"The Porosity of Drain Tile" (an old subject) came in for a brief consideration, it being said that some farmers were demanding porous tile. It was generally agreed, however, that the amount of water passing through the wall of a porous tile was very small indeed, and really was not worth any consideration in the purchase of drain tile; the water almost, if not wholly, passing into the drain at the joints.

The general verdict of those in attendance was that prices of tile are low and competition sharp.

It was stated that those engaged in tile draining their lands are doing better and more thorough work this year than

ever before, and are putting in parallel lines of drains 50 or 60 or 80 feet apart, as the character of their land may seem to need. This is an encouraging fact. It means a great deal in the way of benefits to the farmer.

The meeting of the association was very satisfactory as to numbers and interest. If other tile manufacturers want to know more about the association, write to Lee Goodwin, secretary, Curtisville, Ind.

IF NEED BE, GO IN DEBT TO DRAIN LAND.

"I would run in debt for money to drain a farm with a close soil, thoroughly as far as it was to be plowed. I would not break up a field without first draining it. I would plant tile before planting a crop every time. And still, when I am asked, as I often am, whether I would advise any one to go in debt for tiles, I dare not say yes, because so much depends upon the man; whether he will follow up his draining with good farming that will bring the money out of his venture, and again, whether the draining will be thoroughly done, or whether it will soon be practically of little value. Tile draining is the foundation, next to the farm itself, of all good, profitable farming on land that needs it. I wish I could grind this into every reader who has such land. There is no more question of its truth today than that two and two make four."

—T. B. Terry.

FERTILITY FROM ABOVE.

Rainfall usually contains ammonia equal to six or eight pounds of nitrogen per acre. If the water can be made to pass through the land the ammonia is taken up by the soil, otherwise if the rainfall passes off over the surface the ammonia is largely lost. By underdraining the land it will become open and porous, readily absorbing the water of rainfalls, saving to the soil a store of fertility for the growth of farm crops, thus saving the fertility coming to us from above.

In applying fertility to the soil in the use of barnyard manures, if after being spread the manures are allowed to leach or are washed out by the rainfall and the colored water passes off over the surface into the little rills and streams and away, much of the fertility thus applied is lost; otherwise, if the land is well tile drained and the soil open, readily taking the water from the manures into the soil, then the fertility applied is saved to the land. So it is not only possible, but it is feasible and profitable to underdrain so as to save the fertility coming down from above and that which is applied, to say nothing about that which comes to the surface from beneath.

SOME "OLD TIMERS" IN THE TILE BUSINESS.

Mr. R. Brandt of Atlanta, Ill., gives in the Springfield News some interesting personal reminiscences of pioneer tile manufacturers. He says what you might call the old pioneers were the Dawson Brothers, who came from Lincolnshire, England, in the early 60's and commenced making tile in Ohio. In 1866 they came to Acton, in this State (Indiana), and commenced making drain tile. In 1868 Henry Dawson came to Indianapolis, and with Robert Thomas, another Englishman, started a tile factory. Matthew Dawson remained at Acton. Some years later Matthew Dawson moved to Rushville, Ind., where he engaged in manufacturing tile, doing quite an extensive business. John Dawson went to Thorntown, Ind., in the year 1868, and built a tile plant. Henry Dawson built a tile factory in Greenfield, Ind., in 1869, and afterwards built one near Cincinnati, which was burned out. He then went to Atlanta, Ill., in search of a man with money to back up his brains in the establishment of a tile factory. He found the man at Auburn, Ill., and started a factory. It was essential that they have some experienced tile ditchers, and from Lincolnshire came Paul Dowry and Henry Portugal. In 1867 R. Brandt, Thomas

Jackson, William Williams and Thomas Cookston came to Acton, Ind., to put in tile. R. Brandt worked in several factories in this State (Indiana), running a factory one year in Shelbyville, in company with Thomas Jacklin. Jacklin went to Hopedale, Ill., in 1871, and burned the first kiln of tile in central Illinois for Emerick & Ireland, who burned three other kilns. R. Brandt went to Hopedale in the fall of 1871 and bought Mr. Emerick's interest. There was at that time no demand for drain tile; people did not recognize their value or even anticipate what drainage would do for their lands. Mr. Brandt says that to introduce them and get them into use he had to trade them for anything and then put them in himself. The first trade that he made was with G. P. Orendorf for cord wood, and the tile were put in on the Sparr farm, north of Hopedale. The next spring he brought two practical tile ditchers from Indiana. At that time there were no tile spades longer than fifteen inches, and he had several made from crosscut saw blades by local blacksmith, the desired length.

When R. Brandt went to Illinois, in 1871, he says there were a few three-inch tile for sale at 7 cents per foot. Afterwards at his Hopedale yards he reduced the price to one and three-quarters of a cent per foot.

In 1873 Mr. Haefer, Sr., of Bloomington, went to the Hopedale factory and stayed all day and took his first lessons in the tile business. The Haefer's afterwards built extensive tile, and brick works at Bloomington.

Railsback & Clodfelter established a factory at Minier, Ill., in 1875.

R. Brandt sold his factory at Hopedale in 1874 and went to Atlanta, Ill., where he operated a factory for several years.

J. H. Dawson, another Englishman, built a tile factory at Atlanta in 1876.

Mr. Brandt says that the first ditching that he did in America was for Dawson and Thomas in the spring of 1868, which was probably inside of the present corporation line of the city of Indianapolis.

BENEFITS DERIVED FROM TILE DRAINAGE.

It renders the soil and subsoil more porous. It makes the deep breaking of the land possible and easily done. It enables the husbandman to cultivate thoroughly and easily soon after a rain fall. It requires much less labor in preparing the seed bed. When the land is well underdrained allowing the surface water to pass down readily into the soil and subsoil and the surplus passes out through the drains, the soil dries quickly so as to admit of stirring, which facilitates the circulation of air through the soil, making it friable.

Tile drainage warms the soil by lessening the evaporation. A well underdrained soil is eight or ten degrees warmer than it would be if not tile drained. Underdrainage prevents the baking of the surface soil.

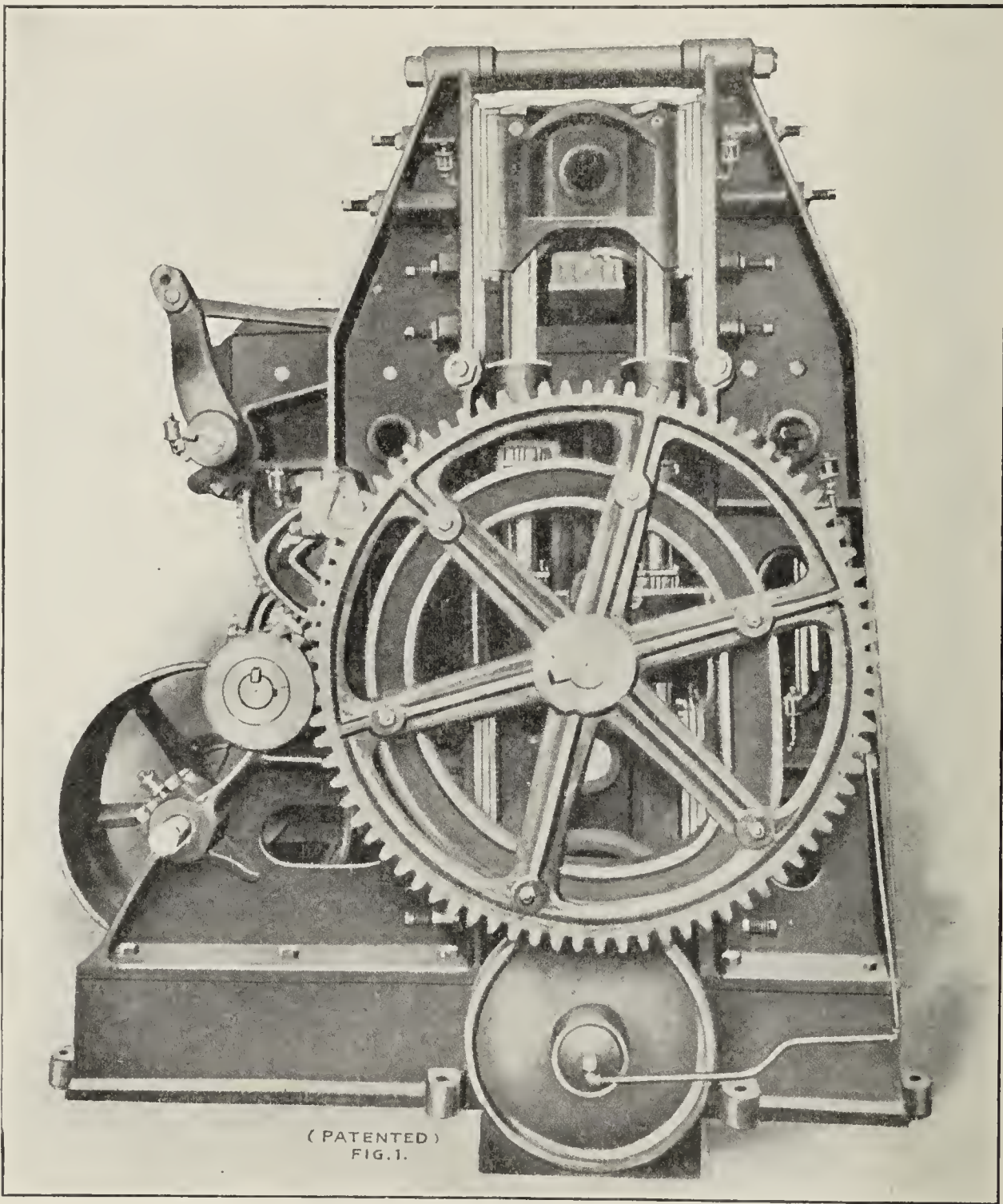
The increased temperature of underdrained soil and the open, friable condition allowing the air to circulate through the soil, causes plants and farm crops to grow rapidly and

mature without hindrance from unfavorable conditions.

Underdrainage lowers the line of saturation in the soil, which allows the air to circulate to greater depths, which acts upon the insoluble elements of fertility, renders them soluble, and the roots of plants penetrate to greater depths for food and moisture, and are enabled to withstand extreme drouths, and mature healthfully, insuring a good yield, despite unfavorable weather conditions.

THE RELIANCE BRICK PRESS.

WE ARE PLEASED to present to the readers of the CLAY-WORKER the accompanying illustration of the Reliance dry press brick machine, which it will be noted is quite a radical departure from the ordinary type of



Side View of the Reliance Brick Press.

dry press. The Reliance is distinctively a St. Louis production, and is made entire in the shops of the Reliance Machine and Tool Works of that city, which, as our readers know, is the home of the dry press process of manufacturing brick. The advocates of this method of manufacture claim that it is the most economical method of making high grade building brick, particularly where it is desired to make face and ornamental brick. The dry press process is also suited to the manufacture of fire brick. The claims of superiority for the dry press process and the various points of perfection of the Reliance press are fully set forth in a pamphlet which gives front and rear views of the press. As stated in their ad on page 635, the notable features of this press are its simplic-

ity, strength and efficiency. The Reliance Machine and Tool Works make a specialty of designing and equipping complete dry press brick plants and solicit correspondence from any and all who are interested in that line.

Written for THE CLAY-WORKER:

KANSAS CITY BRICK AND BUILDING NEWS.



ON THE PRESENT time the most of the building in this city has been residences and smaller buildings. That is, the permits issued this year have been for that class of buildings. Great things are promised in the way of new office buildings, and actual work is now in progress on several, but others will not start until a little later. The building on the northwest corner of Tenth and Main is to be vacated the middle of this month and will be torn down at once and a new office building erected on the site. Work is now in progress on the foundation of the \$300,000 Y. M. C. A. building. J. J. Swofford has plans for a twelve story hotel building on Ninth and McGee. The new addition to the Baltimore and Midland hotels will soon be started upon. Two new office buildings on the corner of Eleventh and Walnut will soon be started, and innumerable four and five-story buildings are going to be built this summer.

The estimated cost of buildings for which permits were issued during the month of March was \$728,150, as compared with \$895,345 in the same month of last year, or a decrease of \$167,195 in cost; while the number of permits was greater last month, being 407, as compared with 297 the same month of last year. Of these building permits, only 45 were for brick buildings, while 166 were for frame buildings.

Cement is selling, by the wagon load, delivered on the job, for \$2.35 per barrel, and at this price there seems to be little danger of many concrete buildings being built here this year. At the same time there will be at least three big ones. The big building, covering nearly a block and to be occupied by Montgomery, Ward & Co., is to be of reinforced concrete, and a ten story office building is to be built in the business section by the same parties who are building the Montgomery, Ward & Co. building. Then the Townley Metal Co. is now constructing a concrete warehouse. The bricklayers are doing all they can to force people to use concrete, and if it was not for the fact that there is only a limited production of cement in this territory, as yet, and the price held so high on account of the demand, a great deal more attention would be given to that building material. The bricklayers are now demanding 70 cents per hour, and it is this high price for labor which makes builders feel friendly towards concrete.

The brickmasons threatened to strike the first of this month for the advance from 62½ cents to 70 cents per hour, and some of them did strike. The master builders on the hand, refused to grant the raise, and some of them are still refusing. The fact of the matter is, some of them are now paying the 70 cents demanded and some of the bricklayers are working for less. It seems to be altogether who the contractor is. If the master builders would hold together they would prevent these wage advances, but they do not seem to care about it. They just figure the cost of labor that much more, and let their bid go at that, and let the builder pay the bill. They overlook the fact, that one of these days this high labor bill will run all of the builders to some other material, or they do not care, probably feeling that when the time comes they will themselves hire the cheaper labor and use the other material.

The report of the building inspector of Kansas City, Kan., covering the three months of this year already past, shows that in that time \$289,670 has been spent in building. This includes six factory buildings, 38 brick houses, 15 stone houses and 102 frame houses.

Brick manufacturers in this section of the country which

have well organized sales forces, declare that this is going to be the best brick year they have ever experienced, both in the demand for paving brick and building brick, but a great deal depends upon the number of freight cars they are able to get in which to make delivery. There will be no question about selling all they can produce, if they can only make the delivery.

Kansas City is not doing much in the way of brick pavement now, in fact, brick is not being pushed here as a paving material, and, of course, not being pushed when other materials are, there is little chance of much being done. Brick manufacturers seem willing to go outside after business and other western towns are taking all the good brick paving they can get. The superintendent of streets has been investigating the cost of keeping streets clean in the different cities of the United States, and incidentally found out how many miles of "hard paving" a good many of them has. The following table was compiled from the figures received by him:

City.	Population.	Miles.
New York	3,888,180	1,017.9
Philadelphia	1,392,589	1,000
Pittsburg	352,852	352.14
Buffalo	372,033	340
Baltimore	685,020	338.9
Cleveland	425,632	315
Kansas City	305,955	235
New Orleans	305,132	232.25
St. Louis	624,626	208.03
Washington	298,050	190.27
Newark	283,289	170.67
Toledo	150,594	160
Columbus	169,812	140
Boston	595,380	120.17
Jersey City	232,699	118.154
Detroit	403,512	112.50
Rochester	177,228	107.13
Minneapolis	297,011	96.10
Milwaukee	353,252	78.042
St. Paul	206,364	47.08
Denver	237,751	35.74
Los Angeles	190,193	35
Providence	194,027	33.80

The Kansas gas belt brick manufacturers have employed an attorney to present their views about freight discrimination to the State Board of Railroad Commissioners. They want some relief, if it is in the power of the commission to grant it. They are not complaining about rates, but car service. The fact that brick can be shipped in almost any kind of a car should make it especially easy to get cars, but it has not during the past year.

All the Kansas City brick plants are now running and some of them full time, with more orders ahead than they will be able to catch up with. Others are not having such a strong demand. It is the shale brick that is wanted on every side, and as there is any quantity of shale all around and in this city, there should be a number of new plants put in here. The fact that the Kansas brick is finding a better market in other directions on account of the freight, makes it sure that plants well located right here in the city will be able to get all the business they can take care of, if they turn out a good shale brick. Those now turning out such an article are busy and have all kinds of business in sight. The rock crusher and brick plant combination seems to be the best for this city. The Lyle Brick Company has this kind of a combination, getting the crushed rock then following up by taking the shale. Many other openings can be found for a similar plant and the fact that they are putting in their second plant of this kind indicates what they think of the future.

Flanagan Bros. are running full time and well sold ahead.

The Eadic Building Supply Company has bought very heavily, well in advance, but now states that it is going to be a struggle to get enough brick to keep up with the demand long before the season is over.

The Kaempff Shale Brick Company has been incorporated in this city with a capital stock of \$30,000, by Frederick C. Kaempff, W. A. Hammond and others, and has purchased the plant and property of the Stukenberg Pressed Brick Company, Thirty-first and Wyoming. They will run the old plant while a new one is being erected, which is to be located nearer the shale than the old plant, and which will have a capacity of

100,000 brick per day. It has about been decided to use the Reppell kilns in the new plant.

John H. Massman, for many years a brick manufacturer of this city and whose oldest son, H. J. Massman, is secretary and treasurer of the Builders' Sand Company, died March 23, of Bright's disease.

The Master Builders' Exchange will move about May 1 from the old location in the Postal building to a fine location on the third floor of the new Scarritt building. The building will not be completed for at least a month after that date, but as soon as it is completed a large number of the present tenants of the Postal building will move up there, as they are handlers of building material and wish to be near the headquarters of the master builders.

The Eadie Building Supply Company expects to move to the Scarritt building about June 1, and has selected a fine suite of rooms.

K. A. W.

Written for THE CLAY-WORKER:

REINFORCED CONCRETE.

Elements of Weakness that are Inseparable From Structural Work When Cement is Used.



WHEN DOCTORS disagree, we look out for trouble. At a recent convention of engineers, there was a discussion between three representatives of as many different systems of reinforced concrete construction. There was absolute disagreement as to the engineering formula and practice as expressed by these engineers.

The reinforced concrete business, under these conditions, is in a chaotic state.

This discussion, to be sure, was on the floor of a convention, but where the engineers do not agree, where do the people come in? That question has been answered in a way at the Bixby Hotel at Long Beach, California. It was answered some time since at the Kodak Works in Rochester, New York; again at Elmira, New York, and at Trenton, New Jersey, at Milwaukee and at Pittsburg. The answer in each case was—a collapse. Is it a fact that reinforced concrete is a failure as a structural medium? That may not be absolutely true, but the difficulties may be so great as to make reinforced concrete an unsafe medium. At Long Beach, the coroner's jury found that the collapse was occasioned by prematurely removing a number of the timbers supporting the fifth floor, but the coroner's jury did not go fully into this question. An investigator for the Engineering News indicates that there was faulty design, faulty installation, poor concrete. The Rochester disaster had attached to it about all possible troubles. The design was faulty, the concrete was as bad as possible, and in certain sections where there should have been concrete, there were blocks of wood, straw, shavings and saw dust. The work was superintended by one who knew nothing about reinforced concrete. Then again, the metal which the drawings showed was not installed in all instances. But, to begin with, the design was faulty. There would have been trouble under any circumstances.

The reinforced concrete idea has much attached to it that is very fascinating. It presents many interesting engineering problems. Theoretically, the idea of reinforced concrete is promising, but the promises have not been realized. There are many good reasons for this. There are too many links in the chain. Where the concrete is down on the ground and has mother earth to support it, the chances are all in its favor. But, in the mere making of concrete from sand and gravel or broken stone and cement, and in its use in reinforced work there are so many chances of failure that it amounts almost to a reasonable probability that there will be failure. The success of concrete is dependent upon more varying conditions than the fabrication of any other building

substance. To begin with, there is the cement, and it is required that this cement should be tested. The test, to be of the greatest value, should be a 28-day test; first, a 24-hour test, then one of 7 days and then the one of 28 days. In the ordinary building work it does not often happen that it is conveniently possible to have even a 7-day stock ahead, and it is rarely possible or desirable to have a 28-day stock ahead, or on the work. Then there are so many conditions relating to what is known as the aggregate portion of the concrete; that is, the sand and gravel and broken stone. This, by the way, is a quality which is being very much neglected. There is quite as much variation in the aggregate as there can possibly be in any other building material, and as these changes present themselves, it involves a corresponding change in the proportion of cement in the mixture. Concrete should contain, not too much or too little of cement. Too much cement makes a relatively weak mixture, and it is certainly known that, if there be not enough, the mixture is weak. Certain grades of sand, because of the proportion of voids or open spaces between the particles, require varying quantities of cement. The quantity of voids in sand will vary from 30 to 40 per cent. This is also true of the coarser particles of the aggregate, the finer gravel and the broken stone and the variation of these. Then again, there comes in the matter of the mixing of the concrete, and the mixing of the cement with the concrete. Any varying or neglect is certain to influence the structural value of concrete. The personal equation is always present, not only as related to integrity, but to intelligence as well. Furthermore, it is a popular thought that a very low grade of labor may be employed in mixing concrete and in placing it in position. There is a great hazard in the installation of the cement. A portion of it, even a small part, may become aged, and even with the closest of supervision, the test of or tamping may be improperly done. Even a small part of the work, in a part of the structure which is deficient from any of the causes above outlined, whether it be as to the cement, the sand, the gravel, their mixture or installation, will cause failure. There are too many links in the chain, and every link in a concrete structure must be depended upon, and every part of every link. Hence, the hazard is very great. A small amount of inefficient concrete in a column or beam, a slab or a lintel, may effect the integrity of the entire structure. These conditions are not dependent, as said before, altogether upon the integrity or conscientiousness of the worker. They are dependent upon the character of all of the workers and upon the skill of all. As one looks at these conditions and at the hazard presented, it is no wonder that there are as many failures as there are. The only wonder is that there are not more. It is said that reinforced concrete construction has had the test of time in the old countries. That is true, but there it has been used under conditions quite different from those in America. We are with reinforced concrete as we are with many other things. We go to extremes. We make uses of this material that the originators of the reinforced concrete idea never dreamed of. We are extremists in many ways, and even in France and Germany, who have been pioneers in this kind of construction, the reinforced concrete idea has never been received in the same way that is common with us. And again, they have had failures, with all the precautions which they have taken. The temperament of the continental worker is quite different from that of the American. There is not the same inherent thoroughness and feeling of responsibility. The law is more strict, and the punishment on account of failure, greater. The responsibility is always located. With us, reinforced concrete construction is used where great haste is required. Haste in the construction of concrete buildings, and especially the reinforced structures is, in itself, a very great hazard. With winter work it is especially dangerous.

The pendulum has probably swung to the extreme in favor of the reinforced concrete idea. It may now be expected

to swing back, and, in time, assume a normal position. It is a quality of our race that most anything which is new is received with greater favor than the old. A new pavement, a new system of steel construction, new systems and new forms relating to concrete, to wood, to plaster and other materials, are received with even greater favor and more enthusiasm than that which is older and that which has stood the test of time. America is a great field for the man with a new idea. We appear to be especially fond of novelty, even in building matters and even where we hazard our own lives and those dependent upon us. The story of reinforced concrete is a continued one and as it comes to us, chapter after chapter, with its regular failures, as it has during recent weeks and months, it may be that, in time, we will be influenced by the record.

T. SQUARE.

NEW YORK IMPORTS BUILDING BRICK FROM ROTTERDAM.

A strange consignment of 14,000 precious bricks, which are being carefully guarded by the police, was received in New York recently. They were not gold bricks, as the unwary

Written for THE CLAY-WORKER.

THE LITTLE FALLS, WASH., FIRE CLAY CO.'S PLANT.

The

ACCOMPANYING illustrations give an excellent idea of the immense plant at Little Falls, Lewis County, Washington, of the Little Falls Fire Clay Company, of Tacoma, Wash. This plant is the largest in the north-western part of the United States, and ranks as one of the most important on the entire Pacific Coast.

The plant, as shown in the illustration, is comparatively new, and is equipped throughout with the most improved and modern appliances for the manufacture of the products, which have a wide range, and include fire brick of all degrees of hardness and burn, paving and vitrified brick, for which there is an immense demand at the present time in all of the towns and cities of any importance in the Pacific Coast States, pressed and building brick, hollow building tile and fireproofing, sewer pipe, vitrified tile, drain tile, and a host of other necessary clay products.

The demand for these products is excellent, and the scarce-



General View of the Sewer Pipe Factory at Tacoma, Wash.

might suspect, but plain, small, white bricks, of the old-fashioned appearance, straight from Holland, from a kiln which has been making them without change for 250 years. They are to be used by the Sons of the Revolution in their work of repairing, in its original style, the old Fraunces Tavern, at Broad and Pearl streets, so that it may present the same appearance as it did when Washington bade farewell to his officers there. Since then the first wall has been torn out to make a show window for a store, which afterward became a saloon, and in the work of restoring it as a club house its patriotic owners were confronted with the problem of securing small white bricks for facing it in the original style. A fruitless search revealed the fact that these were not to be obtained in this country and the Sons were almost despairing when it was discovered that fifteen miles outside of Rotterdam, in Holland, the identical factory which made the original bricks 206 years ago, was still doing business at the old stand, and the bricks were ordered accordingly.—Exchange.

ity of stone for building purposes has been an important factor in the success of the brick and tile making industry in this section of the country. The market for the above products is found principally in Western Washington and in Oregon. While it is well known that this rather limited market could readily be greatly extended, the rush of business that has been emanating from this district has prohibited the expansion further than the district above mentioned. Owing to the immense amount of new sewerage being laid, and the new systems that are being installed in the hundreds of thriving little municipalities in this immediate district, the demand for sewer pipe has been enormous, and this portion of the plant has been worked to the utmost capacity for some months past, while the output is already booked for several months in advance.

In the foreground of the third illustration is shown the storage yards for sewer pipe. Two of the kilns on this side of the plant have been run exclusively on this product, and when the photograph was taken a month ago, the shipments had been

so heavy that the yard, or reserve stock, was badly depleted. The end of the yard nearest the kilns is used for making shipments direct from the kilns, thus doing away with a large amount of unnecessary handling, and insuring a minimum of breakage. A siding from the main line of the Northern Pacific Railroad runs into the yard.

The company's clay mines and clay deposits are but a short distance from the plant, and within a very short time after the clay is taken from the earth, it is possible to have it in grinders and crushers, under course of preparation for the molds. This rapidity is made possible by means of the special road, or tramway, that the company operates, and may

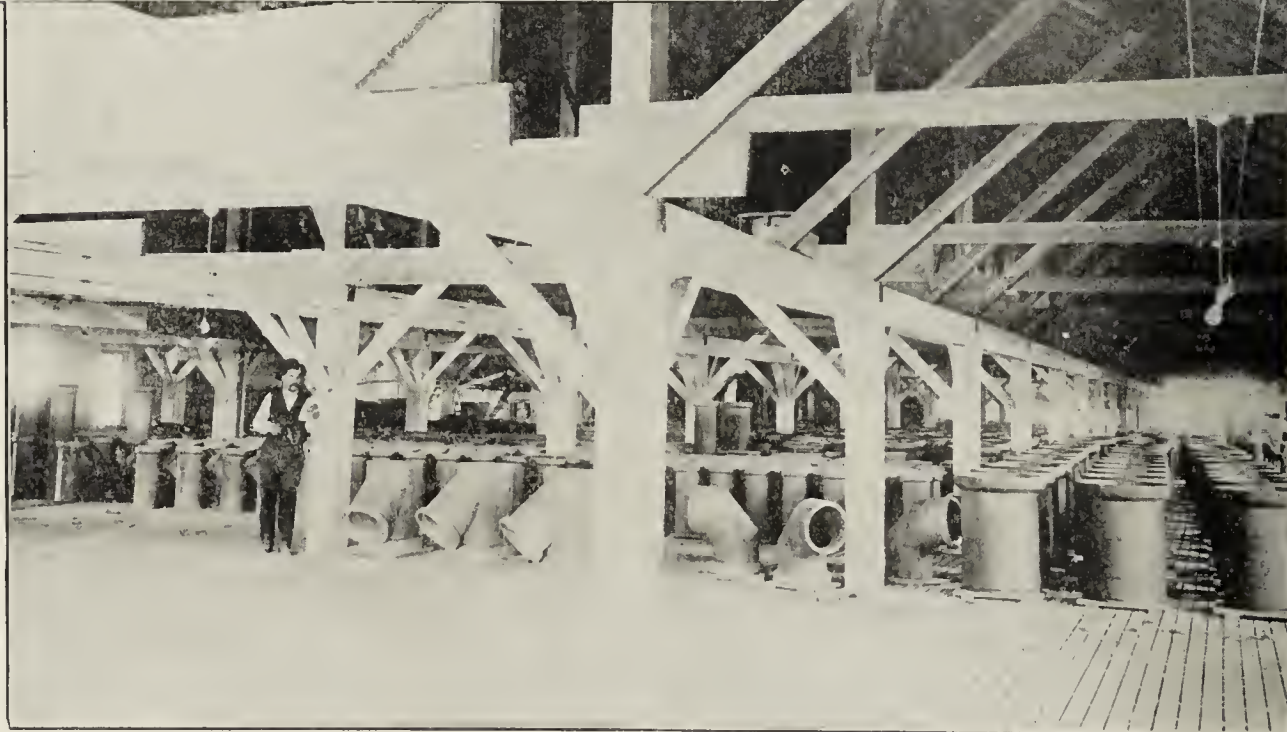
county mines, a short distance from Tacoma. Slabs from the many large lumber camps are used for boiler fuel, so that the item for fuel is comparatively small, as compared with the high similar expense for brick burning in many other parts of the country.

Directly back of the five kilns is the main building, which is a four-story brick structure, 80 by 250 feet. In this building is located all of the mechanical equipment of the plant, crushers, grinders, presses, molds, dryers, etc., all arranged for convenience and speed in handling the raw material, and transforming it into semi-finished product, ready to be run to the kilns for burning. The engineering and power plant is located in another brick building adjoining, and having direct



**Drying
Sewer Pipe
on Upper
Floors
of Factory.**

**Interior
Views of
The Little Falls
Fire Clay Co.'s
Sewer Pipe
Plant.**



be seen at the extreme right of the photograph. The train of cars with the load of clay is run down to the works, and unloaded direct into the main building, where it is prepared for the molds without extra handling. A reserve supply is also kept in large bins at the opposite end of the plant, for use in case of necessity, due to the breaking down of an engine, or shortage of power at the mines. The supply of clay is ample, enough being in sight to run the plant for many years.

The company has seven kilns, all of which are down draft round kilns. Five of these are 26 feet in diameter, one is 28 feet in diameter, while the other is 36 feet in diameter. Coal is used as fuel in all of them, and is obtained from the Pierce

connection with the main building. Here all power used for the operation of the works is generated, and plans made for the making of special shapes and sizes. A large carpenter shop, where the molds and special wooden forms are made, is located on the upper floor of the main building. Every precaution is provided against fire, and adequate apparatus is provided for use should the emergency arise at any time.

Mr. R. P. Bradley, of Tacoma, is the active manager of the plant, and the company owning it is composed of prominent business men of the same city. It might be added that Mr. Bradley is a son of Brigadier General R. P. Bradley, U. S. A., who is now retired, and has been a resident of Tacoma for many years.

Written for THE CLAY-WORKER.

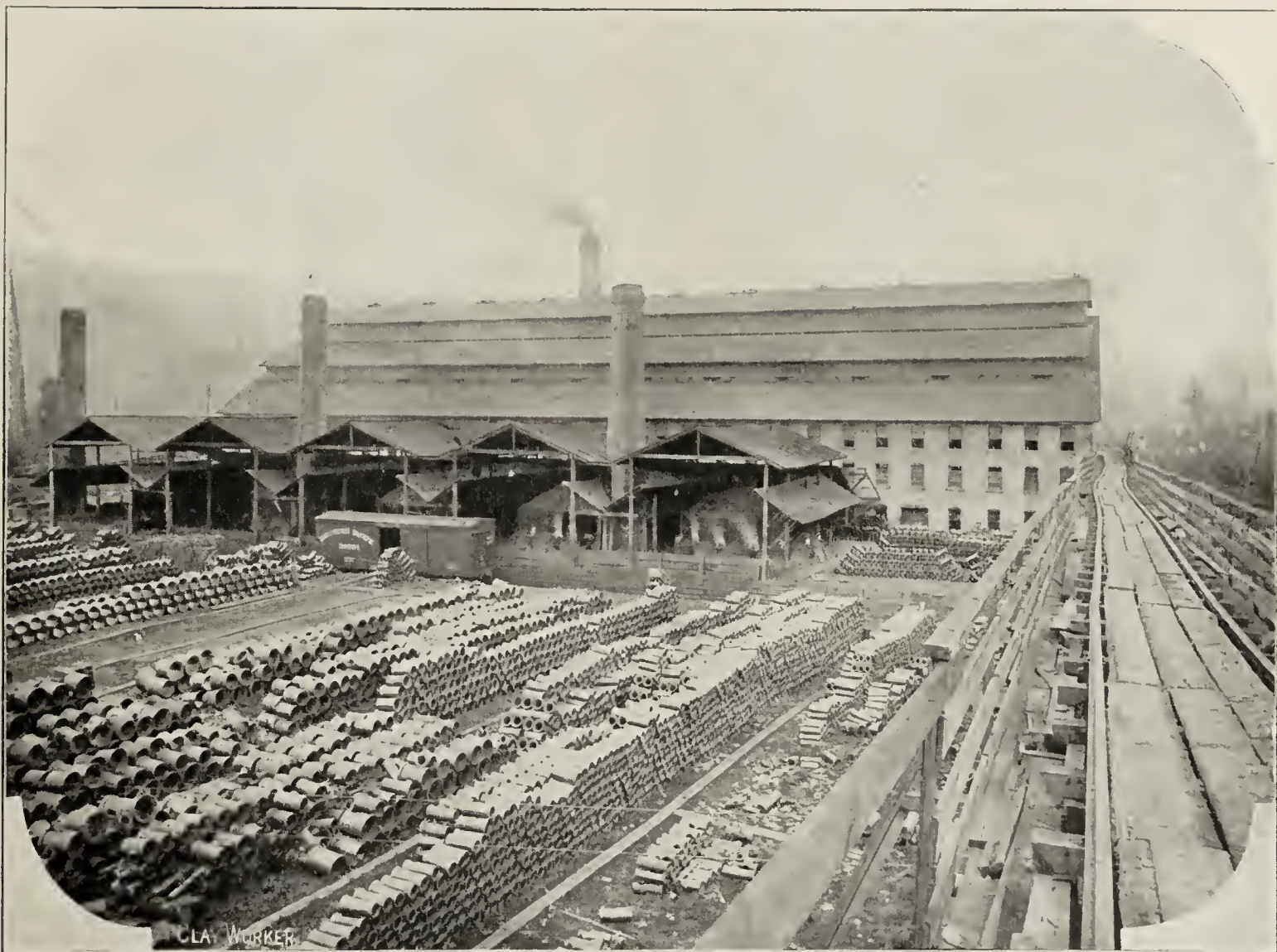
PACIFIC COAST NEWS.

COMPARATIVELY little new construction work was accomplished during March on the many large buildings under way in San Francisco, although a great deal of inside finishing and rehabilitation was done. The unusually rainy weather prevented the commencing of many new buildings that were projected. During the month 8 inches of rain fell, a quantity which has been equalled only twice in the past history of the city. Many concrete foundations are being put in and now that the rainy season is practically over with, new buildings will soon spring up on every hand. There has been no falling off in the number of announcements of plans accepted for new structures, many of which are of very large size.

The height limit, which was imposed on Class A buildings

of the city. The labor situation has improved this spring as the cheap colonist rates placed in effect by the transcontinental railroads have induced thousands of skilled workmen and laborers to make the trip to California to take advantage of the high wages prevailing. There has been no falling off in wages, but demands for still higher wages or shorter hours are being made in several lines of industry. The bricklayers will have all the work they can do at high wages, although they have lost a good deal of time on account of the rainy days during the past two months. Most of the trades except the plumbers and the electric wiremen have shown a disposition to permit new comers from the East to join their unions and help rebuild the city speedily. Misleading circulars, however, have been sent East informing skilled workmen that, although high wages were paid, there was not steady work to be had.

Nearly all of the pressed brick plants and the stiff mud plants are running at their full capacity in the endeavor to fill the orders with which they have been swamped for brick for the many new buildings in plan. The soft mud plants owned by the various companies in the Standard Brick Asso-



Plant of the Little Falls Fire Clay Co., Tacoma, Wash.

by the new building ordinance passed after the fire, has been taken off by the Board of Supervisors and the proposed early erection of several skyscrapers has since been announced. While a large proportion of the new Class A structures to be erected this year will be of reinforced concrete, much face brick and architectural terra cotta will be used in the fronts of these buildings as well as in brick buildings. Terra cotta and tiles will be used in immense quantities in the thousands of buildings that will be erected this year. Although the late spring and the great number of rainy days since the first of January have caused a bad start, San Francisco will undoubtedly do more building during the present year than in any previous twelve months. Last year, New York was the only city in the United States that spent more money on building construction than San Francisco. This year, figures will be limited only by the quantities of building materials and the number of workmen that can be secured for the rebuilding

ciation have about completed preparations for making and may start up for the season almost any day. Nothing but another severe rainstorm would delay them much longer. They are largely sold ahead on common brick. The brick on hand from last season will not exceed 30,000,000. These are not all burned yet, but have been sold and will be delivered as soon as possible. Deliveries of brick are still very slow, as the congestion of cars between San Francisco and the brick yards within a radius of 50 miles has been much worse since the heavy rainstorm flooded hundreds of square miles of land along the river valleys. It has been fortunate for the brickmakers that the rains prevented much building work from being done in San Francisco recently, as they could not have made deliveries to any extent. With a few days more of dry weather the demand for brick for immediate use reached tremendous proportions.

Common red brick are bringing \$15 a thousand and cleaned

second hand brick from the burned district are still being dug out and sold in large numbers at \$11 a thousand and upwards. Under these conditions, brick from the ruins that were covered up or dumped into low places will be mined out and sold to building contractors for use in certain portions of walls. Considerable numbers of damaged second hand brick are being crushed and mixed with concrete for use in foundation walls, etc. Every brickmaking plant that can be pressed into service will be worked to its full capacity this season, and unless railroad strikes prevent deliveries being made, great numbers of brick will arrive in San Francisco within the next few months. Quite a lot of brick are delivered by water, of course, from Sacramento and elsewhere, but it is now difficult to secure wharf room for piling brick and they must be removed promptly on arrival at most of the wharves. So rail shipments are more satisfactory when the railroads are in condition to make fairly prompt deliveries.

The principal difficulty the manufacturers of brick will have to contend with will be the danger of taking more orders than can be filled under existing conditions. Labor will be scarce and high and the fuel that is required in the manufacture of brick will be more expensive than last year.

Many new brick plants are projected in the territory surrounding San Francisco for several hundred miles, and there is danger of the business being exploited to such an extent that there may be a serious reaction in a few years after the rebuilding of the city has been largely completed. The rapid growth of the number of Pacific Coast cities, as well as the surrounding country towns may, however, justify the construction of most of the new plants. Many valuable deposits of clays in California, Oregon and Washington, have been prospected by capitalists from the East, as well as the the Pacific Coast, with a view to the manufacture of terra cotta, pottery and brick. Many very favorable tests have been made of these materials by local chemical engineers and mineralogists, indicating that there is plenty of good clay for these purposes in accessible locations.

A new silica fire brick of very fine quality, judging from some test bricks that have been made and examined by experts in San Francisco, is to be manufactured soon on a commercial scale in California.

The Bay Point Brick Company, which was recently organized, purposes to manufacture sand-lime brick in San Francisco from the beach sand on the water front and will erect a plant this year.

The Rose Fire Brick Company is gradually improving the quality of the magnesite fire brick turned out at its new plant at East Oakland, Cal. The company has had no difficulty in disposing of all the brick it has made, although it will not actively solicit orders until the process has been thoroughly perfected. Many orders have been booked ahead, however, which will be filled as soon as the plant is considered ready to be run at its full capacity on brick of the best quality.

Gladding, McBean & Co., of San Francisco, voluntarily increased the wages of the employes at their very extensive terra cotta and brick manufactory at Lincoln, Cal., within convenient shipping distance of San Francisco. The probability of a strike this season is accordingly reduced.

The Pacific Coast Pottery Works Company has been organized in San Jose, Cal., and incorporated with a capital stock of \$500,000. The new concern proposes to make its factory one of the largest and finest on the Pacific Coast. Terra cotta chimney pipe, stoneware, nursery and flower pots, sewer pipe and other terra cotta wares will be manufactured in the development of valuable clay beds which have been discovered near the present location of the pottery at First and Flood streets. A. D. Campbell is president of the corporation; Loney S. Denton, vice-president; W. K. Jenkins, secretary; First National Bank, treasurer, and Niles E. Wretman, attorney.

B. F. Wasson, of Tacoma, Wash., and eastern capitalists with whom he is associated, have announced that they have completed preliminary plans for opening a large brick yard in the Canal Zone, at a point on the line of the Panama canal. An investment of \$250,000 is contemplated.

San Francisco, April 4, 1907.

SUNSET.

ARTIFICIAL DRYING.

FOREMOST AMONG the latest clayworking improvements and one which has had more to do with the success of the up-to-date brickmaking industry, has been the introduction of "Martin" patent system of artificial steam brick drying. This system is one that is causing genuine surprise among the craft on account of its simplicity as compared with the results obtained.

Many brickmakers have hesitated to consider the installation of a brick dryer on account of the first cost, the extensive equipment of rolling stock and the cost of operation and maintenance. The new "Martin" patent system referred to, is presented as an economical method of drying either stiff or soft mud building bricks, as all cars are dispensed with. There are no tunnels, fans or other equipments of this kind to be kept in repair and at the same time the brick are thoroughly dried over night. The brick made one day are ready to set in the kilns the morning following.

The heat used in this dryer is furnished by steam circulating through specially designed coils of pipe, these being supported by heavy cast iron columns. The buildings necessary to cover the dryer are inexpensive, as the dryers are so constructed that the roofs can be attached to the dryers themselves.

The "Martin" patent system is practically fire proof, no wood work being used in its construction whatever. Another valuable feature noticeable in this new system is that of handling the brick into the dryers by the cable conveyor. This conveyor handles the green brick direct from the machine to the dryer, with a great saving of labor and most satisfactory results. This conveyor also takes the brick after they are dried to the kilns; making the work a continuous one. With this new "Martin" patent system, the brickmaker is made independent of the weather or seasons. The sale and construction is under the supervision of the factory office at Lancaster, Pa., and the manufacturers and owners of their important patents have authorized no one to sell the Martin Patent System Rack Pipe Steam Brick Dryer, and it is to your interest to consult The Henry Martin Brick Machine Mfg. Co., Inc., if interested in handling or drying brick in the most economical manner.

A SURE CURE FOR THE CONCRETE CRAZE.

"Burnt Clay Products in Fire and Earthquake."

A book on burnt clay products that will repay you a thousand-fold for every dollar spent. Once in the hands of a reliable architect or prospective builder, it re-establishes their former faith in brick construction.

An elaborate publication; cover in four colors; ninety-six 10x12 pages; eighty-three 7x5 halftones, showing the effect of fire and earthquake on concrete, both reinforced and plain, and on concrete in general; hollow cement block collapses, frame building collapses and the collapse and official report of the Hotel Bixby disaster at Long Beach.

Also showing the excellent results of burnt clay products in the San Francisco earthquake, with concise descriptions and short technical extracts by leading engineers and architects.

Issued by the Brick Construction Association, which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

Every brick man should have a book, and see to it that everyone in his locality, interested in construction, has a copy.

This publication is not sold for profit to the Brick Construction Association, all proceeds being spent for the promotion of the use of burnt clay products.

Sent prepaid at the following rates: Single copies, \$1.00; 100 lots, \$75.00; 500 lots, \$250.00.

BRICK CONSTRUCTION ASSOCIATION,

707 Lankershim Building,

Los Angeles, California.



The Behavior of Sand-Lime Brick in Fire.—Prof. N. Gary has reported that, according to extensive experiments, sand-lime brick behave under fire the same as any ordinary clay brick. However, care should be taken in the selection of the products, as there are many brands on the market which will not stand a good fire test.—*Keramische Rundschau*, No. 3, 1907.

* * *

Burning of Fire Brick in Continuous Kilns.—In answer to a question if fire bricks and fire clay specialties could be burnt in a Hoffman continuous kiln, we find the following replies: Fire brick can be burned with success in continuous kilns. However, the kilns should be in such shape that they will resist a high temperature. Fire brick should never be burned below cone 6, as they will appear too soft for use and also the shrinkage is not entirely eliminated. Retorts and specialties should not be burnt below cone 8 to 9.—*Sprechsaal*, No. 3, 1907.

* * *

Importation of Magnesite Bricks.—The association of the Veitsch magnesite factories has made a contract with the American dealers in that material which provides for the supply of 8,000 car loads of magnesite brick. However, the American agents can demand a greater supply than the contract calls for. The agreement, which first would be signed for six years, has been extended for 20 years. In order to supply the amount of brick called for in this contract, the Veitsch factories will open up the mines at Sunk, near Admont, and commence at once the erection of magnesite kilns. The total cost of these improvements and enlargement is about one million kronas (\$200,000.00).—*Baukeramik*, No. 3, 1907.

* * *

The Separation in Glazes.—Many glazes show, after being ground and then let stand for some time, that they are lumpy, and that the materials are somewhat separated. The heavier glaze materials form a hard cake in the bottom and separate themselves from the water used in grinding the glaze. It is necessary in order to bring such glazes again in good shape to either screen or regrind them. Both operations are expensive, and take time. In order to overcome this trouble, the addition of a few cubic centimeters of calcium nitrate will prevent this separation. The glaze will remain ready for use by mere stirring. This calcium nitrate can be best made for use with commercial nitric acid diluted to 1 to 3, and marble. After all marble is dissolved the solution is filtered and ready for use.—*Tonind. Z.* No. 10, 1907.

* * *

The Potteries of Limoges.—The china clays for the manufacturing of the well known Limoges china is mined close in the vicinity of that town. Besides this there were imported 181,900 kilos from England in 1904, which importation stopped in 1905. Feldspar is also mined in the same locality. English coal is mostly used for burning kilns, and cost \$6.15 f. o. b. Limoges. The importation amounts to 15,000 tons. Most of the ceramic colors are imported also from England, and amount to \$25,000 yearly. The manufacturing of porcelain is identical to the process used in most potteries. All ware is burnt twice, first a soft biscuit burn and then a high burn for the glazing. The firing of the glaze is from 50 to 65 hours. A trade school for the learning of the potter's

trade, has now been established. The greatest establishment, that of Theodore Haviland, with 1,200 employes, was started in 1892. Haviland & Co., another firm, employs about 1,000 employes. This company was started by Charles Haviland, of New York, in 1840.—*Keramische Rundschau*, No. 4, 1907.

* * *

A New Soft Porcelain of Sevres.—After experimenting for over a century to obtain again the same results as the soft porcelain made at that time, Mr. Georges Voigt has been able to reproduce a new body and glaze which has the same essential features as the porcelain of the 18th century. Mr. Baumgart, director of the Sevres Manufactory, has exhibited a few vases of this new porcelain, and it is pronounced to be excellent. Sevres will exhibit several large pieces of this new soft porcelain at the International Ceramic Exposition, which will be held next year in England.—*Moniteur de la Ceramique*, No. 2, 1907.

* * *

A Blue Green Glaze for Terra Cotta.—A new green and blue green glaze suitable for outside decoration, which will fit most anybody, is composed as follows:

Frit—

Red lead	29 parts
Carbonate of barytes	5 parts
Whiting	2 parts
Feldspar	14 parts
Flint	31 parts
Boracic acid	9 parts
Salpetre	10 parts

Main glaze body—

Feldspar	32 parts
Whiting	17 parts
Carbonate of barytes.....	11 parts
Kaolin	18 parts
Flint	22 parts

The glaze proper is mixed as follows:

Ground frit	60 parts
Main glaze body.....	40 parts
Ground basalt	50 parts
Rutil	5 parts

This glaze will mature at Seger cone 4, and should the basalt be a little too hard, add more frit to soften the glaze.—*Deut. Topf. & Z. Z.*, No. 8, 1907.

* * *

Figuring the Cubic Contents of Continuous Kiln.—In figuring the cubic contents of a chamber of a continuous kiln, we have two constant figures, the length and the width of the chamber. The height of chambers varies and can not, therefore, be constant. There are several short ways in use for figuring this half circle contents. However, few are reliable. The following formula is, however, easy to figure and correct.

$$H = h - (b \times 0.107).$$

H is the height which should be used for figuring the cubic contents, whole h is the actual height till the top of the arch, and b is the width of the chamber. An example will illustrate the figuring of the cubic contents of a chamber with a half circle arch, 18 feet long, 9 feet wide, and 8 feet high. According to the formula, the height which can be used to obtain the right cubic contents is:

$$H = 8 - (9 \times 0.107) = 8 - 0.963 = 7.037.$$

The cubic contents is therefore $18 \times 9 \times 7.037 = 1139.994$ cubic feet.—*Tonind. Z.* No. 14, 1907.

* * *

Patent Lining for Crucible used in the Thermit Process.—The Thermit process, which is now in use in all countries and which was demonstrated at the St. Louis World's Fair, requires a crucible for the melting of the thermit. As the enormous high heat of the process has proven too severe on ordinary clay crucibles, the inventor of the process patented a combination of magnesite and tar to make these crucibles

from. This combination, however, has not given the right results, and after much experimenting he found that magnesia or korund will bond with a solution of soluble glass. He has now patented this process, and all the crucibles made now are manufactured by this process. This new crucible has the advantage that it can be used longer than the old process one, and that melting of the thermit is more even and uniform. The application of soluble glass for fire resisting qualities has been known for some time, but that the mixture of magnesia with the same would result in a higher fire resisting material, is entirely new.—Deut. Topf. & Z. Z., No. 1, 1907.

* * *

Fire Resisting Qualities of Fire Brick.—In connection with the chemical analysis and the fire resisting qualities of fire brick, G. W. Cronquits has made the following very interesting experiments:

The percentage composition of "clay substance" is alumina 39.7 per cent., silica 46.4 per cent., and combined water 13.9 per cent. In burnt state, the composition is alumina 46 per cent., and silica 54 per cent. The closer the combination of a clay is to pure clay substance, the higher we will find its melting point. The fluxes will reduce the melting point quite considerable. The following table will show what a few per cent of fluxes can do:

Experiment	Silica	Alumina	Iron Oxide	Lime, magnesia, alkalis.	Melting point Cones	Centigrades
A	57.55	40.56	1.36	...	35	1830
B	54.22	42.66	1.40	1.60	34	1810
C	60.56	40.36	2.42	1.54	33	1790
D	61.20	33.51	2.26	3.05	31-32	1760
E	61.86	32.19	2.04	4.00	29-30	1720

—Sprechsaal, No. 3, 1907.

* * *

The Use of Molten Magnesia, Quarzglass and Carborundum as High Fire Resisting Materials.—According to Dr. M. Simonis, of the Chemical Technical Laboratory of the Royal Porcelain Manufactory, materials which are burnt in hard porcelain kilns do not resist the temperatures between the melting points of platinum and magnesia (Seeger Cones 36-42) when large pieces are used, especially while the magnesia has different melting points. In order to find a material which could be used for electric furnaces and which would resist such high temperatures, pieces of molten magnesia have been used with success between cones 37 and 42.

He states further, that for a clear burn up to the temperature of 1,300 degrees centigrade, muffles and crucibles made of quartzglass can be used. Such pieces are impervious to gases, they do not burst, and are at present sold at moderate prices.

As a material which will resist a rapid change of temperatures and which will be at the same time high fire resisting, he advocates the use of carborundum in different fineness, which is intermixed with a little kaolin as bond.—Sprechsaal, No. 1, 1907.

THE HAIGH CONTINUOUS KILN IN DEMAND.

That attendance at N. B. M. A. conventions pays in a material way as well as in the accumulation of knowledge, is demonstrated by the fact that Hervey Haigh, of Catskill, N. Y., the proprietor and inventor of the new continuous kiln bearing his name, who was one of the busiest delegates at the St. Louis convention, in session, as well as out of sessions, booked a number of orders for his improved continuous kiln. Among them, one from Wm. Conway, Philadelphia, Pa., president of the N. B. M. A., who, after inspecting many plants, decided that the Haigh kiln was the one thing wanted at his building brick plant, and consequently a Haigh kiln is now in course of erection there. Another order booked by Mr. Haigh was from Charles M. Crook, manager of the Bessemer Limestone Company, for the erection of one of the Haigh kilns at his paving brick plant at Youngstown, Ohio.

Written for THE CLAY-WORKER.
CLEVELAND BRICK AND BUILDING NEWS.



NCE MORE a Cleveland grand jury has failed to find foundations for the indictment of Cleveland paving brick dealers who were accused of having a combine. Late in March the grand jury bequeathed its job to its successor. This persecution of brick dealers is an old tale in Cleveland, for two years ago the common brick dealers were similarly accused and similarly acquitted. Yellow journals start the tale and drive an unwilling prosecutor into spending the people's money for an investigation which always ends as this one did.

It is not believed that the general era of building prosperity will be interrupted this spring with strikes of any serious magnitude. The bricklayers and masons have not as yet given any sign of dissatisfaction and the carpenters are feeling pretty good because the demand for workmen has forced the contractors to come to their demand for forty-five cents an hour, the bone of contention in the big strike of two years ago, which has been drifting along until the present time, though, as a matter of fact, most of the men went to work at reduced wages. Every month sees a stronger organization on the part of the business interests as opposed to the unions, and the former are in such good shape financially and otherwise that the unions can no longer dictate their terms as they did several years ago.

The volume of building operations this year promises to eclipse everything on record. For the month of March the record was smashed by a wide margin. A total of 776 permits, involving an expenditure of \$1,898,702, were issued, as compared to 562 permits for a similar period a year ago, involving an expenditure of \$1,254,520. The total value of permits for the first three months of this year reaches \$3,280,720. This is in excess of last year, which was a record breaker.

Brick yards are again operating to capacity and will scarcely be able to keep up with the demands being made upon them. A new \$1,000,000 skyscraper is planned for Euclid avenue, near East 14th street, to be erected for A. A. Pope, of Farmington, Conn. It will be fourteen or sixteen stories high. Directly across the road a row of nine brick stores with pressed brick fronts is to be erected. A brick commission house is being planned for Broadway which will be three stories high and 100 feet long. A new \$50,000 brick parochial school is to be erected this summer for St. Augustine parish. The building will have eight class rooms, an auditorium and a gymnasium. A new brick \$10,000 town hall building is being planned for Mayfield Heights. There are a host of brick dwellings, apartment houses and store buildings going up. The new West Side market house is almost ready to be started. It will be of brick and steel.

Myron Vorce, who has been building inspector of Cleveland for five years, has resigned to resume his engineering duties. He becomes head of the Vorce Engineering Co. and will be missed by builders and others with whom he came in contact. He has been succeeded by W. S. Lougee, formerly his first assistant. Lougee's place has been taken by Edward Horner, formerly chief draughtsman in the city engineer's office. Lougee gets \$4,000 and Horner gets \$3,500 in their new jobs.

A number of important changes have been made in the office staff of the Cleveland Hydraulic Pressed Brick Co., which is part of the recent big merger. William H. Hunt continues in charge of the work and Clayton A. Bliss continues as secretary. The general management of the Findlay Pressed Brick Co. has been transferred to Cleveland and assumed by Mr. Hunt. R. E. Kelly, former manager at Find-

lay, will continue to represent the plant on the road in western Ohio and Michigan.

Morse Fellers, sales agent for the Cleveland Hydraulic Pressed Brick Co., has resigned to accept a position as manager and superintendent of a mine out west. He has been succeeded by J. O. Sharp, a well known brick salesman, who has been connected for two years as sales manager with a brick plant at Wellsville, Ohio. Mr. Sharp came to Ohio from Boston, Mass., two years ago and is an experienced man in his line.

In addition to these changes, Albert D. Klein, a former secretary of the Builders' Exchange of Baltimore, Md., has been engaged as a sales agent for Ohio, and assumed his duties the beginning of March. William McKay, a Cleveland man, goes on the road for the company, covering territory in West Virginia and Kentucky. Mr. Hunt declares that business has never been better, and that with his new staff he expects to set things humming for competitors this year.

A disastrous flood on the evening of March 26 caused upward of \$6,000 worth of damage to the Cleveland Hydraulic Co.'s plant at South Park, which is near Cleveland. The plant is located near a creek and a mile or so above are situated two quarries and a stone mill. For the past few years the quarries have been dumping their "strippings" and refuse into the ravine through which the creek flows. As a result, just the moment there is high water the creek breaks its boundaries, for five or six feet of sand and rubbish has filled up the original bed. When the flood arrived it swept through the big brick plant, leaving five feet of water in the boiler rooms. Four or five inches of water in the plant floated everything not nailed down. When the water drained away there was two or three inches of mud left. It took 100 men several days to get the plant back into a presentable shape. Mr. Hunt, through an attorney, has enjoined the quarries from dumping anything further into the creek, and in addition, has filed a suit for \$10,000 damages, based on the obstruction of a natural water course.

An action which will be welcomed by brickmen all over Ohio is the calling of a meeting of the executive board of the Ohio Builders' Supply Association to consider the amending of the present laws relating to liens. It is proposed to seek legislation which will afford better protection to dealers in building materials. Invitations have been sent out to other interested organizations and some active result is expected from the conference.

City Engineer Joseph P. Bayne, of Cleveland, has suggested a plan whereby he believes that much additional paving can be done this year regardless of whether the city is permitted to issue more bonds or not. The city has planned to pave in the neighborhood of 170 streets, but when the court decided that the legal debt limit had already been reached in the matter of bonds it put a crimp in the paving plans. Bayne has discovered, however, that last year's bond sales provided for the paving of intersections on fifty-one streets, and that \$13,331 could legally be raised for more intersections. Bayne says he thinks he can pave intersections on fifty-eight other streets with this additional sum. On some thirty of these the intersections will cost less than \$200 a street, and that the others will be less than \$300 apiece.

Paving is well under way on a score or more of Cleveland streets. Curb setting is in full swing and brick has been delivered on most thoroughfares to be paved. An excellent quality of brick is being furnished, the city inspectors say.

Brick is again favored by the county commissioners for county roads to be improved this year. Brick is to be chosen because it is cheapest as well as best for the purpose. The North Ridge road contract has been awarded to Baldwin Bros. & Graham on a bid of \$1.20 per square yard. County Engineer Lea, after having examined different kinds of material for paving purposes, has spoken in favor of brick. On one road alone brick will save the county \$25,000. Thirty farmers living on the Kinsman road have requested the commissioners to use brick in paving that highway. B. A. Downs,

of Canton, has been awarded the contract to pay the Northfield road at \$1.10 per square yard of brick.

The Cleveland Builders' Exchange, which contains among its members all of the brick men in this city and which has a brick dealer for a president, is contemplating securing a new building or enlarging its present quarters in the Chamber of Commerce.

Paving brick plants in and near Cleveland are working to capacity and the manufacturers declare that they are going to be able to sell all their product before the paving season really opens. Pressed brick is equally popular and the plants in this section are busy at work storing up brick for the demand which is expected for it. Common brick is also being stored in large quantities, as the demand this year is expected to be exceptionally heavy.

Another new \$1,000,000 brick hotel is projected for E. 9th street, corner of Walnut avenue, and will be erected this summer and be ready for opening in about a year's time. It will have 420 rooms and above the fourteen stories will tower a mansard roof which will make a showing of three extra stories. In this mansard roof is to be located a number of tanks for various purposes. Red brick and stone trimmings will be used for walls.

Another \$1,000,000 hotel project, which, by the way, are quite numerous in Cleveland at present, is being promoted, it is said, by F. Melville Lewis, president of the Hotel Life Co. The hotel is planned to be a part of the new group plan. Options on Ontario street have been secured for a site.

The Benedict building on Euclid avenue has been sold to the First National Bank and a modern bank building will be erected on the site commencing April 1. It has not yet been decided what the material for construction will be. In any event large quantities of brick will be used and local companies are angling for the contracts. The building will cost upward of \$500,000.

The Williamson building, the fine brick sky-scraper facing the Public Square at Euclid avenue, is to be enlarged next year. Pressed and glazed brick will be used to match the present structure, which is one of the most imposing in the city. Office buildings are one of the best paying propositions in Cleveland which is rapidly growing and several others are projected, though no definite plans have as yet been announced.

Many more miles of brick pavements on country roads are being projected for this year, at an average expenditure of \$20,000 per mile. Four different sections will benefit. Six miles of the North Ridge road are to be paved, while a stretch four miles long on Kinsman road will also receive attention. A country road for a mile south of Bedford will be paved as will also a stretch two and three-fourths of a mile long on the Brecksville road. The county is considering the purchasing of nineteen miles of toll roads now owned by private companies and which are paved with plank. These roads, if purchased, as seems likely, will be paved next year.

One of the finest brick stables in America has just been finished at Cleveland at a cost of \$40,000. It has been built on the estate of H. M. Hanna, Jr., and adjoins the Lake Shore boulevard. The stable is eighty feet wide and one hundred and fifty feet long. The body is built of red pressed brick, with thin white stone for trimmings. The roof is of tile. The lower floor is for the horses, carriages and automobiles, while the upper floor is given up to quarters for the coachmen and for storage.

BUCKEYE.

GLASS BRICK, MAYBE.

The demand for hollow bricks and building blocks for house construction has induced glass manufacturers to put hollow glass bricks on the market, and they promise to be used extensively for novel and artistic effects. The first glass bricks made proved a failure on account of their cost, but the hollow glass bricks can be made at much less expense. They are lighter and stronger than clay bricks, and are such excellent non-conductors that walls built of them are proof against dampness, sound, heat and cold.

The bricks are sealed hermetically when hot, and are placed in walls with a colorless mortar made of special glass. The binding strength of the glass mortar is almost as great as the bricks themselves.—Building Management.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Don't See How "Clay-Worker" Can Be Improved.

Editor THE CLAY-WORKER:

We herewith enclose check for \$3.00 for renewal of our subscription to THE CLAY-WORKER for 1907. Your CLAY-WORKER is all O. K., and we do not see how you can improve it. We make our check for \$3.00; for the extra dollar we wish you to send us your Post pen, if you have it; make it a medium fine. We hope it will give us as much satisfaction as THE CLAY-WORKER has.

L. B. C.

Lexington, Ky., Dec. 28, 1906.

Brickmaking a Safe Investment.

Editor THE CLAY-WORKER:

A question that arises, and sometimes a most perplexing one to the prospective investor, is "Will it be a safe investment?" It makes no difference in what kind of an enterprise he wishes to engage, that question will surely predominate.

A prospective investor, no matter in what enterprise he wishes to engage, should thoroughly canvass the situation and make an intelligent and careful investigation of the business before investing a single dollar. He should convince himself that the business has exceptional merit as to worth and earning capacity, that the business developed be sound and substantial and a dividend paying enterprise.

"Is it a safe investment?" asks a prospective investor in the brick manufacturing industry. Facts are stubborn things and prompt the answer "yes." Now the prospective investor in brickmaking should be diligent. He owes it to himself to make a most thorough investigation. It is unfair to jump to an erroneous conclusion without understanding the subject. It is unfair to be prejudiced before investigating. It is unfair to infer that conditions are not as represented without taking the trouble to find out the truth. If the investor will make an intelligent investigation into the merits of the brickmaking industry, the result will surely be eminently satisfactory.

In the field of brick manufacturing the chances of a successful issue are greater than many other industries, still the prospective investor asks the question, "Is it a safe investment?" It is a question every true man must ask if he is anxious to make provision for the future of those depending upon him. He, perhaps, hears of a failure, and every person who takes thought of old age, which must come, revolves the many plans presented for investing money, and tries to decide in his own mind which is the best. The brickmaking industry to-day has features of an attractive order, features that the brickmakers of a quarter of a century ago did not enjoy. By grasping the opportunities as presented to-day by this industry, one is able to shape the destiny of his life in the space of a few years and accumulate wealth and knowledge, which, had one overlooked, would not have been realized, if ever, until after years of hard work and painstaking effort. Brickmaking is a great industry and is increasing and developing by leaps and bounds. Many minds have been awakened and many hearts pulsate with pleasure, for the owners are keen and alert to the opportunities for them to amass a competence which the brick business offers and which would surely go to others if they allow their minds to sleep and their pocketbooks to lie dormant.

There are great numbers of properties which the men who know most about them will spend their last dollar. These men don't guess; don't hesitate, but know and do.

The science of brickmaking has of late years been brought to a high standard and with modern machinery and skilled labor, this business of brickmaking, that has been thought by so many to be risky, is now realized to be an exact and proven business. To these men whose minds are made up to try it, and certainly the efforts going forth will bear fruit and many of the ships will surely come home with a bounteous cargoes. Some may be wrecked, but the disaster may be traced directly to the pilot, who being of a careless and indifferent disposition allows his ship to drift to adversity. This is true of every adventure in life, but he who hesitates because he has not the courage of his convictions will never succeed, and he who will not dare, to a certain extent at least, has little pure American blood in his veins and may readily be reckoned on to stand in years to come lamenting the good fortune of his more enterprising brother. How many men there are who made resolutions years ago, resolutions to venture a little at least. Look about you, those men who did venture in the brickmaking business and observe those who are in fortunate circumstances to-day. In nine cases out of ten they are the men who took the ventures; the others let their resolutions vanish with the breath that gave them birth. Where are they now? They cannot begin life again. Time has gone fitting by, but even now some of these men get a few of the good things that may be obtained in a few years in this great industry.

Brick is a staple article, an absolute necessity; the smallest hamlet requires them; the prosperous progressive city demands them, and will have them at any cost. These facts before one, it should not take long to decide that the business of brickmaking is a meritorious one and is worthy of the consideration of the most skeptical and conservative person, especially so when shown that it is a highly profitable enterprise and the basis of a fortune.

Fear, skepticism, bias, prejudice and imaginary conservatism rule some and keep them from advancing along the highway to prosperity. Lack of information and the refusal to investigate a meritorious brickmaking enterprise when presented, hold some back. While unjustified opinions that will not yield to reason bind them as with fetters of iron, and yet these same people marvel at the prosperity of the active, intelligent investor.

Without money there cannot be a well rounded out joy or satisfaction in life; not because of money, but because money is a means to an end. It means food, medicine, comforts, study, opportunity for travel and advancement to mankind in general. It affords an occasion to better the condition of those less fortunate, to give employment to many and to realize that he is an instrument in the hands of destiny for development. To enjoy such pleasure, one must therefore accumulate money, and money can only be accumulated by proper and judicious investment. To the prospective investor in brickmaking, it may be truly said that that industry is an attractive one, and under proper direction and management cannot fail but make returns of an eminently satisfactory nature and proving it a safe investment.

J. G. Greusel.

A Small Ohio Tile Plant Well Managed.

Editor CLAY-WORKER:

You have often asked me if we did not have something for your valuable paper. We have a very small plant, but we do not sit on the back seat when we put out our finished goods, as they stand second to none in quality. Our tile are manufactured the old-fashioned way with a horse sweep. We started in the business in 1899, got out three kilns that season, melting our first burn (had about six foot settle on eleven courses of tile), any brick or tile maker knows what that means, and you surely know we have learned something by this time if our goods stand at the top. Any small tile manufacturer will find by trying it that sawdust is of great advantage to him in covering up clay while soaking or in drying this clay should he get it too wet. Also the sawdust is of great value in burning to hold slow fires. Will give our way of burning a kiln of tile.

Our kiln is a W. A. Eudaly kiln, round, eighteen foot diameter inside with six furnaces. Say, we fill the kiln Tuesday with tile. Tuesday evening we get a good fire started

down in the ash pit underneath our grate bars and cover it up with sawdust so that the fire will burn all night long without any one being with it. Wednesday the fires are kept slowly burning in the ash pit all day and at night they are filled with wood and covered up with sawdust again, and we go to bed the same as any farmer. Thursday we get out rather early, say about four o'clock, and the fires are moved from the pit to the grate bars above, and generally about twelve o'clock, noon, we have the water smoke off and the black jack is coming, keeping good fires until eight or nine o'clock, the last thing filling all the furnaces full of wood (as that is our fuel), we go to bed again with the farmer. Friday morning early, say from three to four o'clock, we get out and usually have fire enough to kindle up our fires from, not being too fast with the fires, let them have a little time to heat up what we have lost during the night, gradually getting them hotter and hotter until we get our required heat, which is cone .09, of Prof. Edward Orton, Jr., Columbus, Ohio. We finish our burn Friday evening usually from four to seven o'clock that evening.

We were unable to get help this last season, the most of the time having only man and myself—one week was alone—and we got out twenty kilns of tile. We have two sheds 80x24 feet, and six brick racks 80 feet long for drying sheds.

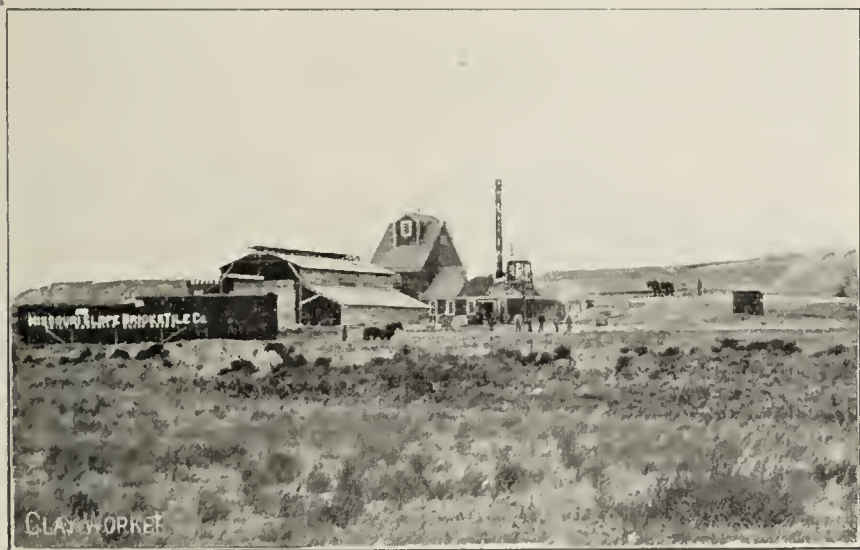
I would like to hear from some of our small tilemakers who can beat our twenty kilns in one season with open sheds and one man.

CRAIG HANKINSON.

A Happy Beginning.

Editor THE CLAY-WORKER:

We hereby send you a photo of our plant, two and one-half months after the arrival of machinery. We have 140 acres of clay and coal land. We secured our machinery from



Factory of the Missouri Slope Brick and Tile Company.

the Chisholm, Boyd & White Company, and Mr. Flood selected the best kind of machinery and made prompt shipment. Out here we always expect to find shipments short and usually experience delay in getting a plant started, but in this case it was all complete. We have the four-mold Acme Boyd press, and boiler and engine from the Atlas. We have now run out about 200,000 brick in a short time. We are going to make common and facing as well as fire brick and expect to make additional kilns in the spring. We have secured a first-class brick man with long experience to run our plant, Mr. William Simms, who is going to sell out his brickyard at Glendive and move to Dickinson. Mr. K. A. Kalman has been appointed general manager. Mr. Kalman is a well known contractor with success, and will push the sale and the business for the company. Our company is organized with \$35,000.00 capital paid in and the stock was mostly taken by the directors and superintendent.

MISSOURI SLOPE BRICK AND TILE COMPANY.

Dickinson, N. D.

Demand for Brick Not Affected by Concrete Block.

Editor THE CLAY-WORKER:

Some time ago I received a gentle reminder from the business department of THE CLAY-WORKER that my subscription for same for the coming year was due, but as it found me at our busiest time, I have neglected sending same until the present time.

Our business has been extraordinarily good, owing to the oil boom in the immediate vicinity of our plant, which has created a boom in the building line.

Of course brick is in general demand, yet there are some cases of the disease "concreteitis"; yet it seems they must call upon brick for support in the way of solid foundations on which to lay the concrete blocks.

The concrete block receives the honor as a foundation material, and the poor old brick lies buried in the ground, doing duty for duty's sake, although unseen by man.

The concrete business in our vicinity hasn't injured us to any great extent. We have just completed two fine brick buildings and are starting a third. I believe this is doing very well for a little town of 1,500, having three concrete yards walled by blocks unsalable, the product of this season. They have now quit business and two of the proprietors of the block yards are seeking positions with me for the balance of the season. Therefore, I see no reason to ask for a prescription for "concreteitis." Our brick business has extended over the Indianapolis Southern division of the I. C. railroad as far as Linton, Ind., and intermediate points, allowing us to ship from three to five carloads of brick per week, which is quite good business for a plant of 20,000 daily capacity.

Prospects look bright for the ensuing year. Would be glad to have a look in from THE CLAY-WORKER scribe sometime in the near future. You see now why I have neglected the little reminder of a few weeks past, but hope it will not occur again.

HARRY H. THOMAS.

Oblong, Ill.

Where Young Clayworkers May "Grow up."

Editor THE CLAY-WORKER:

"Go West, young man, and grow up with the country," was the advice given by Horace Greeley, nearly two generations ago.

The opportunities of the West at that time were unparalleled. The broad and fertile prairies were awaiting the squatter's plow. The mountains, mighty and rock-ribbed, were bursting with their hoarded wealth. The climate, pure and health-giving, was untainted by any putrefaction.

But the prairies have been converted into fertile fields and profitable ranches. The mountains have yielded up their treasures to the currency of all nations. The sun is obscured by the smoke of the smelters, and almost every phase of industry is represented in the West. The continent is spanned by numerous railroads and the West is peopled. One is not surprised to find all modern conveniences in the western cities. The style of architecture is up to date. The homes are beautiful, and even the things pertaining to dress and society are equal to those of the eastern cities. The home of the millionaire miner lacks nothing in the way of convenience or beauty. Even the rugged mountains, where you find no living plant, is peopled. Towering high above the railroad track you may see the prospector's cabin, and it is said that these cabins are abodes of peace and happiness, and the song of woman and the merry prattle of children are often heard. In such lonely, isolated homes, Mackay, Clark and Kearns laid the foundation for their immense wealth.

But these states are occupied. They are filled with cities,

large and small. They are full of men digging for gold. The sheep men occupy the sage brush ranches, that are useless for any other purpose. The poultry man, the small gardener, the bee man, the fruit man, the hop man, the sugar-beet man, and farther west, the lumber man, each and all find their places in this vast territory.

The West, with its varied industries, will progress rapidly in the avocations for which it is naturally adapted. All this has justified the advice of the sage, and the West is still a good place to seek one's fortune, but there is another vast section that offers equal advantages to those who would build for the future, and I am of the opinion that if Greeley were alive today, he would say, "Go South, young man." It is a section that has been neglected in past years, but the eyes of the homeseekers are now turned that way. The South may not yet equal the West in bustle and enterprise, and yet it is a region of splendid opportunities. The resources of the South are boundless. With no waste land that must be redeemed through irrigation, no mountains that must be girdled or tunneled, no barren plains that must be set with trees to produce the necessary shade, its naturally productive soil, its genial climate, its immense forests, its abundant waterways, all contribute to make it an ideal land. Would you be a farmer—you can find no more favorable conditions. Or do you prefer the manufacture of brick, you will find excellent clay and a ready market. Would you engage in the lumber trade, the facilities for handling and shipping the lumber are excellent. People take life more easy in the South. Occasionally a business man takes time to go with his wife to visit her people in a neighboring town. He doesn't say he will be back tomorrow on the five o'clock train, but rather, "Look for me when you see me." If there should be any occurrence to prolong his visit he is free to do so. Sometimes a business man forgets all about his every-day duties and takes an afternoon off and attends a game of baseball. Some way, I liked it. It seemed good to find a man who could forget the rush of life long enough to visit with his wife, or enjoy a few hours with his friends. Perhaps, it is in this way the man of the South lacks the progressive enterprise of his northern brother. There is less change in the condition of southern cities than in northern cities. A gentleman who visited one of the prominent southern cities, twenty-eight years ago, returned to that place, a short time ago, and he readily found his way over the town from the familiar streets and buildings.

Farming, lumbering and brickmaking are profitable occupations throughout the South. The great tobacco warehouses tell something of the abundance of that one article, and one is surprised on learning the great number of hogsheads of tobacco that are annually shipped to foreign countries. The immense number of bales of cotton that are handled in New Orleans will give some idea of the enormous yield of the cotton fields. The trains that are constantly carrying the lumber from the forests. The refrigerator cars that are coming to the North, loaded with ripe fruits, vegetables and melons, all bear evidence of the resources of the South. And still the South is not overcrowded. There is room, and to spare, for many more people.

But I must not forget that my paper is for the readers of THE CLAY-WORKER. In many parts of the South we find deposits of clay that seem inexhaustible. Beds of beautiful yellow clay—to the depth of fifteen and twenty feet, and frequently in the same locality a beautiful white clay, that is used in making pottery. Brick are generally made by machinery—and on account of the scarcity they sell for as much as nine dollars per thousand, in some places. The labor is done by the negroes, who live in little homes in the neighborhood of the brick plant.

The southern people are kind and hospitable. The old

slave "mammies" are often found in the homes of their masters' children. They are slaves no longer, but receive a certain sum each week for their labor. They are good cooks, and not even the mistress interferes with the plans of the faithful, efficient black cook, who rules so well in the kitchen. Such good biscuit, pie and dumplings as they make I have never found any place else. The South is a pleasant place in which to visit. There are persimmon trees, loaded with fruit, along the country roads; also graves of chestnut trees. It is there we see the magnolia, with its beautiful flowers which so much resemble the pond lily. The mistletoe is also a curious plant. It grows on the limbs of trees, often forming a mat of thick growth near the top of the tree, spreading out, in surface, for several feet square. In the near future there ought to be—I feel like saying there must be—an exodus of the people to the South. There is opportunity. E. M. J.

PAVING CONTRACTORS OPPOSED TO PETITIONS.

THE LEADING paving contractors of Rochester (N. Y.) have combined in an effort to do away with, or improve, the present system of obtaining contracts, which requires them—because of the sharp competition in the business—to canvass all the abutting property owners on a street to be improved. In submitting their plea to Corporation Counsel Webb, they said:

"We don't want to deprive the people of their right to select the kind of pavement they want, but the present petition system is a nuisance to the contractors. We want to see if the pavements cannot be designated before bids are received, or get some plan so that we won't have to keep running around with petitions.

"As it is now, contractors bid on several different kinds of brick. Then if a man is low on one kind, he starts out with a petition, and the other fellow who is low on another kind of brick also starts out with a second petition, until sometimes there are a dozen petitions out for one street, and a large amount of pulling and hauling.

"We have to do and say all kinds of things. If I am a good talker, I may get my brick in; but if the other fellow is a good talker, he may win, and sometimes the taxpayers get the worst of it. Possibly it would be better if there were two weeks after bids were opened before petitions were due.

"There is little doubt that the taxpayer is often led to believe that he wants something that he doesn't want, because of the multiplicity of petitions and arguments, and the system should be revised. Any plan that would do away with the present confusion, and also the bitter strife among the contractors in their anxiety for work, and thereby safe-guard the public, would be welcomed by both parties concerned."

The corporation counsel replied that the property owners must have the opportunity of designating the paving material and no provision would be legal which would prevent a signer of a petition from withdrawing his name. It is a constitutional privilege for a man to change his mind. The petitions to the Board of Contract and Supply, therefore, cannot be done away with. The people have the right to say what they want after they see the bids.

Then one of the contractors suggested that the result of the opening of the bids be published the day following, and that a limited period thereafter be allowed both property owner and contractor for the signing of petitions. It was further suggested that the city furnish such property owner abutting on the street to be improved, with a published copy of the results of the bids, as otherwise many of them would not receive the bids. In this way the property owners would know what each kind of brick would cost and could sign petitions intelligently with this information at hand.

An outside engineer offered the following plan to the Corporation Counsel, as an efficient and equitable adjustment of the difficulties:

"The day after the bids are opened, publish in the official

papers of the city the tenders of the various contractors. Send, on the day after publication, this information to each property owner interested in the proposed improvement, together with a form of petition which will enable the petitioner to clearly and readily indicate his choice. This petition should contain a clause affirming that said petitioner had not received and would not receive in the future, either directly or indirectly, any rebate, reward or other compensation for making his choice. Each petitioner shall be furnished with a stamped envelope, addressed to the city engineer, or such other official as may be designated, in which his choice in paving materials will be enclosed and mailed. Ten days will be allowed for the submission of such petitions and on the eleventh day after publication in the official papers, at noon, the various petitions shall be opened and a majority of votes for a given pavement shall determine the choice, except in case of a tie, when it shall be left with the city engineer to cast the deciding vote."

Written for THE CLAY-WORKER.

SIXTY-NINE YEARS A BRICKMAKER.

Interesting Incidents in the Life of One of Maine's Pioneer Brick Burners.—Methods in Vogue Fifty Years Ago.

PERHAPS THE OLDEST living expert brick burner, who is now in active life in his natural sphere today, is Henry Harlow, of Brewer, Me. Mr. Harlow is sixty-nine years old, and today, in company with Martin Dunn, an expert in clay and burning, has gone to Waterville, Me., to take charge of the burning of several brick kilns.



Henry Harlow.

Mr. Harlow began his early training in his father's brickyard at the age of eleven years, when he began by taking a position as a sander and looter in an ordinary six-man, two-machine mud yard. In those days the old-fashioned Hobbs machine was unknown in this section, the method used being the pugging of the clay by the human foot, and the molding being

done by hand. The brickmaker pugged this clay, placed it upon the table himself and molded it by hand for the bearers, who bore off the precious burdens to their resting place upon the flat or yard.

It was the duty of Mr. Harlow in those days to keep the yards smooth where the off-bearers might make their deposit upon a perfectly level surface, and at the same time throw the dry sand upon the top of the newly moulded bricks, in order that the water which was used by the moulder for the purpose of creating the proper slip might be dried up ere it occupied itself in splitting the bricks as it dried in the hot, summer's sun.

It was during the intervals that ensued between the finishing of these half rows and the time spent in bailing water from the stream into the wash-box, that Mr. Harlow first began his study of Maine clay, and the influence of heat upon the various "straighters," as he calls it, in the different sections of the State.

At sixteen years of age he was a wood wheeler around the kilns of his father, and at eighteen was taking charge of the burning of some of the largest brick kilns ever burned in the village of Brewer, at the head of the tide, on the Penobscot River.

It was in those days that the Irish emigrants were landing penniless from their native land on English vessels into the city of St. John, and were walking overland through the woods in order that they might take refuge in the State of

Maine, the nearest State in the Land of the Free to that country. When the brickmakers from Limerick, Ireland, and some who had had experience in the yards of Wales and near Scotland's cities, were pausing on their march towards the West to partake of the shelter of the Brewer brickmakers, and in return for their generosity yielded forth to them ideas that assisted in the development of the brick industry, and made for the playmates of Henry Harlow and his kin places in the markets of the cities of Boston and New York, then in the process of development and construction, using those burnt block of clay which were moulded by the sweat and perseverance of these unfortunate exiles.

Mr. Harlow, although a descendant of old Puritan stock, mastered in his early youth the Gaelic language. He could converse with those sons of Erin in their native tongue, and with such fluency that it was often asked of him by them what part of Ireland he came from.

He received his first training under the inspiration of Patrick Murphy, whose fame as a brickmaker will not be forgotten for many, many years to come. During the past fifty years there has been not one season that he has not assisted in burning at least ten kilns of bricks, varying from 200,000 to 500,000 each. He has burned bricks in the States of Colorado, Michigan, Maryland, Vermont, Massachusetts and in New Foundland, as well as in Maine, and he says wherever he has traveled there has always been a local custom in regard to certain methods where it seemed impossible to swerve the mind of the local expert.

One instance he cites which seems to make the burners of bricks at Winooski, Vermont, differ widely from the burners from the same old clamp kilns in the State of Maine. He says that when the kiln is all scoved and daubed ready for the fire, the outside scoving comes clear to the top and is daubed up close to the platting.

In Vermont the method seemed to be that before the kiln was fired, about five bricks down from the top of the kiln, the scoving was left off so that the air had perfect play through the top, and then in the bottom of the kilns.

The Vermonters believe that in this way the air passing in through assists in driving off the water and smoke, while Maine brickmakers believe that nothing can be worse for the brick kiln than this very method as prescribed by their Vermont brethren, and they give this reason: They say that while the kiln is in the process of clearing, with the heat rising from the bottom being caused by the combustion of air with the flames below, that as the heat rises it is checked by the vapor or water smoke, and in this way keeps a uniform heat until by its intensity it forces the mists before it until the fire plays through the entire top of the kiln. The whole kiln is one living, seething mass of flame and heat, and according to the Maine theory, is then ready to receive the final touches, and will gradually work to a level settle from peak to peak.

The Maine brick burners believe it is better to hold the draft in until after the water smoke has gone, that even though the top of the kiln is cold, the flues are open, there is no sign of clogging, and this, by increase of the heat beneath, the same end may be accomplished, but Mr. Harlow says that in both ways the kiln may be burned and get about the same form of settle. The bricks that are burned according to the method prescribed by the Maine brickmakers are of a uniform color from top to bottom, and from peak to peak, with snug corners and close outsides, without any ragged arches and no melted bricks.

The Vermont kiln puts on the appearance of a thing that was too well done at one time, and not quite well enough done at another time. He says the usual kiln burned by the method prescribed has ragged arches, is very black over the second clift on the heads, sometimes that a great many bricks melt; then, about one-third up the kiln, will be found

bricks well colored, but sometimes badly broken on account of the uneven settle. The top will be found pale or light colored, with a gradual rounding towards the center of the kiln where the best bricks are. The corners will be long and unburned, while the bottom of the outside arches will be stove to pieces. Of course the Vermont burner who fosters his theory of leaving a part of the kiln uncovered, may differ with Mr. Harlow. Mr. Harlow says that he has noticed a great difference in the clays of different parts of the State of Maine and in other States; that sometimes the clay will stand more heat than at other times, but he says it makes no difference where it is, or what the clay, as the same general rule of application to heat and draft must be applied or there will be a fatal result.

Mr. Harlow said the other day to one of his associates that he believes that when he cannot stand it to take charge of a brick kiln during burning time, he thinks he will be all through with his program on this side.

"Yes, sir," he says, "a man who knows how to cook a kiln of bricks in the proper shape, that same man would make a good baker of bread, and the man who can learn to be a thorough baker of bread can be a brick burner if his constitution is fit to stand it."

MAINE.

Written for THE CLAY-WORKER.

WITH PHILADELPHIA BRICK MANUFACTURERS.



CALL ON T. B. McAvoy & Sons' Vitrified Brick Company elicited the information that they are making improvements in their plant at Perkio-men—increasing the capacity of the dryer and making some smaller alterations. They just closed a contract last week for \$40,000.

At the present time, the McAvoy's are especially interested in the organization of the Eastern Board of the National Paving Brick Association. The first meeting of this board occurs in Buffalo, on Monday April 15. Their Frankford plant is very busy and their output of bricks is sold for some time ahead.

The Eastern Hydraulic Press Brick Company gives a good report of the business outlook, stating, however, that it is not as good as that of last year—that it started in poorly. Bricks are selling at such a low figure—any old price—that there is little money prospect, although at a casual glance the business is apparently the same as at this time last year.

The Atlantic Brick Company has plenty of business on the tapis and count the outlook a fair one.

The Conkling-Armstrong Terra Cotta Company is comparatively busy. Just at present they are erecting the additional building for the Medico Chirurgical Hospital, Herman Miller, architect. The building is renaissance in detail and the illustrations give some of the artistic decorations which make the exterior a thing of beauty.

The Main Belting Company are busier than they have ever been, and Mr. Plummer, in his genial and hearty way, declares that they are indebted to the brick business for a large part of it.

John Goodwin, Twenty-seventh and Westmoreland streets, reports business not very good. The hand yards seem to have a poor show, in a way, yet have we heard men of machine yards regretting that they ever changed from the former to the latter? Is it that human nature always craves that which it possesses not?

The Philadelphia Brick Company report business good, they are sold up to six or eight months ahead. According to Mr. Major, the outlook for this year is all to the good. The yard of Murrill C. Dobbins, which was taken over by them and which is run as a separate yard, has been subjected to improvements. Two new boilers have been added, also a large dryer, and they will turn out about 12,000,000 bricks per year.

Chambers Brothers have been shipping brick machines to all parts of the country, as will be seen from the following: The new plant of the Muscogee Brick and Terra Cotta Company, at Columbus, Ga.; has just been completed and is ready for operation. This plant is for the manufacture of building brick and is equipped with a plant of Eudaly down draft kilns, waste heat dryer, after plans made by Chambers Brothers Company, and an entire outfit of Chambers auger brick machinery of largest size. They will make side-cut brick and have put in one of the largest and heaviest Chambers machines with full outfit of clay preparing machinery, and have every facility for handling material advantageously. Their buildings are of brick and the plant is first class in every particular.

The plant of Messrs. Rutherford & Co., Augusta, Ga., has been improved by the addition of a new dryer, which has been built by Chambers Brothers, and which will be turned over for operation within ten days.

The plant of the Altamaha Brick and Tile Company, at Theo, Ga., will be in operation in two weeks' time. The machinery and dryer equipment has been supplied by Chambers Brothers, and the plant turns out 75,000 bricks daily.

The plant of the Independent Brick Company, of Trenton, which was put into operation last fall, is already preparing to make an extension and have found it necessary to increase their drying and kiln capacity to equal the product of their machinery, which was supplied by Chambers Brothers Company.

Mr. A. R. Root is spending a few weeks on the Pacific coast in the interest of Chambers Bros., and has met with very gratifying reception at Los Angeles.

Mr. Frazier, their Chicago representative, reports the Chicago situation as somewhat improved and looks forward to a much better condition of affairs in the brick trade there than prevailed last year.

Trade conditions in Philadelphia and Baltimore appear to be fairly good, although prices may not be quite as high, as last year.

Pig iron and steel continue very high in price, with poor deliveries, with apparently not much prospect of betterment for several months.

Chambers Brothers are extremely gratified with the reception accorded their new side cutter, orders for which have lately been received from Washington, D. C., Chattanooga, Tenn., Nashville, New Orleans and Los Angeles. Altogether, Chambers Brothers have much cause for congratulation, and we heartily offer them ours, at the same time removing our hats in respect to their genial, cordial and affable mien.

The yard of William Conway, Fifty-eighth and Walnut streets, is undergoing a transformation. Mr. Conway is installing a new Martin machine which will turn out 12,000,000 bricks per year; also a new steam dryer, the brick being conveyed into this dryer and out of it, by cable. He is also building a Haigh continuous kiln, the capacity of which will be 1,000,000. The stack will be erected by the Custodis Chimney Construction Company, the largest stack builders in the United States. The stack will be 135 feet high. After the new kiln is completed all the other kilns will be abandoned. If all goes well, the alterations and improvements will be finished by July 4, and the plant will then be as complete and up-to-date as any in Philadelphia. With the rush of business, the continuous manufacture of bricks and the improvements under way, Mr. Conway has about all that any one man wants to attend to at one time.

The condition of the brick business in general in this city is not particularly encouraging. As one man remarked, it is all right for this year, but we can look out for next. Conditions seem better in the South. Many new brick plants are in progress and the business aspect seems more hopeful.

M. E. LOCKINGTON.

THE JAMESTOWN EXPOSITION.

The Wheels of the Great Historic Fair to Be Set in Motion by President Roosevelt, April 26.—A Mid-Year Meeting for Clay Workers.—Great Naval Displays and the Warpath Will Charm Visitors.

THE OPENING of the great Jamestown Exposition occurs Friday, April 26, when President Roosevelt will touch a golden key, and presto, the wheels will turn, and the industrial event of the year will be on, which will take countless thousands from all sections of the country to the shores of Hampton Roads, where Captain John Smith cast anchor three hundred years ago. Here in the greatest harbor in the world the naval fleets of all nations will gather, on dress parade, as it were, affording a sight that may not again be witnessed for generations to come. This, of itself, will prove an irresistible attraction. It is safe therefore to predict a large attendance, especially through the summer

Many of the members have expressed their desire to attend such a meeting, and arrangements will be made accordingly. It is not the intention to have any deliberative sessions, but just an informal gathering for social pleasure. It is the present plan to arrange for this meeting the third and fourth week in August, when the seashore season is at its height, and the Exposition will be at its best, and when Hampton Roads will teem with the war ships of all nations. If clay workers who contemplate visiting the Exposition will plan to be there the week of August 19, the pleasure of the trip will be greatly enhanced by the meeting of old time friends, with whom they can indulge in "button hole" talks to their heart's content. Further particulars as to point of rendezvous, etc., will be announced later on.

CHANGE OF BASE.

The business of the L. E. Rodgers Engineering Company, Chicago, Ill., has grown to such proportions that they find their present quarters altogether inadequate for their needs,



Birdseye View of the Jamestown Exposition, Hampton Roads and the Navies of the World on Dress Parade.

months, when it is always a joy to visit the sea shore and listen to the music of old ocean.

The Exposition itself, while not so extensive as the World's Fair at St. Louis, will afford object lessons in industrial and scientific matters of rare interest, while the war path will amuse when visitors have grown weary of sight seeing of a serious sort. Already reduced railroad rates have been announced from all points in the country, offering round trip tickets at about one fare rate. Visitors from the west and north may, if they wish, make the trip via Washington, Baltimore, Philadelphia and New York, and thence by ocean steamer to Norfolk. Stop over at the metropolis will be permitted, so that those who chose to do so may visit the famous seashore resorts. All in all, this will make a splendid summer vacation trip.

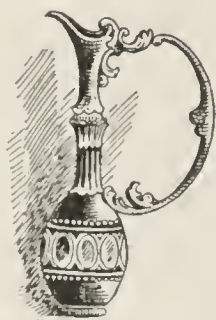
The suggestion of a midyear meeting of the N. B. M. A. at Jamestown Exposition meets with very hearty approval.

and will accordingly, on May 1, move to larger and more commodious offices in the Stock Exchange Building, 108 LaSalle street. The popularity of the Rodgers waste heat system of drying has grown steadily from the start, until now the company has enough orders on their books for the installation of waste heat dryers to keep all hands busy for the rest of the year. Mr. Rodgers is a well spring of information on all matters pertaining to the use of waste heat in drying clay wares, and is ever ready to give of his knowledge to those seeking pointers, and readers of THE CLAY-WORKER who have dryer troubles are invited to tell them to Rodgers.

W. S. Purington, the general manager of the Purington Paving Brick Company, Galesburg, Ill., writes that everything is moving nicely at the plant, with prospects better than ever. They have just bought a new locomotive for use in their clay hole, as the work was too much for the two engines which they now have.

Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.



PLEASANT weather has caused business to begin in earnest. Every brick manufacturing industry is busy getting ready for spring building operations, which no doubt will begin very early on account of the early spring that is anticipated.

Several labor troubles have been adjusted, notably in the carpenter and bricklaying lines, so these two trades will not interfere with building operations.

Building permits to the value of \$2,959,659 were issued during the month of March, according to the report of the Building Commissioner, compared to only \$1,933,336 issued during the same month of 1906. This is a remarkable gain, in view of the fact that there were no permits during March this year for large office buildings. As a general rule, the larger applications were for improvements to factories and for apartment houses. Included in the number of permits were several for residences in the exclusive sections of the west end. The difference between the two years is \$1,026,323. The report is as follows:

BRICK BUILDINGS.		
	1907	1906
New brick:		
Permits	306	233
Additions:		
Permits	164	120
FRAME BUILDINGS.		
New frame:		
Permits	398	251
Additions:		
Permits	79	65
Total	947	669

BRICK BUILDINGS.		
New brick:		
Estimated cost	\$2,703,620	\$1,707,308
Additions:		
Estimated cost	137,555	167,375
FRAME BUILDINGS.		
New frame:		
Estimated cost	107,880	50,811
Additions:		
Estimated cost	10,604	7,842
Total	\$2,959,659	\$1,933,336

For the month which closed March 31, there were 947 permits issued and 669 for the same month a year ago. There is a substantial lead of the first quarter of 1907 over 1906, but it is hardly probable that the month of April this year will be as favorable to building as in former years. In fact April, 1906, was the best of the year, with a total of \$4,459,715.

A comparative record of these months shows:

	1907.	1906.
January	\$1,600,926	\$1,743,556
February	1,703,492	1,636,263
March	2,959,659	1,933,336
Totals	\$6,264,077	\$5,313,155

The annual election of the Christy Fire Clay Company, which took place recently, resulted in the choice of Calvin M. Christy, president; Wm. C. Morris, vice-president and general manager; Richard D. Hatton, secretary and treasurer; Robert H. Miller, sales agent and engineer; Chas. T. Farrar, member of the board of directors. Appointed: J. A. Schoedel, general superintendent; Vincent Lamy, assistant secretary; Paul C. Guignon, assistant sales agent; William I. Horton, assistant general superintendent; Felix A. Guignon, assistant general superintendent.

Deeds were filed a few days ago, transferring all the property of the Union Press Brick Works to the Hydraulic Press

Brick Company. The two companies have been operated together for some years, having the same officers.

The St. Louis Vitriified Brick Company has purchased thirty-five acres adjoining its plant at Maryland Heights.

Pottery works at 3316 Gravois avenue were damaged to the extent of \$500 by a recent fire. The damage was fully covered by insurance.

The Acme Roofing Tile Company filed articles of incorporation at Clayton, county seat of St. Louis county, recently. The capital stock is \$1,000.

The Evans and Howard Fire Brick Company, at its annual election held a few weeks ago, elected C. D. Gregg, president; Andrew Sproule, vice-president, and George W. Jones, secretary and treasurer. The directors elected were, C. D. Gregg, Andrew Sproule, Warren L. Clark, Frederick and Isaac L. Orr.

The Edwards Vitriified Brick and Sewer Pipe Company elected the following officers at their recent election: George C. Zeigler, president; Sam A. Zeigler, secretary; George W. Finch, treasurer; George F. Martin, general superintendent. The company's new \$15,000 plant will be ready for use in about two months.

The stockholders of the Laclede Fire Brick Manufacturing Company at their annual meeting at the office of the company and re-elected the former directors for the ensuing year, as follows: James Green was re-elected president, and J. L. Green, secretary.

The St. Louis Clayworkers' Association, temporarily organized for the purpose of entertaining the National Brick Manufacturers' Association at its annual convention early in February, has been considering perfecting a permanent organization. The matter has been discussed among them and a meeting will be held shortly, when the proposition will be settled. Such good fellowship was shown during the time that arrangements were being made for the convention that the St. Louis clay manufacturers seem to think that they ought to get together and meet regularly. A. SAINT.

GEORGE T. DICKOVER AS OTHERS SEE HIM.

Readers of THE CLAY-WORKER, particularly members of the N. B. M. A., will, we are sure, appreciate the accompanying sketch of Mr. George T. Dickover, which is taken from the Wilkesbarre Record, and shows Mr. Dickover as the artist has pictured him, building substantial structures of brick of his own making. Be it known, Mr. Dickover is both a brick-maker and a brick contractor. Many of the best buildings in Wilkesbarre are monuments to his skill.



Written for THE CLAY-WORKER:

NEW YORK AND THE EAST.



UNCERTAINTY controls the brick business to some extent about New York this spring. It is impossible to say how business will open and it is equally impossible to say how many brick are ready to be thrown on the market early in the season. Makers are reticent about their holdings, but there is no disputing the fact that they are larger than they were last year. But even admitting that this is true, there doesn't seem to be any reason for so much hysterical talk as is sometimes heard. The building operations which are planned for the coming season are equally as important and extensive as last year, and there promises to be even more in the near future. The building development and the great public and semi-public works will consume more brick than ever before, but the question of whether they will absorb them early in the season seems to be what is troubling the makers.

Demand for brick throughout the Metropolitan district opened brisk this spring. Schooner load after schooner load of brick are being hurried to the city, with the view of taking advantage of the early demand, which is said to be good in some grades. While the situation is not quite as firm as it was at the opening, owing to the increased supplies, still there is sufficient demand to create a good, active market at fair prices. It was so late this season when navigation opened that stocks were reduced to almost nothing, hence it has not been possible to get enough to market to reduce prices so far. Hudson river common are moving forward in fair volume at the present range of values. Prices are quoted as follows: Front buffs No. 1, \$32; grays, shaded and specked, \$32; white No. 1, \$32; Hudson river common, \$5.25 and \$5.75; light hard, \$4.25 and \$4.75; pale, \$3.25 and \$3.75; No. 1 fire, American, \$25; No. 2, \$20; Scotch, \$35.

Justus E. W. Goslaw has been engaged by the Board of Public Works of Newark, N. J., to establish a laboratory and make scientific tests of paving material offered the city before the placing of contracts and also to make occasional tests during the progress of any work that may be ordered. He will also make similar tests of sewer materials. The object of this appointment is to be certain that those who sell the city paving material are living up to their contracts, and that only the best material is obtained for the money invested.

Meanwhile manufacturers are going over the ground and are planning for the coming season. The only thing that really worries them is the increasing use of cement. Unquestionably more cement is being used than ever before. It is being put into dwellings as well as business buildings. Of course, it has been impossible to do much with it this winter because it freezes so easily, but the fact remains that there are too many contracts being let which specify cement as the material from which the buildings are to be constructed.

Manufacturers have discussed this competition in its various phases many times. They haven't found any solution that satisfied them, though it doesn't look as dark as it did. Of course, the increased use of cement and concrete in building is primarily a matter of cost. And cost is a question of labor more than anything else. It appears from what can be learned that the unions may settle this difficulty for the brick manufacturers by taking the spreading of cement out of the labor department and demand skilled workmen's wages for doing it. If that is done, the brick manufacturer and the cement man will be upon equal terms and there will be no question about what builders will do. They do not like cement, nor do they like the unsightly manner in which it must be laid up, but the expense is so much less that it becomes of importance and is specified for such structures as it is possible to use it in.

The bricklayers of some of the New Jersey cities adjacent to New York are talking strike. What it will amount to does

not yet appear, though it seems as though where there is so much talk the result must be more or less disastrous. The situation doesn't indicate what the difficulty may be, but it is said that there has been some misunderstanding over the wage scale and that those who do inside work want a readjustment which will equalize their work with that outside.

Building operations in New Jersey will be heavy this year. The completion of the rapid transit facilities which enable residents of New Jersey towns to reach New York much more quickly than ever before draws steadily nearer. This has sent an army of people to the suburbs looking for homes. But they are not to be had. The result is that building operations will have to improve to keep pace with the increase in population. Hundreds of new structures are planned for the coming season throughout the suburban section, and many contracts are being let every day. The demand for brick in those cities and towns promises to be unusually heavy, though to what extent the business will develop it is impossible now to say.

From Massachusetts come reassuring reports concerning the brick industry and sales are being made in larger volume than usual at this season. Boston dealers report business as good and prices as holding up to the average for the time of year. Some dealers incline to the opinion that prices will advance, but there is no reason to expect that at present. That they will continue about at present level seems more likely. Conditions in the consuming end of the business are fairly active, and sales are being made upon a fair basis and in fair volume.

Pavements are attracting a good deal of attention throughout the east this winter, and the discussion has been along rather different lines from what have governed heretofore. For example, Newark, N. J., and Patterson, are both discussing the feasibility of replacing some of their pavements with brick this season, and a good many hundred square yards are likely to be laid. The fact that brick has been successfully used in both of those cities is creating a strong feeling in favor of its extension, and brick may be adopted more extensively than ever before.

New York is the great point, however, and there business men who have heavy trucking to do are circulating petitions protesting against wood pavements which have been laid on all the down town streets. These pavements are well enough in summer, but during a winter when snow is as plentiful as it has been this winter and so little attention has been given the streets, the wood pavements render trucking impossible. Thousands of horses have fallen and have broken their legs, making it necessary to kill them. A thin covering of snow makes the wood pavements so slippery that horses can not stand, and it is almost impossible to haul any sort of a load. The business men interested say that it has reduced their trucking facilities at least two-thirds. All the down town streets, including Broadway, on the west side of town, are now paved with wood, while the east side is still paved with blocks. The difference in trucking facilities is palpable. Wood pavements are a nuisance which ought never to be tolerated where there is any business of consequence to be done, and in a big city like New York where there is trade unlimited and trucking is absolutely essential, the introduction of wood pavements has meant serious loss to everyone who has had to use them the past winter. BURTON.

NEW FACTORY FOR THE C. W. RAYMOND CO.

The C. W. Raymond Co., of Dayton, Ohio, has purchased a tract of land comprising ten acres in the best manufacturing part of the city of Dayton, and will proceed immediately to the erection of large and commodious buildings in order to take care of their fast increasing business. They will erect a machine shop, foundry, fire-proof pattern storage, wood department and office, all after the most modern patterns. Plans are now in the hands of the architect and will be shown in these columns at a later day.

Sure it is that this company will be in the running on brick machinery for many years to come.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF NORTHWESTERN OHIO.



DURING the past winter the brick industry in Toledo, and in fact throughout northwestern Ohio, has been practically at a standstill. There are but comparatively few of the factories fitted with dryers and for this reason they were not able to run during the extreme cold weather, even if their business had demanded it. Most of the factories closed down last fall and have remained idle during the winter. This long period of idleness was occupied in a way. Many of the plants have been remodeled, new machinery installed, and are now ready for the spring and summer trade.

In a great many ways the past winter was a hard one on the brick and clayworking industry. The extreme and prolonged cold weather discouraged all building, which, under more suitable conditions, would have gone on unabated, and killed all trade among brick manufacturers. The very unsteady market in all building lines also exerted its influence. Contractors were slow to take on new work because of the constantly advancing values of lumber and other building materials. They held-off hoping that the market would break or at least reach what might be fairly accepted as a high value mark. This point has not been reached and the uncertain conditions will no doubt continue to wield their influences in quieting trade.

An example of the conditions is shown in the following instance. In a near-by town an appropriation was made for a school building. A certain amount of money was set aside for the building and after plans had been made and everything ready for the bidders it was found that the price of building material had advanced so much that the appropriation would fall at least \$20,000 below what the actual cost of the building would be. Such conditions as these have ruined confidence and brought things to a standstill.

When the brick factories closed for the winter last fall most of them then had on hands a large stock. Deliveries during the winter were sufficiently large and numerous to cut down the stocks, so that all the plants will be able to start in this spring and run full force.

Of the eleven yards in and near Toledo only one, the Collinwood Brick Company's plant, continued to operate all winter. This plant has turned out about 35,000 brick every day it has run rather steady.

The supply of brick on hands at the present time is about the same as in former years at this time. It is estimated that there are now about 15,000,000 or 18,000,000 brick in the local market.

Nearly all the buildings that were in course of construction last year were finished before the winter set in and this is assigned as another reason for the light demand for brick this past winter.

With the exception of two years ago Toledo never had before it a season that promises to offer so much in the way of new building. Everything points to a most prosperous year for all building trades. The office of the City Building Inspector is crowded with plans and specifications and permits in great numbers are being issued daily. The aggregate amount of these permits is in excess of the permits a year ago at this time. March started in with one permit for \$175,000. Up to date this is the largest, but there are many others which call for large expenditures. It was feared for a time that there would be labor troubles that would greatly handicap building, but these clouds, for the time at least, are gone. The carpenters asked for a small advance and it is said that they will be allowed it. The bricklayers are also going to ask for an advance of five cents an hour, with every prospect of the demand being granted.

Building will necessarily start later here this spring than

usual. During the coldest weather there was little if any snow on the ground. This fact allowed the frost to penetrate very deep and it is but now that it is entirely out of the ground.

An immense deposit of pottery clay has been discovered in Richland county, Ohio. A company has already been incorporated and a factory will be erected.

There will be a great deal of brick paving laid in Toledo this spring and summer. Contracts have already been awarded amounting to \$70,000, and others are to follow.

The Riverside Fuel and Brick Co. has installed a new brick machine that will increase the capacity of the plant materially. The old machine had a capacity of 30,000. The new machine will turn out 50,000. The new plant will be operated by electricity.

The Defiance Tiles Mill Company, of Defiance, Ohio, the pioneer clay manufacturers of this section will build a large addition to the plant, 40 by 190 feet, three stories high and of corrugated iron. New kilns will also be constructed and much new machinery installed.

James Hennesy, a contractor of Napoleon, Ohio, has been successful in landing an \$80,000 contract for brick paving at Troy, Ohio.

The American Clay Working Machinery Company, of Bucyrus, has completed a deal whereby they get possession of a valuable piece of real estate. The purchase had been contemplated for a long time because of the cramped condition of the factory. Already this company has started the erection of a new factory building on the new site. The new building will be four stories high, 60 by 100 feet, and will be used as a pattern storage house. The company has just completed a factory building 80 by 400 feet.

Wauseon, Ohio, has arranged to do about \$30,000 of brick paving this spring.

Herman Kinzel, an employe of the Spear & Clark Brick Co., of this city, has brought suit against this company for \$10,000 damages. He claims that while at work at the plant he was permanently injured. The accident which is said to have been the cause of the man's injury occurred three years ago.

The plant of the Castalia Portland Cement Company was damaged by fire a week ago to the extent of \$20,000.

The Perrysbury Tile and Brick Company will start their plant very soon.

Bucyrus, Ohio, is preparing to do a great amount of brick paving this spring. Already many carloads of material have arrived and the work will be rushed.

The management of the Toledo Work House brick yard has announced that operations at this plant will be started some time this month. It was said that work would be started about the middle of the month, but this will hardly be the case because of the unfavorable weather conditions.

It is not definitely known when the other plants in the city will open, but it is sure that they will not start up as soon as was expected. There are but three plants in the city that are fitted with dryers. These have been running all the time, but the others are dependent on weather conditions. They will hardly open before the first of May.

The Findlay, Ohio, Clay Pot Works is enjoying an exceedingly prosperous season. This company manufactures crucibles used in glass factories.

T. O. D.

OUTPUT OF NEW ENGLAND BRICK PLANTS TO BE CONTROLLED BY FEDERAL BRICK COMPANY.

Announcement was made recently that the Federal Brick Company, with headquarters in Providence, R. I., has just obtained an agreement with nine of the eleven brick firms of New Britain and vicinity, comprising the Central Brick Exchange of New Britain, by which it will control the output of the nine firms for the next five years. The Federal Brick Company already controls a great part of the brick yards of Massachusetts and Rhode Island, and it is understood, expects within the next three weeks to secure control of about 80 per cent. of the brick yards in New England. A. M. Young, of New York, and President Studley, of the Union Trust Company, of Providence, are interested in the Providence Company.

Written for THE CLAY-WORKER.

BUTTON HOLE TALKS.

Back to Brick and Iron.

THE COLONEL stood at the edge of the crowd of onlookers who were hanging about the sidewalk where the work of starting the erection of a new mammoth building was going on. The crowd, as a rule, was lazily contemplating the various actions of the workmen down in the basement, who were putting up a skeleton work and boxing in preparation for doing a lot of concrete work, but the Colonel, while apparently gazing intently at the work, was really seeing no details and was lost in thought. So much so, in fact, that he had to be spoken to twice before his attention was called to his immediate surroundings.

"Well, suh, I was buried about ten miles deep in thought, but I was just beginning to see light when you came up, so I was."

"If you have seen a light, Colonel, tell us about it, for we are looking for light right along, especially if it pertains to the building business."

"All right, suh, if you can just follow me a while, may be I can show you the same light I see. Look at the work going on in front of us and tell me what you see."

"I see preparations going on for constructing reinforced concrete foundations and basement for this building, but I don't see anything unusual about it."

"You don't, eh? Well, that's because you see it in one light only, and that is in the light of being informed as to just what certain preparations are for. Suppose you were a man from Mars, or a stranger to concrete structural methods, how would it strike you in that light?"

"Oh, if I didn't know what they were doing I might logically assume that they were erecting this building of lumber, for there is enough lumber being used around this basement to make that much of the building out of lumber."

"Now you are beginning to get light on what I have been seeing, but you have not followed it out to its logical end and found the termination of my thoughts. Let us assume that this building is to be erected of reinforced concrete all the way up. I can take you down here, about four blocks away, and show you one that is, and down there you will not only find that they used lumber like this in the basement, but in carrying the work on up they had to use so much lumber and do so much cutting and fitting on it that the contractor put in a gasoline engine, a rip-saw and a cross-cut, and he has been running a regular lumber yard and planing mill there for two months. Do you know what that means?"

"I would judge it means lots of expense, and when the job is done it will be found that the great element of cheapness has been swallowed up in the lumber work."

"Yes, suh; yes, suh. It means all that, but that is nothing new. We have figured it out that this matter of cheapness in concrete construction is a rainbow we are always looking at but are never reaching, and what I was thinking about was really something else. I was thinking, suh, that if this thing keeps up, the thing to do is not to go into the concrete business, but to go into the lumber business. Did you ever stop to think how much this means in the way of increased consumption of lumber?"

"No, I had not stopped to figure on it, but now that you mention it, I am reminded that if this building were being erected of brick, or of steel and brick, there would be very little lumber made use of. Not, in fact, one-hundredth part of what is being made use of here."

"That's the idea exactly. I don't know just what the proportions are, but it may take from forty to one hundred times as much lumber for temporary aid in erecting concrete buildings as if the buildings were of brick, or steel and brick.

In fact, the modern brick and steel building has very little lumber about it, even when in course of erection for temporary use, but the way these concrete ideas have developed a demand for lumber, suh, is enough to start a man down to the woods with a new sawmill."

"Well, but can't they use this lumber over again?"

"Yes, suh, they say they can, and they probably can to a certain extent, but it is a very small extent, compared to doing without it entirely. Do you suppose, for example, that all that lumber the man spent two or three months cutting up with a rip-saw and cross-cut can be restored to its original condition, or to its original dimensions, rather, without saying anything about the damage that is done to it by having it act as a box for holding concrete while it sets. I tell you, suh, there is no getting around it. The cement structural work is a great boon for the lumber business, if we look at it from the present market standpoint only. But, suh, if we look at the future and consider the way our forests are disappearing and our lumber supplies threatening to be limited in the future, it looks like the rankest kind of waste, and it ought not to be tolerated, suh, so it oughtn't. What's moah, you can put me down as saying that unless they change their tactics and learn to do this concrete work without wasting so much good lumber, they will be forced to go back to brick and iron."

"Oh, well," I said, "I do not think there is any use to get unduly excited about it, for I believe they will drift back to brick and iron almost exclusively, anyway; at least it looks that way."

"Is that so? Well, I am glad to hear it—and the sooner, the better, suh; the sooner, the better."

HUMOROUS LOGIC.

If the water Wall street has been squeezing out of stocks of late could be used for irrigation purposes, there would no longer need to a "semi-arid" West.

We all know what Harriman would do to the Panama canal to make it practical, if he was in charge. He would stop throwing away money on construction work and just issue watered stock enough to float full sized war ships right over the isthmus.

The suppression of the canteen at the National Soldiers' homes is the kind of a temperance move which is very pleasing to saloon men who happen to have saloons located near enough to catch the old soldiers' pension money. This temperance movement is something great.

We may yet have to remain married to our own wives if these legislatures do not take to attending more closely to their own business. Just see what South Dakota has done. Gone and shut down the divorce mill right at the time the Easter bonnet bills are due.

If the congregation of that Tennessee minister puts implicit faith in what he says, it must be a happy lot now-a-days, for he says that hell is a place of strong drink, tobacco, base ball, theaters and peekaboo shirt waists. What other inducements for a permanent home could a poor sinner ask?

A man in Altoona, Pa., has discovered a method of preparing wood and coal ashes so they can be burned again, same as if they were coal. Possibly he has been taking lessons from the gentleman who is supposed to be able to find substance in a departed soul which will burn for a considerable time.

If Joe Trim, of Joplin, Mo., had lived in a larger city he might be alive and well to-day. His wife asked him for some money the other day to go shopping with. He gave it to her and then fell dead. Men living in large cities are so accustomed to this sort of thing that it no longer causes any extra palpitation of the heart.

No wonder doctors are so anxious to have laws passed by the different States protecting them from competition. Real competition might force them to be more careful. An operation was performed on a lady in Braman, Okla., the other day, and a pair of forceps removed from her which had been left inside three years ago when she underwent an operation for the removal of a tumor. Real competition might put such doctoring out of business and help protect the public.

Written for THE CLAY-WORKER.

A STUDY IN LOST JOBS.

THE STUDY of "lost jobs" would not be amiss from either the employed or the employers' side of the case.

When a man finds himself suddenly separated from the pay-roll, it would seem the natural thing to call himself strictly to account and ask himself why he "failed to make good." He should consider every job lost as a lost opportunity, for contrary to popular belief among the employed, the employer is not looking for a chance to "let men go." The up-to-date employer much prefers to keep the old employe who is fairly good and used to the "ins and outs" of the business than to "run the chances" of getting a worse one.

Then to the employer, every new man is a "possibility;" he may be just the man he is looking for to "push to the front," and he is disappointed when the man fails in his expectations.

In no class of work are the possibilities so great for the green hand to "get to the front" as in clayworking.

Every clay manufacturer likes to have an "under-study" for each department, for if the burner, engineer, head setter or foreman should be taken ill or leave, the "under-study" steps up and is the means of saving hundreds of dollars which might be lost from the kiln being improperly burned or taken off at the wrong time, goods poorly dried or badly set.

Many times the employe is angry at being "let out," and fails to question the "why of it," and sometimes the employer might reply as did the school teacher when the boy asked why he had been whipped: "Well, sir, I just whipped you on general principles." It may have been "the last straw" after a series of misdemeanors, which leads to his final undoing.

Each employer keeps mental tab on employes, and it may be that he is spotted for a long time as the man to let go at the first opportunity. One fellow tells his tale of how he lost jobs as follows: "The first job I had was shoveling the mud and defective brick back into the pug mill. It was hard work, but I did not have to work all the time, and as usual 'satan found work for the idle hands.' I would make balls of the clay and shy them at the fellows at work, and one day I made one extra large to get even with a fellow who had been teasing me. I reached back and, giving a regular base ball curve, let it go, but alas, just then the boss stepped in the door and got it square in the face. There was weeping and wailing, but to no avail, so I had to break the news gently to mother that 'I was out of a job.'

"The next factory I struck gave me the pug-mill job. That was a nice job, for I could sit down and I decided that should be my life work, for above all things I liked to sit down. But the fates were against me. Now you would think a religious gathering was the last place to lose out, but that is just where I lost, and perhaps that accounts for my aversion to religious services to this day. The Baptists were having a baptizing at the creek and I was there with the crowd. The minister had descended to the water with a girl and said: 'I baptize thee, Lavinia, etc.,' and had put her under the water the first time. It was so solemn I couldn't stand it, so I just picked up my dog and threw him into the water. My, what a splash and such a commotion. I had no idea that religious people were so lacking in humor. They turned on me and yelled, 'Put him out!' 'Put your grandmother's green parrot into the middle of next week,' I said, 'but you'd better take that girl out of the water.' The preacher had been so shocked he had been holding the girl under the water all the time. She came up splashing, spluttering and gasping so that they all were helping to bring her too, so I got away.

"I did not go home until night. Father had heard about it and interviewed me in the kitchen with a strap, and I thought that was the end of it, but when I went to work the next day the boss sent for me to come to the office. My, how he did

light into me, accused me of trying to drown his daughter and breaking up religious gatherings, etc., until I almost began to believe I had done something terrible. You see the girl that was being baptized was his daughter, so it is no wonder that I do not believe in immersion.

"Well, I was out in 'the cold and cruel world' again, hunting for a job. After 'hot-footing' around to the different factories, I was put on as cart-driver. I did fairly, at least I held the job for awhile, but one day at noon, I felt gay, and after watering the horse at the well, I jumped on his back and started to trot him down the hill. He was a big clumsy Clydesdale and he stumbled on a brickbat and fell down. He broke his leg, the bone coming through the flesh so badly, the veterinary surgeon said the only thing to do was to shoot him. So that is the way it goes when a man tries to have a little enjoyment in this 'vale of tears.' Again, I was up against the real thing.

"I was getting a pretty bad record among the factories, but managed to get in again at one of the factories I first worked at. I was put 'on the yard,' sorting and piling hollow blocks. I stuck to this pretty well, as the boss did not come around very often, so I got some chance to rest. You know some of these bosses expect a fellow to work all the time. At noontimes, we boys got to molding rustic stumps and various articles of clay. The boys said mine were fine, so I imagined I was 'a coming artist' in that line. Whenever the boss was down town, I would work on these things. I had a little nook built around with blocks and one day I was working away, twining a snake around a stump. I just had made the head looking into a bird's nest at the bottom of the stump, when I looked up and there the boss was standing looking at me. I tried to tell him I was making it for a present for him, but he said when he wanted me to mold statues and ornaments for his house he would tell me so, and that I was hired to pile up blocks and not to do art work, and he told me to come to the office and get 'my time.' This shows how little art is appreciated, and how easy it is to wreck an artistic career with cruel words.

"I kept away from clay plants for several years, but I had a hankering for clay and finally got on as a driver again at a large plant. One day I was sent to the depot with a load of blocks. I had unloaded and was ready to go, but I became interested in a ball game near by and was sitting in the wagon watching the finish. I got so interested I did not notice a train which came puffing along. Just as it got up to us it gave a screech. My gallant greys would not stand for it and started to run. Being taken off my guard, I lost control of them and they dashed into a vacant lot where a wagon company was setting up a car-load of wagons. The greys seemed to be at home among the wagons and tore right through the thickest of the fray. The men at work scrambled wildly to places of safety, and even now I laugh when I think of one fat fellow who caught his foot in a wheel and could not get loose, all the time imagining the horses were running over him. I have heard of people being suddenly possessed of unusual powers, but it was up to me to have poetry knocked into me. I suddenly became poetic and shut my eyes to the awful havoc about me. All I could think of was:

"Wagons to right of 'em, wagons to left of 'em, wagons in front of 'em, red wagons, yellow wagons, green wagons; wagons with wheels; wagons without wheels; wagons of all sorts and kinds. Into the valley of wagons dashed the grey thoroughbreds.

"Just then one of the lines broke and the off horse got ahead so that the neck-yoke went over the end of the tongue; this let the tongue down with such force that it stuck into the ground. The result was that the front wheels of the wagon went sky-ward and stayed there. While sitting in this elevated position, my poesy did not desert me, although the horses were still going on, I yelled to the men: 'O, you eaters of sauerkraut, come here quick and help me out.'

"They came and helped me to catch the horses, while the

engineer came near having a smash-up by laying back in his cab and laughing fit to kill. I felt anything but poetic and funny when I took the wreck of a wagon and the bruised up horses to the factory. I decided Richard might give a kingdom for a horse, but no more of the noble horse for me. I resigned my position before the boss had time to tell me I needn't come out the next day.

"I went out in the woods and sat down on a log and thrashed the thing out then and there. I saw if I was going to succeed it was time I settled down to business in earnest. I went back and told the boss I was sorry and was willing to pay the damages and if he would only try me once more, he would see that I was in earnest.

"He said he was always glad to give a man a second chance and set me to helping around the kilns. I went to work with a will. I watched all the processes of burning, and asked questions of the head-burner. He saw I was interested and took delight in teaching me to be a first-class burner. The boss, seeing me desirous of learning, subscribed for the CLAY-WORKER for me and there I learned many things about expert burning. At last, after a year's work, I had my desire gratified and was 'head burner' at a thriving plant.

"With good wages, steady work and no worry, I began to get 'the swell-head.' I imagined the factory could scarcely run without my knowledge and skill. I took to reading socialistic papers and imagined I was abused because I had to work so hard. I also imagined I was cut out for a speaker and reformer. I often talked to the men at noon hours.

"One day the boss sent word he would be out of town that day, so at noon the men all gathered around and I began to speak. I told them the wealth of the world should be divided; that we were entitled to our share, but that the rich were growing richer, and the poor poorer, and the usual harangue heard from socialistic sources. I did not believe it all myself, but just got a going and couldn't stop. 'Why, men, just see how the boss rides around in his fine rig, while we walk and he sits in the office doing nothing but write while we sweat away here. Who gets the money? He does; just gives us enough to live on and that is all. See the fine house he lives in and his wife keeps a 'hired girl,' too, and just see how our wives have to work. I tell you it is a shame. He has no more right to this factory than we have.' I stopped to get my breath and looked around and there stood the boss. O, how I wished the earth would open and swallow me up. He said, 'Well, my man, if you are through, I will have a few words to say.'

"Well, sir, he stood up there and preached the best sermon I ever heard in my life. He said: 'You men think you have all the trouble, but when your day's work is over you go home free men, nothing to worry you. If you burn up a kiln of brick you expect your money just the same. If you upset cars and spoil the brick, you laugh because the other fellow loses, not you. If the machinery breaks, you stand around and joke, not thinking that fifteen men idle for ten minutes means two dollars loss to the company. You do not know that when you are in bed sound asleep that the manager is figuring and planning to make ends meet that you may have your pay promptly. That many days the factory runs at a loss, that you may have steady work, and the manager hopes to make it up when things are running good. Then when things get to going pretty well, some of you fellows say: 'O, no use running so fast, and put in a plug to stop things.' Many other things he told us until I began to see how foolish I had been.

"When he got through he said to me: 'I want to see you in the office.' He told me how disappointed he was in me, and that he had no idea he was harboring an 'anarchist,' and that while he valued my services, he would be obliged to get rid of such a dangerous man.

"I was a reformed man, but I knew it was useless to say anything, so I took my little family and came away here, and that is why I am away down here in Alabama burning brick

instead of in 'God's country,' among the old clay hills of Indiana." M. B.

MICHIGAN BRICK AND TILE MACHINE COMPANY GIVE CREDIT TO THE CLAY-WORKER FOR LARGE NUMBER OF SALES.

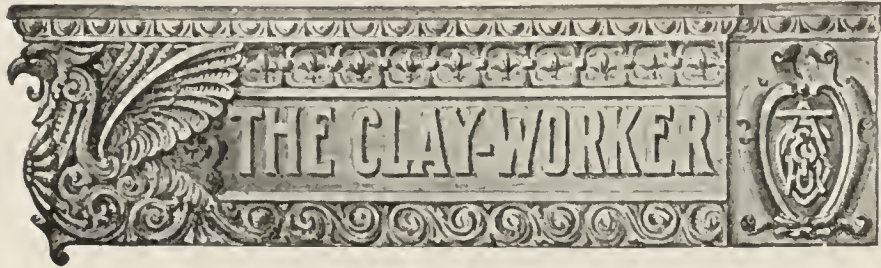
The Michigan Brick and Tile Machine Company, of Morenci, Mich., write that they are having an unusually busy season, that as long as they have been manufacturing clay machinery they have not had as many inquiries and made as many sales in the same length of time, as they have in the last sixty days. They have shipped machinery to the Dickinson Fire and Press Brick Company, Dickinson, N. D.; Alex Lauer, Cloverdale, Ohio; American Brake Shoe and Foundry Company, Chicago Heights, Ill.; Deeter & Breuneman, Pleasant Hill, Ohio; Frank Konst, Continental, Ohio; Gotebo Oil, Gas and Press Brick Company, Gotebo, Okla.; Rockford Brick and Tile Company, Rockford, Ohio; Jacob Burnsworth & Son, Montpelier, Ind.; E. A. Fuller, Oakwood, Ohio; Key & Son, Evansport, Ohio; M. C. Madsen, Hutchinson, Minn., and Sandford & Co., Monterey, Mexico. They also have orders on hand for their largest machines for shipment to Oklahoma, Indian Territory and Manitoba. This excellent trade they say has been brought about almost entirely by their judicious advertising in the CLAY-WORKER.

NEW OFFICES OF THE J. D. FATE CO.

The J. D. Fate & Co., of Plymouth, Ohio, has moved into their handsome new offices which occupy one corner of the new addition to their plant. The building, as it should be, is an excellent brick structure; the floors are of encaustic tile and the wainscoating is of mottled enameled tile. The offices include general offices, reception room, private offices, all of which are fitted throughout with furnishings especially adapted to the needs of a large clay machinery firm, giving the Fate Company a home of which they may be justly proud. The furniture in the reception room is exceptionally handsome, being of special design and made by hand by the father of Secretary Drennan. Visiting clayworkers will find a very cordial welcome awaiting them, and indeed it will pay the traveling clayworker to go out of his way, if necessary, to stop off at Plymouth and pull the J. D. Fate & Company's latch string.

WORK OF THE ANTI-BOYCOTT ASSOCIATION.

The February Bulletin of the American Anti-Boycott Association, which is the 1907 convention number, contains an interesting review of the work done by this association, which has its headquarters at 27 Williams street, New York City. The purpose of the association is to promote good citizenship, individual liberty and the open shop. As an example of the good that has been done by the literature of the association, one may find among extracts from remarks by Mr. Daniel Davenport, a statement that a Senator after complimenting Mr. Beck on making certain objections to what was known as the Gilbert bill, told him that the literature of the association sent out to all members of Congress, had been the most instructive, the most enlightening of any literature that was ever presented to a committee of Congress on any subject, and that it had wrought a wonderful change in the attitude of some of the Senators. This, of itself, speaks volumes for the good work of the association, and there is plenty more in this number of the Bulletin on the same line. It is worth having and it is an encouraging thing to read by those who believe in the open shop.



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TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVII. APRIL, 1907. No. 4.

CURRENT COMMENT.

The inland waterways look mightily like good things to push along.

* * *

No, roasting a mud-slinging politician will not likely make a real "brick" out of him.

* * *

There seems to be an encouraging tendency toward more brick work in fireplaces and mantel making.

* * *

When your city fathers are planning for the summer's work at street paving, don't let them fail to hear a few of the good things about brick.

* * *

The man that trades on the ignorance of his fellows has but little excuse for offering any plea of extenuation when in the course of events he gets left.

* * *

The problem of "what roofing material" is having an inning with builders today, should furnish good opportunities for further expansion of the roofing tile business.

* * *

When you go to buy new machinery, it is not the dollars it costs, you should figure on so much as the dollars it will earn—they are the dollars you are really after.

* * *

A man that turns out the highest grade products, either of brick, terra cotta or other clay ware, is the same man that has the least trouble of all in finding a good market.

* * *

In many industrial lines the pruning of prices down to a close margin will not make enough additional business to justify, but in the sale of structural material it is sometimes different. There are different materials competing for the

same work, and then building is a thing that a man can and sometimes does put off till another day when the cost runs above what he thinks it should be.

* * *

When you see real beauty in a pretentious reinforced concrete structure, it is refreshing to observe that it generally comes from the application of an outer facing of nice brick.

* * *

The Government wants to preserve the poetic beauty of Niagara Falls by preventing all the water from being used through turbines, and, naturally, some hardhearted business men don't like to see all that good power going to waste. Why not compromise by building a few gigantic overshot waterwheels, so that we can have both the beauty and the power, or has the old-fashioned waterwheel lost its poetic pull?

BETTER FIRE PREVENTION.

An interesting change in the policy of the big monthly publications is most noticeable. Where most of the space was formerly given to fiction and travel a great proportion today is used in the discussion of lively and timely topics, and those journals are fast becoming real molders of public opinion and a potent power in the reform of abuses, popular follies, etc.

Advance sheets of the Metropolitan Magazine for May, illustrate that point most thoroughly. One of the leading articles, instead of being romance or a story of conquest, is a most able paper on "Fire Prevention," something about which, judging from our terrific fires, our people are in sore need of instruction. The editor prefaces this article by saying: "In the matter of fire losses we lead the world. The question naturally arises: Are our great losses due to careless preventive measures? Have you ever seen your office or your home, with your treasured possessions, totally destroyed by flames? Do you want such an experience? Perhaps you think you are careful. The maximum cost of fire destruction in all European countries is less than one-sixth as much as in our own country. This article, by an expert, discusses the situation and suggests the common sense preventives."

The article is by Architect F. W. Fitzpatrick, of Washington, the executive officer of an international society having for its members the building inspectors of the world. He is reputed to be the highest authority on matters of fire prevention and fire proof construction, and certainly has written an article of surpassing interest that must needs impress us, by the magnitude of the losses quoted, with the necessity there is for us to mend our ways in so far as construction is concerned.

A TRADE SCHOOL SUGGESTION.

An industrial writer, who has made a study of the subject of training the American boy, is advocating that the logical solution for a great part of this question lies in making education a feature in connection with the employment of boys in factories. The point is made that present methods tend to keep a boy too long in the school room, cramming his mind with isms, while his hands need training. The other extreme, where poor boys are forced to leave school and go to work young in the factory, frequently dwarfs the mind and overburdens the body. The remedy suggested calls, in substance, for the employers of boys to make a special feature of giving instructions in both manual training and in the higher studies along with the work in the factory. The idea is, in short, that the final educational touches should be given right in the industries, where the boys will be surrounded with the same conditions they will encounter when they start out as men of affairs in the world. And it is pointed out

that this can be, or at least has a good chance to be made advantageous to the employers of boys as well as to the boys themselves. This is an idea that of course can not be applied *in toto* when it comes to that trade in which brick manufacturers are most deeply interested, the laying of brick. But the writer in question suggests this thought in connection with it: That in carrying out the trade school work in brick laying, it would be advantageous to so far as possible work classes at the actual task of putting up brick walls that are to stand, and not merely at the putting up of sections for demonstration that are to be torn down and worked over and over again. Just how far this idea is practical, or may be carried out, remains to be seen, but it suggests opportunities for carrying out trade school work on a very broad basis, and it is certainly worthy of attention and experiment.

THE STRENGTH OF BRICK.

One of the most important subjects considered at the St. Louis N. B. M. A. convention was that of the strength of brick. The able paper by Mr. Jas. E. Howard, of the Watertown Arsenal testing station, not only gave valuable data on that subject, but brought to the attention of those present the fact that the splendid facilities of that great government laboratory at Watertown are available for the complete demonstration of the superior qualities of brick as compared with other building materials. The results of many tests are now recorded in the official reports and these will be augmented by the reports of tests now underway. As will be seen by the following letter from Major F. E. Hobbs, it is proposed to continue the tests till the product of every section of the country has been investigated and its worth demonstrated.

MORE BRICK WANTED FOR TESTS.

Mr. Theo. A. Randall, Secretary, National Brick Manufacturers' Association:

Dear Sir—Referring to your recent interview at St. Louis with Mr. Howard of this arsenal, upon the series of tests on the strength and other physical properties of brick now in progress in the testing laboratory, allow me to cordially invite your cooperation in obtaining material for this purpose. The material is desired to aid in giving completeness to this series of tests, the scope of which, it is intended, shall illustrate the industrial resources of the different States of the country.

The cost of transportation of this material and its testing will be defrayed by the Government. The results of the tests will be published in the annual reports of the testing laboratory, congressional documents for general distribution. Advance reports on the results will be sent each contributor for immediate information on his material.

In regard to the number of samples, there should be from 10 to 20 of each kind of brick represented, which should be marked and described for identification. The material should be shipped by freight addressed: "Watertown Arsenal Testing Laboratory, Union Market Station, B. & M. R. R., Watertown, Mass."

It may be remarked in this connection, as a matter of information, that the forthcoming report of "Tests of Metals and Other Materials for Industrial Purposes," 1906, will contain a limited number of tests on individual brick, as well as some tests on brick piers and other materials of construction.

Respectfully,

F. E. HOBBS,

Major Ord. Dept., U. S. A., Commanding.

Watertown, Mass., March 22, 1907.

Those of our readers who are making vitrified brick of superior quality, will not be slow to profit by this proffer of Government service, which opens to them a ready means of proving our claims, oft repeated, that brick is superior in qualities of durability to all other materials. In sending sample brick for these tests, the instructions given in Major Hobbs' letter should be observed and followed carefully. Not only should each shipment be labeled for identification, but

an invoice containing a detailed statement of the number and character of the brick shipped, accompanied by bill of lading, should be mailed to Major Hobbs at the time shipment is made. Our readers will observe that there will be no charge whatever in connection with these tests. Even the freightage will be paid by the Government. All that is required is the proper boxing (or barrelling) of the samples and a brief description that will enable those making the tests to identify and classify each separate shipment.

A GOOD MOVE IN THE INTEREST OF WALL AND FLOOR TILE.

An information bureau of the tile industry has been established at the Corcoran Building, Washington, D. C. The purpose of this bureau is to furnish free information to help the trade promote the use of tile. It is a good move and should be encouraged for it seems that this country is ripe for rapid development in the use of tile in building of all kinds, and this bureau expects by laying before architects and others interested information in the form of illustrated pamphlets and circulars to be able to arouse considerably more interest and convey information that will lead to a more extended use of tile. There was at the recent meeting of the Interstate Mantel and Tile Dealers' Association, at Cincinnati, Ohio, an interesting talk on "Early Efforts at Tilemaking," by Mr. Herman C. Mueller, Trenton, N. J., in the course of which he said: "I want to tell you a little bit of this inaugural period of the tile business. It was a great time. We used to stand in front of the kiln door, and when the kiln was drawn the superintendent would cast an eager look at the contents. If it resembled anything like tile, you know, he raised up his hand and the factory whistle blew and the assembled group broke out in three cheers and a tiger. But when his eagle eye detected something that looked more like devitrified and decomposed ginger snaps—which sometimes happened—he said something else, which was repeated by the assembled crew in what the musicians call 'sotto voce.' When the kiln was a good one—and I tell you, gentlemen, it did not take very much to call it a good kiln—the manager and the superintendent went to the corner grocery—that was a great institution, that corner grocery; it used to have a little saloon attached to it where the boys played seven-up for the drinks—they went to this corner grocery, and they got drunk. But, gentlemen, when the kiln was a poor one—and it took a terrible lot to make it a poor one—the superintendent and the manager went to the same corner grocery, and they got full."

THEY STOOD THE FIRE.

"Burnt Clay Products in Fire and Earthquake" is the title of an elegant pictorial publication issued by the Brick Construction Association, of Los Angeles, Cal. It is full of numerous fine illustrations showing the comparative effect of earthquake and fire on brick and kindred building products, stone, concrete, etc. The pictures tell a striking story of the qualities of brick, too, and any one interested in this subject can not fail to get instructive information from this publication. Mention of this publication has been made heretofore, but one has to see the real thing as displayed here in these pictures to appreciate fully the great difference that may be observed between brick and other building material when put to the severest of all tests, a combination of earthquake and fire. The Brick Construction Association is doing a great educational work in behalf of clay products with this publication, and their efforts should be commended and encouraged. Every clayworker ought to have a copy of the book.

Written for THE CLAY-WORKER.

NO ROOM FOR DOUBT.

God made the world and then made man
In His own way and time,
But if you look the records up,
Man was not made from lime.
They were not up to slacking lime
So long before the flood,
But if they were, lime wouldn't work
Up into flesh and blood.

I know man was not made from mud,
Sand, lime, cement, applied;
For such a man, from such a mix,
Would crack before he dried.
I know they never used concrete
At such an early date,
But if they did, hair wouldn't grow
Upon a cement pate.

Show me a man who claims to be
Made up of sand alone,
And I'll show you a man who has
No marrow in the bone.
I simply give you solid facts.
To make my story plain:
Melted sand might make the skull,
But not a thinking brain.

Like His own image, God made man;
He moulded him from clay—
The proof is good enough for me—
That's what the Scripture say.
Sand, lime, cement, good mortar makes,
If not spread on too thick,
But clay which made the good, hard man,
Alone makes good, hard brick.

D. O. LOY.

Written for THE CLAY-WORKER.

A CLAYWORKER'S GIRL.

He brought her from a gay, bright world, with smile upon her face,
Enshrined her in his little hut, his heart's most hallowed place;
And there she happily abode, with changeless, sweet content—
Ever that gracious, loving smile, while days in years were blent.

And naught she knew, and naught she cared, what that gay world
might do.

That she was made to smile for him, and be for him most true,
Was knowledge all-sufficient, for she saw his life, once drear,
Glow bright with her companionship, and glad with smiling cheer.

Nor cold, nor blasts, nor poverty; nor ceaseless labor done
By him; nor dazzling dreams of fame, hopeless of being won,
Could ever, for the briefest space, drive her blest smile away.
It was his inspiration for each weary work-a-day.

The four walls of his rustic hut became, for that dear smile,
The confines of his Paradise, and life a thing "worth while."
The clay fields were God's treasure-mines, spread out in lavish
miles;
And days and nights—mere time in which to love his Queen of
Smiles.

* * * * *

They sought him in his humble hut, and in his lowly bed
They found him, clasping her who smiled—who smiled—*tho' he
was dead!*

She? Was but his Ideal—vision of his happier self;
A smiling *terra cotta girl*, who lived upon his shelf!

MARGARET ANDREWS OLDHAM.

LET IT IN.

When you're feelin' grouchy,
Let the sunshine in;
When your face gets feelin' hard,
Crack it with a grin.

Don't be 'fraid o' wrinkles,
Tear loose with your mirth;
An old face, laughter wrinkled,
Is the sweetest thing on earth.
—Houston Post.

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THE RESULTS of years of re-
search by Mr. Ellis Lovejoy, upon
"Scumming and Efflorescence" now
available to all. 50 cents brings the
book. Stamps taken.

The Richardson-Lovejoy
(See Page 749.) Engineering Co.

FOR SALE, WANTED, ETC.

COMPLETE BRICK MAKING OUTFIT
FOR SALE CHEAP.

We are consolidating our paving brick
plants. This throws out of use:
One center crank, 100 h. p. engine.
Two boilers, 50 h. p. each.
One feed pump.
One 8-ft. Frost pan, wood frame.
One elevator.
One pug mill.
One auger machine, 50,000 capacity.
One Freese automatic cutter.
Shafting, pulleys and belting.
All in good working order and valued at
over \$5,000.
Will sell same cheap—immediate deliv-
ery.

STREATOR PAVING BRICK CO.,
4 3 c Streator, Ill.

For Sale, Wanted, Etc., Ads Continued on
Pages 696, 700, 701, 702 and 703.

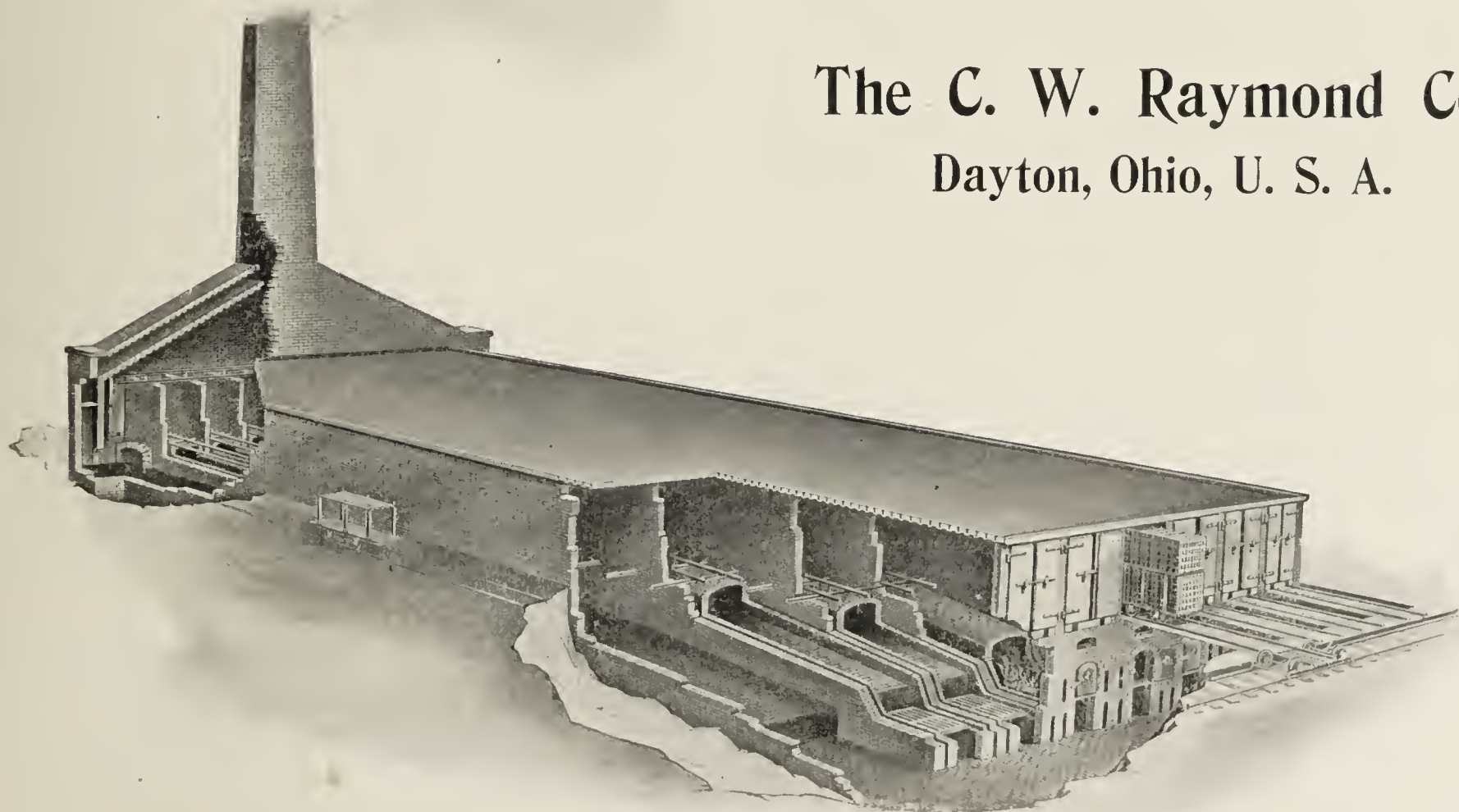
200% More

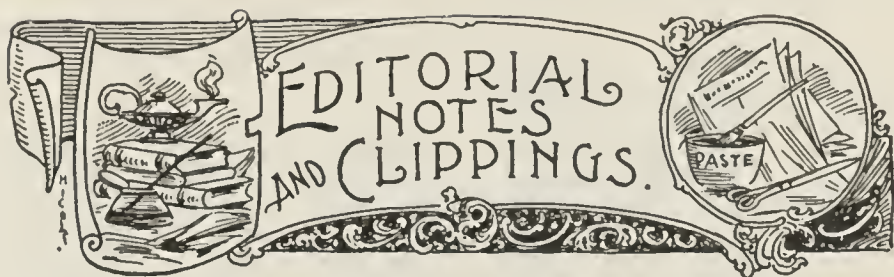
The Raymond Radiated Heat Dryer presents 200 per cent more radiating surface than any "Hot Air" Dryer made. This is no pipe dream. Look at the picture below, and judge for yourself. Examine the construction. The heat ducts or flues are built entirely independent of the tunnel walls. Cold air circulates between them and is superheated by the radiation of heat from the sides of the duct. These heat ducts radiate on three sides, giving 200 per cent more heating or radiating surface than when heat comes from the top alone.

The first cost is also an item to be considered. The simplicity of its construction as shown by the small amount of excavating required, means a low initial cost, and with 200 per cent more radiating surface, makes a dryer to be seriously considered.

We make a special system of ties for this dryer, which absolutely prevents spread of rails, and consequent wrecking of cars. The cost of operation is therefore reduced to within reasonable limits.

The C. W. Raymond Co.,
Dayton, Ohio, U. S. A.





W. R. Hulett will erect a brick yard at Twisp, Wash., where he has a tract of fine clay.

The burning of some sheds at the plant of the Ostrander Brick Works, Troy, N. Y., resulted in a \$2,000 loss.

Wooster, Ohio, is to have a new brickmaking plant. Dr. E. J. Barrett, who owns extensive clay land in that vicinity, is at the head of the movement.

A new Kentucky clayworking company is the Nebo Brick and Tile Company, recently organized at Nebo, Ky., by C. N. Ferguson, W. T. King and R. E. Walker.

The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pa., are forwarding at the present time a carload of improved machinery to Winnipeg, Manitoba.

The Enterprise Brick Company, with plant at Mountainview, N. Y., has been incorporated by Wm. F. Hosier, Susie Hosier and George W. O'Connor with \$10,000 capital stock.

The Richfield Brick and Tile Company, of Richfield, Utah, capitalized at \$4,000. J. W. Stewart is president; J. A. Jensen, vice president; A. E. Youngberg, secretary and treasurer.

Wm. A. Butler, San Francisco, Cal., patentee and builder of the New San Francisco Continuous Kiln, writes that he now has under way four continuous kilns for plants in his immediate vicinity.

Charles A. Wagner, a member of the firm of A. Wagner & Sons, Dearborn, Mich., died late in March after a two weeks illness from pneumonia. Mr. Wagner was forty-seven years old and leaves a wife and seven children.

P. J. Fish, formerly traveling representative for Taplin, Rice & Co., manufacturers of clayworking machinery, Akron, Ohio, has accepted the managership of the White Hall Sewer Pipe and Stoneware Company, at White Hall, Ill.

The Richmond Brick Manufacturing Company has been organized with \$25,000 capital stock, at Richmond, Ind., where the company has thirty-six acres of clay land. A plant will be built at once, of 10,000,000 annual capacity.

A. C. Ochs is making some elaborate changes in his large brick plant at Springfield, Minn., installing machinery that will enable him to increase his output and also to manufacture drain tile. He will also build an additional down draft kiln.

Mr. George C. Pedrick, Flemington, N. J., is installing one of the "Martin" latest improved style "A" steam power brick machines in combination with a "Martin" improved clay screen, purchased from the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The former plant of the Pittsburgh Brick and Tile Company, at Warren, Ohio, which was sold at sheriff's sale, is to be operated under the name of the Leavittsburg Brick Company, of which Thomas Burrows will be at the head. The firm already has orders for over a million brick.

The Craig Colony for Epileptics at Sonyea, New York, who have been operating the "Martin" equipment, have added to their plant a "Martin" latest improved heavy all iron and steel style "P" steam power soft mud brick machine, manufactured by The Henry Martin Brick Machine Manufacturing Company, at Lancaster, Pa.

C. & A. Potts & Co., Indianapolis, Ind., advise us that they have met with great success in the introduction of the Rack Pipe dryer, and are now furnishing complete dryer equipment to plants in California, Minnesota, Indiana and Massachusetts, and could have taken orders for more of these dryers which they style as "money makers," if the facilities of their shops had permitted.

The employes of the Sayre & Fisher Brick Co., New Brunswick, N. J., went out on a strike recently, asking for an increase of 25 cents per day and a Saturday half-holiday. After being out four days, they compromised with the company on promise of a raise of 15 cents per day and no half-holiday, and went back to work. The company decided it would be better to make a compromise with the men, rather

than risk a protracted strike with all the troubles incident thereto.

Messrs. Quinn & Southworth will operate the brick yard at Ravenna, Neb., the coming season. There is every prospect of a good demand at fair prices.

Harry Bemis, an employe of the Brookside Brick Company, Cleveland, Ohio, had his leg badly crushed by being caught between the cog wheels of a brick press.

H. C. Rhud and John Riggs are interested in a company which has been organized at Bismarck, N. D., to manufacture building brick and hollow tile. They will erect an up-to-date plant of 40,000 daily capacity.

The firm of Peterson Bros., brick manufacturers, of Fillmore, Wis., has been dissolved by mutual consent. The business will hereafter be conducted by Emil Peterson, he having purchased his brother's interest in the business.

Dennis J. Clahane, of Columbus, Ohio, president of the Hanover Brick Co., died of heart trouble at Mt. Clemens, Mich., where he had gone for a little visit. His wife and one brother survive. Nearly all of Mr. Clahane's life had been spent in Columbus.

The Cranbrook Fire Brick and Terra Cotta Company has been organized and is building a modern clayworking plant at Cranbrook, British Columbia. They will manufacture fire brick, sewer pipe and terra cotta. J. D. McBride, W. F. Gurd, J. P. Fink and others are interested.

V. T. Price has purchased the plant of the old Marshall Brick Company, Rapid City, S. Dak., and has formed a new company to be known as the Rapid City Brick and Tile Works. The plant is being overhauled and put in running order and operations will commence in the very near future.

A new enterprise at Galena, Ohio, will be known as the Galena Clay Product Manufacturing Company. W. C. Roberts, G. G. Adams, E. C. Bennett, E. B. Cole and James Rose are interested. The company expects to have the new plant running by June 1. Brick, tile and building block will be turned out.

Krick, Tyndall & Co., brick and tile manufacturers of Decatur, Ind., have in contemplation a number of improvements in their plant the coming summer, that will enable them to run the year around. They now make about 60,000 brick per day and the additions and improvements will enable them to greatly increase the capacity.

The Texas Fire Brick Company, Corsicana, Texas, has just finished burning the first kiln of 250,000 brick. The plant is equipped with a Chisholm, Boyd & White four-mold press, and an eight-foot self contained dry pan. At present the plant has a capacity of 20,000 brick per day, which will be doubled as soon as kilns can be built to take care of the brick.

The strike of the workmen in the plants of the American Sewer Pipe Company in and about Toronto, Ohio, has been settled by the employes being granted an increase of 20 cents a day. The new scale became operative April 16. The plants in the difference were the Forest City, Great Western, Calumet and Ohio Valley. Over 400 men were benefitted by the increase.

C. & A. Potts & Co., Indianapolis, well known manufacturers of sand-mold brick machines, report that they are having splendid trade this season. They are working their large force of men full time in order to keep their shops running to full capacity. The demand for their Horizontal brick machine, disintegrators and mold sanders has kept the shops taxed to the limit.

Mr. James E. Romig, of Roslyn, Montgomery County, Pa., has contracted with The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for a complete brick plant of 40,000 daily capacity. This will be a modern equipment, including the "Martin" system of manufacturing, handling and drying soft mud brick, automatically working the clay direct from the clay bank to the kilns.

The Beaumont Brick Company and the Diana Brick Company, of Beaumont, Texas, have been consolidated, and will hereafter be known as the Gulf State Brick Company, which is capitalized at \$250,000. The two plants have a capacity of 100,000,000 a year, and turn out both common builders and pressed brick. The officers of the new company are Newton R. Wilson, of Monterey, Mexico, president of the Gulf State Brick Company; Ernest Loeb, vice president; R. M. Hallowell, treasurer; S. A. Hillar, secretary; J. W. Jones, general man-

(Continued on page 694.)



AMERICAN CUTTER.

The No. 83 Automatic Brick Cutter is the latest in cutter excellence designed by the American Clay Machinery Company for the clayworkers of the country. It has a heavy box frame upon which the cutter mechanism is mounted. It has many of the best features of the No. 25, and others of its own, including an automatic return oil supply. The cutter cuts ten side-cut brick at a time, and has a range in capacity from thirty thousand to the full capacity of the fastest brick machine ever built. To those who are interested in automatic cutters an investigation of the No. 83 will prove most interesting and profitable. While it was being given its preliminary testing out, four different visiting brick men each ordered one of them. The first cutters have been shipped and more are in work. A complete description and illustrations for the asking.

We build every machine and appliance necessary for making every class of Clay Products. Also the most complete and successful line of Sand-Lime Brick Machinery.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

EDITORIAL NOTES AND CLIPPINGS—Continued.

ager, and J. E. Beall, superintendent. S. E. Humphrey, foreman at the Beaumont plant, will continue in that capacity.

Fire which started in the dryer of A. V. Sturgeon's brick plant at Suffolk, Va., caused a \$1,000 loss. The burned portion will be rebuilt at once.

Mr. John Gibson, Fromberg, Mont., has purchased from The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., a complete "Martin" horse-power equipment.

At Columbus, Ohio, the Columbus Brick Contractors' Association has been revived. William Watson has been elected president, while J. E. Kuntz is secretary and J. F. Blair, treasurer.

Mr. John Hurley, of Denver, Colo., is at the present time installing a complete equipment of the Martin horse power Brick machinery bought from the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

It has been decided by the stockholders of the Columbus Brick and Terra Cotta Co., to increase the capital stock of the concern from \$200,000 to \$300,000. Increased capital will be used to enlarge the properties of the concern at Union Furnace, Hocking County, Ohio.

Kafer & Ivins, brick manufacturers, of Trenton, N. J., are running their plant to its full capacity. One of their recent orders calls for 250,000 brick for the new forty-six story Singer building, New York City, and another for 60,000 brick for the Y. M. C. A. building of Philadelphia.

Articles of incorporation have been filed by the Council Bluffs (Iowa) Brick Company. The incorporators are E. E. Hart, president; E. A. Wickham, general manager, and Wm. Arndt, secretary. The company is capitalized at \$10,000 and will take over the old Weaver plant and operate same.

Mr. G. W. McClelland, Cherryvale, Kansas, and others are preparing to erect a large brick plant at Nowata, I. T. The order for the machinery has been placed with The C. W. Raymond Co., Dayton, Ohio, through their western manager, Mr. Geo. H. Smith, 325 Bryant Bldg., Kansas City, Mo. The Raymond Co. is also equipping plants at Mapleton and Weir City, Kansas.

The Red River Valley Brick Corporation, Grand Forks, N. D., has taken over the plant of the Grand Forks Brick, Tile and Cement Company, paying \$26,000 for same. The corporation now owns nearly all of the brick plants in that district and is incorporated for \$150,000. The officers of same are: A. I. Hunter, president; M. J. Moran, vice president; James Dinnie, treasurer; Louis Campbell, secretary.

The Houma Brick Company has been chartered and organized at Houma, La., with \$10,000 capital stock. The following officers have been elected: Arthur A. Bonvillain, president; A. J. Bonvillain, treasurer, and Mosely H. Webb, secretary. The plant proposes to make in the neighborhood of 15,000 bricks a day. The kiln will be built on the property of Mr. Webb, a short distance above the town.

The Wyoming Brick and Construction Company is a new firm, organized to do business in Lander, Wyo. They have ordered a complete outfit for making brick, and expect to have the plant ready for operation by June 1. They expect to manufacture 2,000,000 brick this season. The officers of the company are: J. D. Deloney, president; F. W. Lucco, secretary and treasurer, and Adam Griersemer, manager.

Greensfelder & Bloch, 220 Central Bank Building, Oakland, Cal., are organizing a company to manufacture facing and enamel brick from clay capable of producing a very high grade article. They will launch the enterprise in May. The same promoters also expect to arrange for the manufacture of an improved sand-lime brick. Instead of being made without heat, which leaves the brick likely to absorb moisture, causing possible disintegration, these sand-lime brick will be subjected to heat sufficient to make them durable.

The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., have practically doubled the capacity of their manufacturing plant, and while they have been handling a larger volume of engineering and constructional work in the equipment of modern brick plants than they have ever done heretofore, their facilities have enabled them to keep ahead a very large supply of stock, so as to be prepared to make immediate shipment of brick machines, disintegrators, conveyors, granulators, shafting and pulleys, with the "Martin" patent dryers complete, within a few days after receipt

of the contracts, carrying as many as five such equipments of 50,000 daily capacity in stock.

J. H. Thress and Foxworthy Brothers has purchased the old Burke brick yard at Reno, Nev. The plant will be remodeled and new machinery installed.

Mr. W. H. Carlon, of Manchester, Virginia, is installing a "Martin" horse-power equipment complete, furnished by The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The plant of the Omaha Brick, Paint and Tile Company, Omaha, Neb., was damaged to the extent of \$1,000 by fire, which destroyed the kiln shed. The fire caught from the gas plant which supplies the gas for burning brick.

The Southern Clay Products Company, Chattanooga, Tenn., has filed an application for charter with the Secretary of State. The capital stock is placed at \$250,000. The incorporators are S. B. Smith, A. S. Caldwell, Theodore F. King, A. T. Moore and W. M. Elliott.

The Blackwell Brick and Tile Company has been organized at Blackwell, Okla., by Z. A. Harris, C. C. Frampton and A. M. Austin. They are building an up-to-date stiff mud brick plant, which will be equipped with machinery from the shops of the C. W. Raymond Co., Dayton, Ohio.

The Delaware Terra Cotta Company, of Wilmington, Delaware, is equipping its plant with the latest improved Martin patent system of handling and drying 40,000 stiff mud brick daily, being installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania.

W. D. Kiesel, treasurer of the Cleveland Car Company, West Park, Ohio, writes that trade with his company is excellent and they are now increasing the capacity of their plant by the addition of buildings and the installation of machinery, that will enable them to turn out a larger amount of work more speedily than heretofore.

Stephen Bertler, a pioneer brickmaker of Manitowoc, Wis., and owner of the Bertler yards, suffered what may prove serious injury in falling from one of the kilns at the plant recently. Mr. Bertler, who is well advanced in years, made a misstep while on top of the kiln, and fell to the ground, a distance of twenty feet or more. It is feared that he suffered internal injuries.

The Stukenberg Pressed Brick Company's plant, which has been idle since passing into the hands of a receiver last December, was sold recently to the Kaempff Shale Brick Company of Kansas City, Mo. The plant, which formerly had a capacity of 20,000 bricks daily, will be enlarged to a capacity of 100,000. The officers of the purchasing company are Frederick C. Kaempff, president, and W. A. Hammond, secretary and treasurer.

New Albany, Kan., has a new concern to be known as the Empire Brick and Gas Company. The company is building a large and modern plant, which will be equipped with machinery from the shops of the American Clay Machinery Company, Bucyrus, Ohio. They have an immense deposit of shale, and three good gas wells on their property. According to estimates made by the company, it will only cost them six cents per thousand to burn their brick.

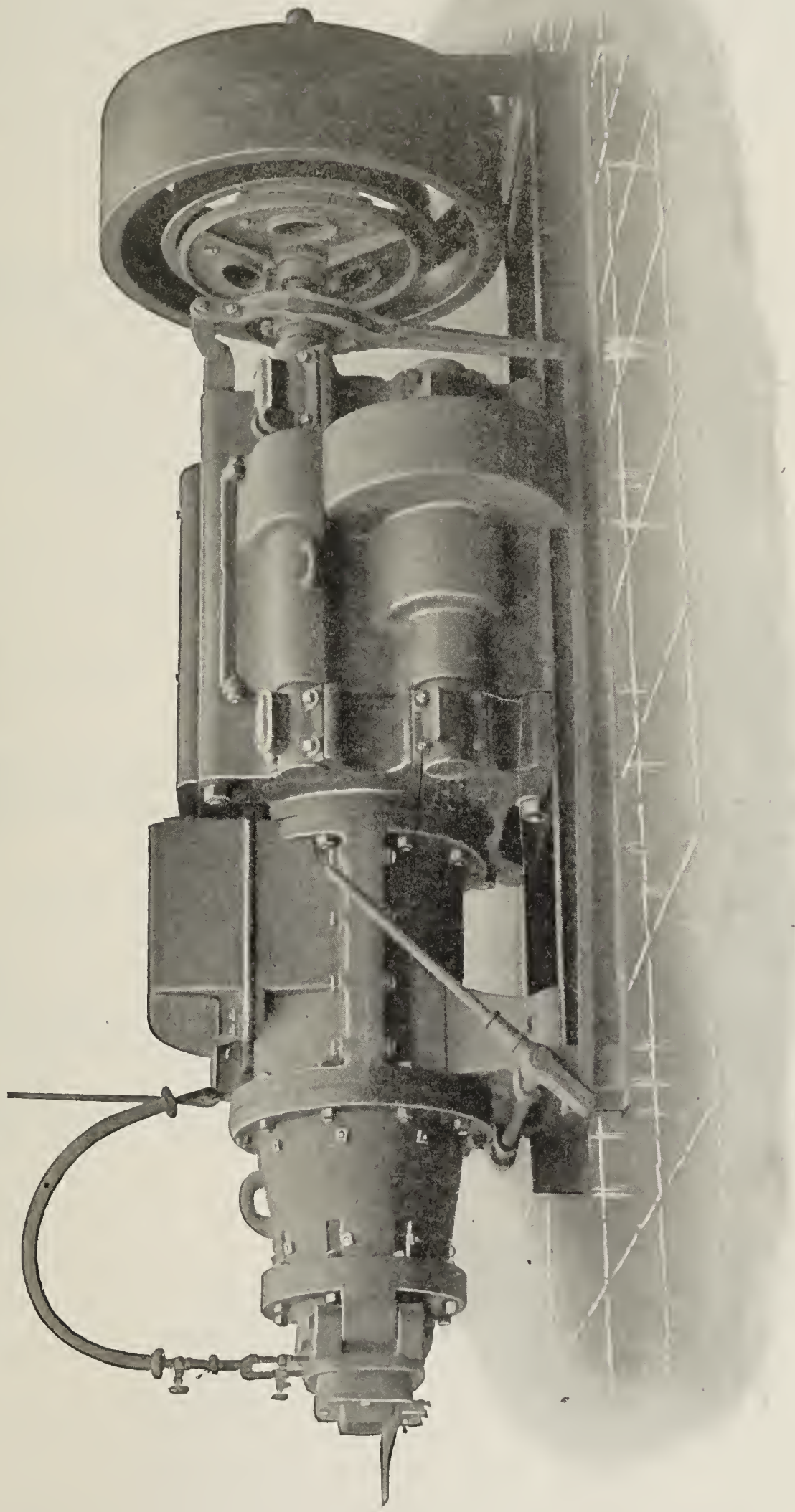
The Potlatch Brick Company of Potlatch, Wash., has purchased the plant and real estate of the Palouse Brick and Tile Company, located a mile south of Palouse. Brick will be used in large quantities in building operations at Potlatch during the next year and the plant will be moved to that place temporarily. It will later be moved back to the old site near this city, where there is an inexhaustible supply of clay. The plant has a capacity of 40,000 brick per day.

C. & A. Potts & Co., Indianapolis, have recently furnished the Minneapolis Brick and Tile Company, Minneapolis, Minn., with a complete plant, consisting of two 100-horse power boilers, one 80 h. p. engine, Horizontal brick machine, disintegrator, mold sander, winding drum and a 50,000 capacity rack pipe dryer. They have also closed a contract with the Brooklyn Brick Co., Brooklyn, Ind., for two 125 h. p. boilers, 125 h. p. engine, Horizontal brick machine and equipment, and a 50,000 capacity rack pipe dryer.

The Hamburger Realty and Trust Company, of Los Angeles, Cal., is building a new brick plant at that point which is to be equipped with machinery from the plant of the American Clay Machinery Company, at Bucyrus, Ohio. The firm has a number of large building contracts under way and have figured that they can make the brick for their own con-

(Continued on page 696.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

(See ads on pages 746 and 747.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

tracts cheaper than they can buy them from other brick manufacturing companies. The plant will be modern in every respect.

The Union Brick and Tile Company has been incorporated at Warsaw, N. C., with \$50,000 capital stock. The incorporators are D. B. and A. M. Faison, and J. E. Richwine.

Two of the workmen at the plant of the Phoenix Brick and Construction Company, St. Joseph, Mo., were badly injured by being caught in a kiln of green brick, which collapsed, burying the two men beneath the brick.

Thomas Hampton, patentee of the Hampton down draft kiln, has charge of the erection of the new plant of the Dillsburg (Pa.) Vitrified Brick and Tile Company. Six of the Hampton kilns will be built at this yard.

The Lexington Brick Company is a new concern recently formed to manufacture brick at Lexington, N. C. H. A. Hege, John Harkey and John Pugh are interested. The plant will have a daily capacity of 30,000 brick per day.

The new brickmaking plant of J. F. Miller, at Bellingham, Wash., has started up with a capacity of 25,000 pressed brick. The demand for brick is good and Mr. Miller expects to be kept running to full capacity straight through the year.

The two brickyards south of Fremont, Neb., have been consolidated and will be operated hereafter under the management of Frank Rightbower, who also recently purchased the yard of Hartmann & Slogett, which he is operating.

L. D., H. H. and W. H. Cobb will erect a \$20,000 daily capacity brickmaking plant at Fort Worth, Texas, where they have a tract of land on which there is an exceptionally fine deposit of clay, suitable for the manufacture of buff brick.

The plant of the Chicago Retort and Fire Brick Company, at Bricktown, a suburb of Ottawa, Ill., was almost totally destroyed by fire April 1st. The loss is estimated at \$7,000. The plant will be rebuilt at once and on a much larger scale.

Newbert & Noyes have purchased the brick yard on the Bond Brook road near Augusta, Me., and will overhaul same, putting in new machinery and operate the plant the coming season. The yard has not been operated for a number of years.

The Bender Realty and Brick Company has been organized to manufacture brick and tile, etc., and deal in real estate, at Utica, N. Y. The directors of the new company are A. W. Bender, Daniel D. Bender, and William A. Douglas, all of Utica.

The new plant of the Enid Brick and Tile Co., at Enid, Okla., under the management of Ed. Frantz, has been started with a daily capacity of 20,000 brick a day. The plant is equipped with a six-mold Boyd dry press and a 9-foot Frost dry pan.

The Taylor-Thomas Brick Company, Crystal Springs, Miss., has started up its plant and brick are now being turned out at the rate of 25,000 per day. The company now has enough orders on hand to keep the plant running steadily for some time to come.

The Queen City Brick and Stone Company, with office located at Burlington, Vt., has been incorporated with \$10,000 capital stock, by Frank J., G. T., I. and K. E. Graves, of Winooski, Vt., and Chester H. Graves, of Rochester, N. Y. A plant will be erected at Winooski.

The Carlyle Paving Brick Company, Portsmouth, Ohio, was a heavy loser by the recent flood, about half a million green brick in kilns or on the dry floor being ruined. The actual loss to the company, aside from loss of time on the operation of its plant, will exceed \$5,000.

The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pennsylvania, is preparing for immediate shipment four of their latest improved eccentric pattern rock and ore crushers, having a receiving opening of 15 inches by 20 inches, for shipment to Salt Lake City, Utah.

J. W. Hinkley, Green Bay, Wis., in renewing his subscription, says that the brickmakers of that section are having a good trade. Owing to the unfavorable weather, two of the yards closed down during the winter, so that fewer brick than usual were made, while the demand for brick increased, so that instead of having from 6,000,000 to 10,000,000 on hand, as ordinarily at this time of the year, there are scarcely 200,000 brick for sale, and these at good prices.

GREAT BARGAINS IN SECOND-HAND MACHINERY, ENGINES, ETC.

The attention of our readers is called to the advertisement of the C. C. Wormer Machinery Company, Detroit, Mich., in this issue. They advertise a line of second-hand machinery, engines, etc., so full that any one, no matter what his requirements may be, can be supplied. To those who may need any article not named in the advertisement, we would suggest that they write the C. C. Wormer Machinery Co. immediately. They are ready to give facts and figures that will be advantageous.

FOR SALE, WANTED, ETC.

NEW ATHENS, ILL., offers an exceptionally good location for a large dry press brick works. Only 28 miles from St. Louis, where the entire output can be marketed. For particulars address
BUSINESS MEN'S LEAGUE,
41 cm New Athens, Ill.

WANTED.

First-class man to take charge of manufacturing end of brick plant, one who is a machinist and a hustler with labor. Good opportunity for right man. Apply at once, with references, stating salary expected. McCoy Brick & Tile Co.,
32 d Augusta, Ga.

WANTED—Brick setters and sorters. Large up-to-date press brick plant in the the South. Can give steady, all the year position to competent setters and sorters. Pay highest wages for same. Address
PRESS BRICK,
41 d Care Clay-Worker.

WANTED—Situation as general manager or assistant of either dry pressed or stiff mud plant, by one who thoroughly understands the designing, erecting, operating and marketing of the finished product. At present have good position, but desire to make a change on account of climatic conditions. All references from both present and past employers. Address
4 tf d CHICAGO, Care Clay-Worker.

(Continued on page 700.)

German Kiln and Construction Co.

(Incorporated)

Engineers and Contractors,
71 and 73 Nassau Street, New York City, N. Y.



All Styles of Kilns in the Ceramic Industry.

Hoffman's Continuous Kiln.

Railroad Tunnel Kiln.

Gas Continuous Kiln.

Kiln with Movable Fire Box.

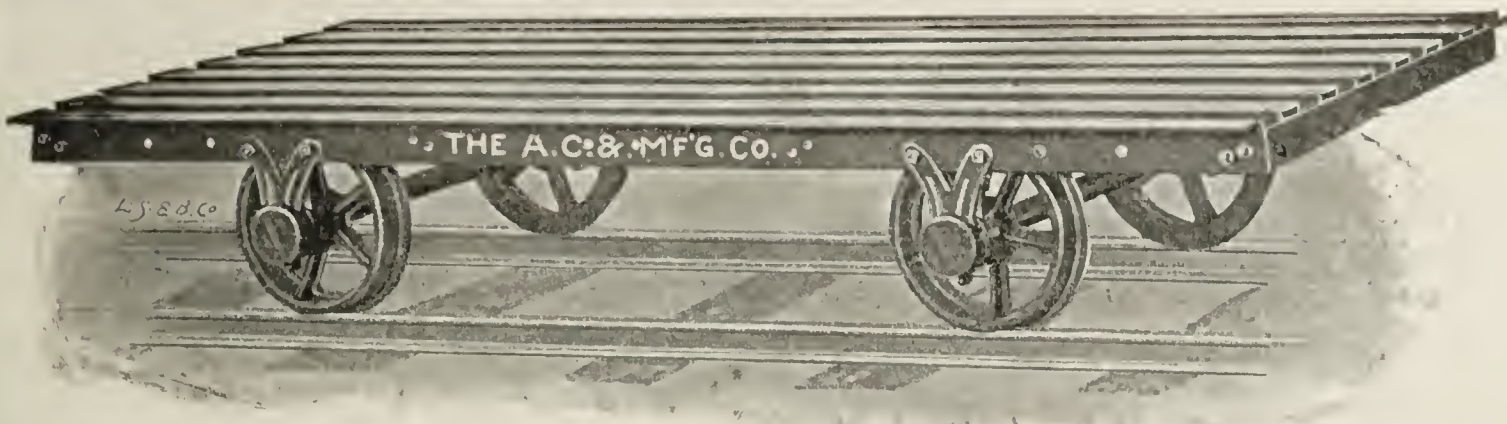
Up and Down-Draft Kilns, Round and Square.

Shanks and Two-Story Kilns, largest in the world.

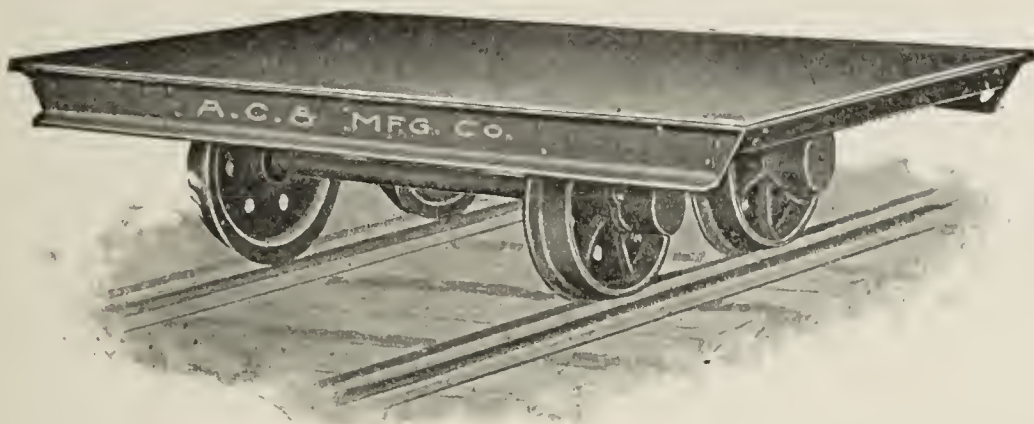
Muffle Kilns for Glazing and Enameling.
Chimneys built of radial brick.

We guarantee satisfaction, the best work and lowest prices.

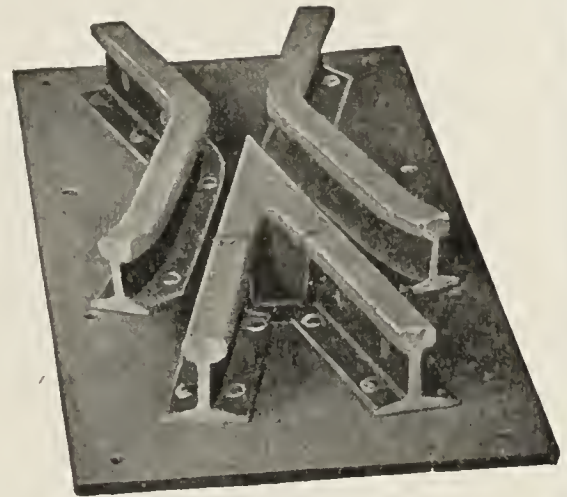
Correspondence solicited.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

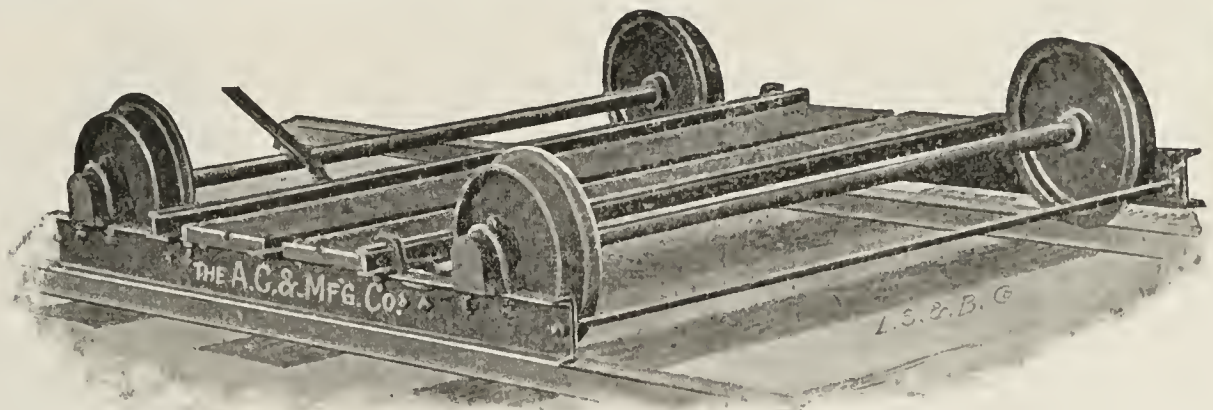
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

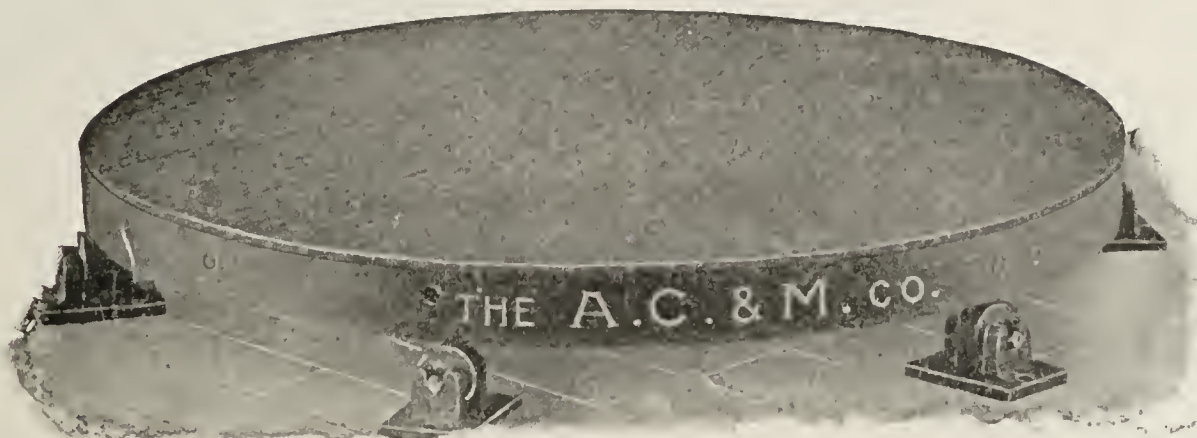
Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for THE CLAY-WORKER:

WESTERN PENNSYLVANIA BRICK AND BUILDING NOTES.



BUILDING OPERATIONS in Pittsburg for the month of March showed a slight falling off from the figures of the same month last year. During March, 1907, 357 buildings were authorized, at a total cost of \$1,115,192, as against 417 buildings at a cost of \$1,183,084, in March, 1906.

In Allegheny, in March, 1907, a large increase in building was made. During the month, permits for 59 buildings were issued, at a cost of \$272,691, while the number in 1906 was 51 buildings that cost \$138,075.

Throughout the entire Pittsburg district the volume of new construction this year is but a little behind last year, and the indications are that this will be made up before the end of the month.

A particularly fine grade of fire clay has been found in large quantities in the vicinity of Shawmut, Pa., and control of the same has been secured by the Shawmut Brick Company, of that city, of which concern Alfred Yates is the general manager. Mr. Yates is conducting a series of experiments with this clay whereby he hopes to produce fine glazed work suitable for statuary and work of this character. If the process, as used by Mr. Yates is found entirely satisfactory, the plant will be changed throughout and a specialty made of this branch of the clay industry.

The officials of the Reese-Hammond Fire Brick Co., at a meeting last month, decided to abandon the offices of the company at the plant at Bolivar, Pa., and to move the general offices to Pittsburg, where a sales office has been maintained for some years. Messrs. B. F. Reese and Benjamin Hammond remain at Bolivar to look after the plants at that city, while Messrs. James B. Hammond, William L. Wynn, I. L. Hammond and William Welsh move to Pittsburg to take charge of the business at that end. The office, as in the past, will be located in the Park building.

G. W. Lenkerd, who has been secretary and treasurer of the Reynoldsville Brick and Tile Co. since that company was organized in 1902, has resigned his position to accept the position of secretary and general manager of the Clymer Brick and Fire Clay Co., at Clymer, Indiana County, Pa. Clyde Murray has been appointed successor to Mr. Lenkerd.

R. L. Coffy, secretary and general manager of the Osceola Silica and Fire Brick Co., Osceola Mills, Pa., has resigned his position with that company and will move to Kentucky, where he will engage in the coal business. Jerre Coffy, his brother, has sold his stock in the company and will no longer be identified with the concern, but will look after his other clay interests in Clinton and Clearfield counties. Mr. R. L. Coffy organized the Osceola company and built the plant here, which has been very successful, turning out a fine grade of brick for blast furnaces and all work where intense heat is used. His successor has not been named.

Mayer Bros. pottery at Beaver Falls, Pa., had a narrow escape from destruction by fire last month. The roof of the annex to the main building caught fire in some unknown manner, but fortunately was discovered in time to prevent the destruction of the plant. The loss was small.

A lighted torch in the hands of a workman employed at the big plant of the Pennsylvania Clay Co., at Freedom, Beaver County, Pa., ignited a bucket of oil used to oil the brick-making machines, and an explosion followed, which set fire to the plant and which resulted in the complete destruction of one of the finest brick plants in the entire Beaver valley, resulting in a loss of about \$30,000. The plant was fully insured and the management of the company states that the plant will be rebuilt at once. About fifty men are thrown out of employment.

Work was started early this month on the construction of the fine new addition to the brick plant of the Bessemer Brick Co., at Bessemer, Lawrence County, Pa., which will about double the capacity of the present plant. Six new modern down draft kilns are being added and all equipment will be of the latest and most improved type.

D. C. Foltz, who is building a large red brick manufacturing plant at Pechin Station, Fayette County, Pa., announces that he will have the new plant completed and in operation

by the latter part of this month. The plant itself is about completed, but the tram road from the clay banks to the brick works has not been completed. The plant is equipped with the most improved and modern machinery on the market.

D. F. Henry, president of the Pittsburg Fireproofing Co., and who has been spending the latter portion of the winter in the South, has returned to Pittsburg and has personally taken charge of the affairs of the company, which has a large number of orders on its books for execution during the coming spring and summer, which will insure the steady operation of the plant for the coming year.

The floods last month seriously damaged several of the large clay and brick plants in Clinton and Clearfield counties, putting out the fires under practically all of the kilns of the plants in question and damaging the machinery in several of them. All damages have been repaired and the plants are now running as usual, although the loss will run into many thousands of dollars.

The plant of the Patton Clay Co., at Patton, Cambria County, Pa., was badly damaged by the floods last month. Two kilns, from which the fires had recently been drawn, were subjected to the sudden rush of the water when Flanigan Run burst the banks and two of the kilns exploded, resulting in their almost complete destruction, which will necessitate having them completely rebuilt. A large amount of green sewer pipe that was on the floors ready to be run to the kiln was destroyed, and some of the machinery was badly damaged. The loss and destruction is being repaired as rapidly as possible, and the plant will soon be in good shape.

The American Brick Works, at Mill Hall, Clinton County, Pa., which have been closed down for some time, will resume in the near future and it is now expected that they will be run steadily throughout the summer.

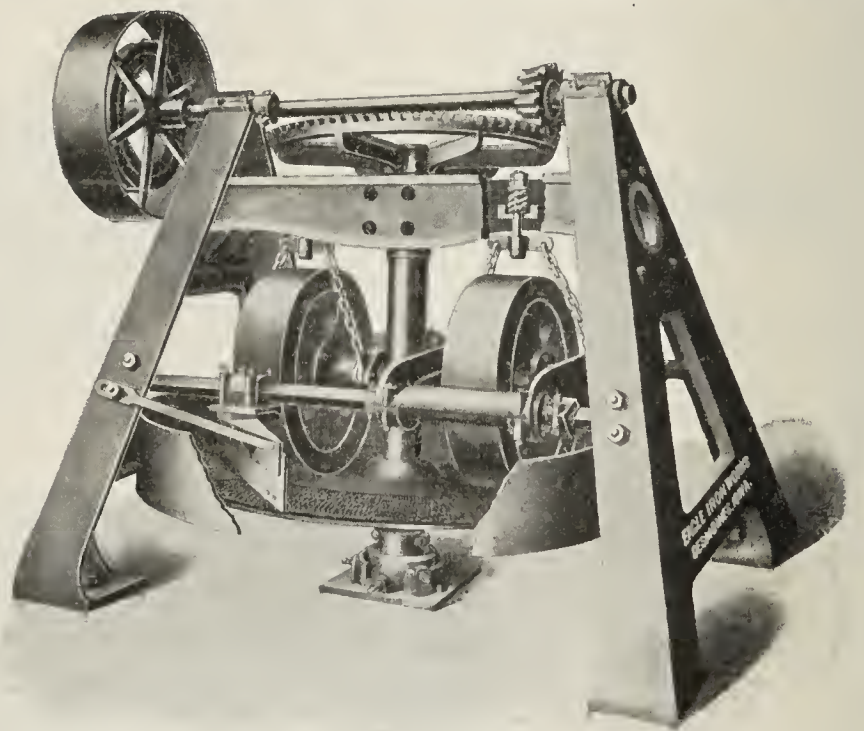
The Patton Fire Clay Co., Patton, Pa., has been awarded the contract for the brick that will be used in the paving of a number of the streets of Ebensburg, Pa. The brick will be heavy, and will all have beveled edges. W. H. Herr & Co., Altoona, Pa., have the contract for the paving.

Vollkommer & Co., Empire Building, Pittsburg, have about completed the structural steel addition that they have been erecting at the plant of the Kittanning Brick and Fire Clay Co., at Kittanning, Pa.

F. A. C.

Independent and Suspended Mullers

the distinguishing feature of our **DRY PANS.**



Other valuable features which our catalogue fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

A SURE CURE FOR THE CONCRETE CRAZE

"BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE"

AN ELABORATE PUBLICATION

Cover in 4 Colors.

Ninety-Six 10x12 Pages.

Eighty-three 7x5 Half-tones.

Issued by the

BRICK CONSTRUCTION ASSOCIATION,

which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

Every brick man should have a book, and see to it that everyone interested in construction in his locality has a copy.

This publication is not sold for profit to the Brick Construction Association, all proceeds being spent for the promotion of the use of Burnt Clay Products.

Sent prepaid at the following rates:

Single copies.....	\$ 1.00
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Brick Construction Association,

707 Lankershim Building.

LOS ANGELES, CALIFORNIA.

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Written for THE CLAY-WORKER.

POTTERY NEWS.



WITH A STRONG demand for pipe for civic improvement work, sewer pipe companies in the eastern territory are experiencing a season of marked activity. There is not an idle sewer pipe plant in the Ohio valley, and those in the Muskingum valley territory are also rushed with business.

S. H. Brown is at the head of a movement to organize a company to erect a large stoneware pottery at Crooksville, Ohio. Considerable stock has been subscribed to the proposition and building operations are expected to be undertaken within a few weeks.

At Sebring, Ohio, a plan is on foot by the Oliver China Company, which is controlled by the Sebring Brothers, formerly in the pottery business at East Liverpool, Ohio, to erect another plant. It will adjoin the property of the Oliver China Company's plant and will have a probable capacity of six kilns.

It has been practically decided that the Wells-Clark China Co. will not assume the business management of the plant of the Homer Laughlin China Co., in East Liverpool, when that company has its large plant at Newell in active operation. The same company owns both properties and its business is so great that both plants, containing 64 kilns, will be operated under one name.

High water greatly interfered with the early completion of a large brick plant in course of erection at Kachelmacher, Ohio, on the Hocking Valley railroad. It was anticipated to have this plant in operation early in May. The works will have a capacity of 125,000 brick per day, which is to be increased as rapidly as possible until the capacity has reached

500,000 daily. Over 47 car loads of machinery are to be installed in this plant.

Five potteries, one porcelain plant, one door knob factory and potters' supply works, were badly damaged at East Liverpool, Ohio, during the great flood in the Ohio river in March. The manufacturers are just recovering and shipments were delayed from two to four weeks. The loss to the plants in damage and wages to workmen amounts to nearly \$100,000.

The proposition to remove the business of the East End Porcelain Company to Ford City, Pa., to occupy the plant of the old Ford City Pottery, has been given up, and the work of rebuilding the plant here which was recently destroyed by fire, is progressing rapidly.

The property of the Acme Pottery Co., at Crooksville, Ohio, which was recently sold by the stockholders to satisfy claims for \$42,000, will likely be operated as a stoneware pottery. The stockholders—most all of whom are stoneware people—will not confine the operation to a general ware property.

At a meeting of the stockholders of the East Palestine (Ohio) Pottery Company, the following directors have been elected: W. C. Chamberlain, W. C. Wallace, W. S. George, Thomas Atchinson and R. N. Chamberlain.

The Donley Brick Co., at Washington, Pa., in a statement just issued, shows where it marketed 3,500,000 brick last season. A recent addition to the production of the firm is a new chimney block.

The Brighton Pottery Company, at Zanesville, Ohio, has been reorganized and it is possible the plant will be enlarged at an early date. New life and additional capital is to be installed in the business.

Operations will soon be resumed at the plant of the South Zanesville Sewer Pipe and Brick Company. A factory which was destroyed by fire some time ago has been rebuilt. The buildings are of concrete and steel construction and the firm has a capacity of 21 kilns. Only brick is manufactured.

East Liverpool, Ohio, April 10, 1907.

O. MEGA.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

FOR SALE—One Freese Rotating Automatic Side Cutter, with 20 ft. separating table. First-class condition.

LUDOWICI-CELADON COMPANY,
4 1 1 514 Cuyahoga Bldg., Cleveland, O.

FOR SALE CHEAP—Two sets screen plates, with 1/2-inch openings for American Clay Machinery Co's 5-ft. dry pan. Address,

O. W. KETCHAM TERRA COTTA WORKS,
4 1 d Crum Lynn, Pa.

WANTED—A first-class pressed brick setter for the Pacific coast. State experience and wages expected.

THE RICHARDSON-LOVEJOY ENGINEERING CO., Columbus, Ohio.
4 1 1

WANTED—To consolidate old established business, making fire clay specialties, located in the East, with manufacturer of general fire clay shapes, desiring to expand. A good, profitable line, covering the finer grades of clay work for extreme heat. Goods have established reputation for quality and ability to withstand sudden changes of temperature. No extensive outlay of cash required. Address,
4 1 cm H. A. P., care Clay-Worker.

FOR SALE.

Brickyard site, 12 acres; good shale; 12-room house; railroad siding, machinery, etc. Address PENNA,
4 1 d Care Clay-Worker.

FOR SALE.

Two complete sets brickmaking machinery, including Chambers brick machines, elevators, clay rolls, granulators, hoists, etc. Address ILLINOIS BRICK CO.,
3 3 c Chicago, Ill.

WANTED—Copies of Davis's Bricks, Tiles and Terra Cotta. Good price will be paid if same is in a good, presentable condition and free from mutilation. Address

APPRENTICE,
10 1 L Care Clay-Worker.

MANUFACTURERS of Portland Cement and Sand-Lime Brick, also Potters and other Clay Workers will find at Warsaw, Hancock County, Illinois, the location they most desire. It will pay to investigate. Call on or address Dr. J. EATON JOHNSTON, Sec'y Warsaw Improvement Association, P. O. Lock Box No 41.
4 1 dm Warsaw, Ill.

FOR SALE OR RENT.

Brick yard in Northern Wisconsin for sale or rent, or will share profits with thoroughly reliable man, who will take entire charge of business. References required. Natural market in the great copper belt. Plant turns out 50,000 per day. Good outfit and fine money maker, but owner is not a brick man and has no time to give to the business. For information apply to
C. A. N.
4 1 d Care Clay-Worker.

WANTED—Situation as manager by one who is thoroughly familiar with all details pertaining to the erection, manufacturing and marketing of either stiff mud or dry pressed brick. Can give A1 references and will expect fair compensation for services and experience. Address
3 tf d I. X. L., Care Clay-Worker.

FOR SALE.

One new double mold Eagle repress, manufactured by The American Clay Mfg. Co., of Bucyrus, Ohio. This machine has never been belted and will be sold at a right price. Address,
THE WADSWORTH BRICK & TILE CO.
3 2 d Wadsworth, Ohio

FOR SALE CHEAP.

3,600 steel pallets for Martin dryer, 10x34 inches, used two months.

One Monarch brick machine, used a short time.

Three sets Chambers kilns, grates and doors for Dutch kiln. Used once.

One 4x12-ft. tubular steam boiler.

One hoisting drum and cable. Apply to

SPRING CITY BRICK CO.,
4 1 d 118 E. Main St., Norristown, Pa.

FOR SALE.

A complete brick and tile manufacturing outfit, consisting of one 80 h. p. tubular boiler, one 60 h. p. engine, one Canton Duplex pump, one 7-ft. dry pan (Bonnot make), one Centennial brick and tile machine, and one pug mill, line shafting, pulleys, belting, elevators, trucks, etc. The above equipment was installed about five years ago, and is in first-class condition, and will be sold at a bargain, as the ground has been purchased by an adjoining large manufacturing firm, who require the room to build additions to their plant, so this entire equipment must be sold at once. For further information inquire of
JOHN AULD'S SONS,
4 1 dm Alliance, Ohio.

FOR SALE—Two Eagle represses. Never been used. Price, \$500 each, f. o. b. St. Louis. Address NO. 333, 4 tf d Care Clay-Worker.

WANTED—Competent superintendent for paving brick plant on Pacific slope. Address, stating experience and giving references, WESTERN, 4 1 d Care Clay-Worker.

WANTED—A head brick setter for face brick plant in Oregon. Steady employment. Wages, \$3.50 per day. Pleasant surroundings. Address, RICHARDSON-LOVEJOY ENGINEERING CO., Columbus, Ohio. 4 1 c

FOR SALE—60 acres fire clay; four veins, 5 to 8-ft. Territory drilled, clay tested, proven very best. Can furnish sample brick. Abutting Pennsylvania railway. Also coal and limestone on farm. Splendid location for plant. W. J. MYERS, 4 1 cm R. F. D. No. 2, Massillon, Ohio.

FOR SALE.

One combination Freese brick machine, capacity 20 to 30,000 per day. Hand cutting table and winding drum. Excellent condition and only run four months. Good reasons for selling. Address, DAY, 4 2 L Care Clay-Worker.

CAPITAL WANTED—An established architectural terra cotta and fire brick plant on the Pacific coast, with large contracts on hand, want \$5,000 additional capital to enlarge its plant and double its capacity. A No. 1 proposition. For further information address PACIFIC, 4 1 d Care Clay-Worker.

FOR SALE—Big Six Monarch soft mud machine, molds, sand dryer, turn table, sander, trucks, 40 h. p. boiler, 35 h. p. engine, Atlas, nearly new. Must sell. Address, STONE, 4 1 cm Care Clay-Worker.

FOR SALE—One No. 80 Brewer board delivery cutting table with attachments for cutting two thicknesses of brick. First class condition, used only three days.

BESLEY BRICK COMPANY, 3 2 d Council Bluffs, Iowa.

FOR SALE CHEAP.

One Henry Martin letter A brick machine and pug mill, complete and in good condition. One 50 h. p. boiler. 40,000 lath pallets, 10 by 33, also standards for same. Standard 2 by 4 inches by 6 feet, pine, with a 2 by 4 by 24 inch foot piece, 10 one inch pins. Cheap for cash, f. o. b. Cleveland, Ohio. Address,

JOHN WILSON, 23 Stillson st., 3 tf d Cleveland, Ohio.

FOR SALE.

One 4-mold '97 Model Boyd brick press, complete.

One 8 wet pan, complete.

One 9 iron frame dry pan, complete.

One No. 4 Monarch brick machine.

One 9 Fire brick press with extra plate and molds for same, also molds, dump table, trucks, belting, shafting, pulleys, anvils, forge, carpenters tools, etc. Used very little. Will sell at great bargain. W. W. RUSSELL, Trustee, 3 2 cm Fort Payne, Ala.

FOR SALE—Eight thousand new all steel 9 foot pallets, 34x10 inches. In good order. Can be had at a bargain. Address THE CLEVELAND CAR CO., 1 tf L West Park, Ohio.

FOR SALE—Cheap. 7,500 wood pallets in good condition; white pine; size 35 in. by 10 in. by 7/8 in, with foot 3 1/2 in. high. Address SUBURBAN BRICK CO., 2 tf d Wheeling, W. Va.

WANTED—CLAY SELLER.

WANTED—Man familiar with clay business, especially the selling end, who knows where to find market for ground clay. Address, THE COLUMBUS & HOCKING CLAY CONSTRUCTION CO., Harrison Bldg., Columbus, Ohio. 3 3 cm

FOR SALE OR LEASE.

Complete stiff mud brick plant, located between Waterloo and Cedar Falls. R. R. switch to kilns and coal bin. Four Stewart's down draft kilns, American Clay Machinery Co's brick machine, four faced side cut automatic machine, Phillips steam dryer. The clay car runs direct to clay pit. Abundance of good clay. Good 140 h. p. Corliss engine and 40 h. p. engine. Cars, trucks and tools. Demand for all output at good prices. Exceptional opportunity for good practical brick man. Address WATERLOO AND CEDAR FALLS BRICK CO., Cedar Falls, Iowa. 4 3 c

FOR SALE.

SECOND HAND MACHINERY.

PUMPS.

One 20x6x18 "Hughes" duplex outside end packed plunger pump, pot valves.

One 16x8x18 outside end packed plunger pump, brass valves, for heavy press.

One 12x8 1/2x12 "Snider-Hughes" duplex pump, inside packed pistons.

One 8x6x10 "Smith-Vaile" duplex pump.

AIR COMPRESSORS.

One 10x10x12 "Guild & Garrison" horizontal duplex, steam driven.

One 8x8 vertical, steam driven.

One 13x8x12 vertical compound, belt driven.

GAS ENGINES.

One 50 h. p. "Olds" gas or gasoline.

One 50 h. p. "Fairbanks-Morse" gas or gasoline.

One 15 h. p. "Miami," gas.

One 20 h. p. "Ohio," gas.

One 5 h. p., gas or gasoline.

CONDENSERS.

One 7x9x10 "Dean Brothers," jet condenser.

One 10x14x18 "Laidlaw-Dunn-Gordon" condenser.

BOILERS.

One 66 inches by 16 feet, standard horizontal tube.

One 54 inches by 16 feet, standard horizontal tube.

Two 60 inches by 16 feet, standard horizontal tube.

Three 72 inches by 16 feet, standard horizontal tube.

Two 72 inches by 18 feet, standard horizontal tube.

One 105 h. p. "Wickes" horizontal water tube.

ENGINES.

One 18x26x42 heavy duty, tandem compound, Allis-Chalmers corliss.

One 16x24 "Atlas," R. H., plain S-V.

One 12x20 "Mansfield," R. H., plain S-V.

One 12x20 "Columbus," R. H., plain S-V.

One 10x16 box bed, plain S-V.

One 16x32 "Buckeye," R. H. automatic.

One 14x20 "Atlas," L. H. automatic.

One 10x18x12 "Erie-Ball," Ver. Cross Com. Aut.

Two 9x15x9 "Westinghouse," Com. Ver. Aut.

One 8x7 "Westinghouse," Aut. Ver.

HEATERS.

One 300 h. p. Ver., closed.

One 250 h. p. Hor. closed.

One "Rice" heater and B. F. pump, combined.

Also other sizes than given in list, if wanted.

Prices and description on application. C. C. WORMER MACHINERY CO., 77 Woodbridge St., W., Detroit, Mich. 3 3 d

Philadelphia LINK-BELT COMPANY Indianapolis

New York St. Louis Chicago Denver Pittsburgh

CONVEYING & POWER-TRANSMITTING MACHINERY

Converted to Leviathanism.

"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

"Thanking you for your courteous dealing, and assuring you of our patronage for anything in your line we may need in the future, we beg to remain,

"Yours very respectfully,

"Signed: VALLEY BRICK & TILE CO."



Send for "FACTS."

MAIN BELTING COMPANY,

CHICAGO—55-57 Market St.

BOSTON—140 Pearl St.

PHILADELPHIA—1215-1245 Carpenter St.

BUFFALO—40 Pearl St.

NEW YORK—309 Broadway.

WANTED, FOR SALE, ETC.

WANTED—Position by an experienced middle aged married man, now employed, as general sales agent or manager of brick plant. Full of energy and good character. Address, SOL, 3 3 cm Care Clay-Worker.

FOR SALE—One Wellington No. 2 disintegrator, price \$100. One Wellington 16 ft. clay elevator, 12-inch belt, price, \$50. One Carnell's all iron clay tempering wheel, price, \$50. Address, 3 tf d MAC, Care Clay-Worker.

WANTED—First class clay molder and finisher with experience in the manufacture of acid pipes, condensing jars, etc. To work by the piece. Can earn from \$20 to \$30 per week. Address, "PACIFIC COAST," 3 2 d Care Clay-Worker.

FOR SALE—Only brickyard in rapidly growing city of 12,000, common brick selling for \$12.00. Demand enormous, great possibilities for this plant. Will easily pay for itself this season. Price \$4,500 to quick buyer. T. H. McMICHAEL, 3 tf d Lewistown, Pa.

FOR SALE—Brick and tile plant doing excellent business in a live town. Make and sell two million brick and tile annually. Everything in first class running order. Splendid proposition. Plant built 3 years ago. Reason for selling, to close partnership. No triflers or traders need apply. Address, OAKES BROS., 3 3 cm Iowa City, Iowa.

FOR SALE.

We offer at a sacrifice the following Boyd presses: One 3 mold standard 1891 pattern; two 4 mold standard 1897 pattern. All in good condition. Inspection invited. Immediate shipment. HARBISON-WALKER REFRACTORIES COMPANY, Farmers Bank Bldg., 3 4 c Pittsburg, Pa.

FOR SALE.

A practically new outfit. Martin Letter B Brick Machine. Martin 9 Ft. Pug Mill. Martin elevator with belt. Martin Brick Barrows (six.) Martin double deck trucks (three.) Kiln grates, doors, 10,000 pallet boards. A complete outfit. Been used but three months. Good, desirable property, in excellent condition, but must be sold at once at some price. SIRENO F. ADAMS, Attorney, 3 3 cm Dansville, N. Y.

FOR SALE.

One size 4 Chambers Bros. stiff mud Complete 25,000 per day Brick Plant. brick machine with automatic end cutter. Cost \$1,500; used 60 days. One 80 h. p. Atlas horizontal boiler. One 50 h. p. Atlas automatic, high speed engine. One pug mill, clay crusher, belts, shafting, pulleys and everything ready to go to work. This machinery was located where there was very little clay and now there is none. Sell for less than one-half its cost. Address B. 4 1 d Care Clay-Worker.

COX'S Special Drawn Coil Wire is

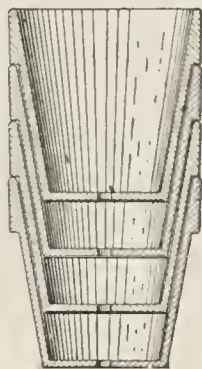
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

For End-Cut, Side-Cut and Automatic Tables.

GEO. S. COX, East Liverpool, Ohio.

Satisfaction guaranteed. Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots;	3,500 five-inch Pots;
4,000 four-inch "	2,000 seven-inch "

Write for Circular and prices.



The Rockwood Mfg. Co.,

1801 English Ave.

INDIANAPOLIS, IND.

The Kiln of Kilns is the "IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

For full particulars please apply to

J. OSMAN & CO., Ltd.,

Cable Address: Dampening, London.

Arundel St., Strand, London, W. C.

THE WEBB WIRE WORKS

MANUFACTURERS OF

MUSIC WIRE

NEEDLE WIRE

NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE CUTTING WIRE, drawn especially to withstand abrasion.

Send for prices of wire in coils.



CANADIAN TRADE. Wooden Brick Pallets.

WRITE US

BARCHARD & Co., Limited,

135-151 Duke St., TORONTO, CANADA.

BOOKS FOR BRICKMAKERS

"CLAY GLAZES AND ENAMELS," H. R. Griffen.....	\$5.00
"BRICKMAKERS' MANUAL," Morrison and Reep.....	3.00
"CLAYWORKERS' HANDBOOK," by Author of Chemistry of Clay- working	2.00
"CLAYS," Heinrich Ries.....	5.00
"TABLES OF ANALYSES OF CLAYS," Alfred Crossley.....	1.00
"VITRIFIED PAVING BRICK," H. A. Wheeler, E. M.....	1.00
"PRACTICAL FARM DRAINAGE," C. G. Elliott.....	1.00

Mailed, postage free,
on receipt of price,

T. A. RANDALL & CO., Publishers, Indianapolis, Ind.

Warwood Kiln Co.

SEMI-CONTINUOUS, ROUND AND SQUARE DOWN-DRAFT KILNS
MUFFLE KILNS and
DIRECT AND WASTE HEAT DRYERS.

Warwood's Semi-Continuous Kiln, the cheapest, simplest and most effective first-class kiln on the market. It combines all the advantages of the best type of single down-draft kilns with the fuel saving features of the continuous kilns.

It can be built either round or square and each kiln can be used individual or continuous, as desired.

Your present kiln, now constructed, can be easily and cheaply changed to Warwood's Semi-Continuous System, and in most cases your own style of kiln bottom can be used, and without any perceptible difference to its working features.

Warwood's Semi-Continuous System can be successfully applied to all kilns for burning all grades of Brick, Sewer Pipe or Fireproofing. In fact, anywhere a single down-draft kiln is now used.

In a correctly weighed test in a 100,000 capacity round down-draft kiln, we have burned all hard brick with 300 lbs. of coal per M, a saving of more than 60% of the fuel formerly used, and will guarantee to burn 95% hard brick.

Warwood's Kiln will burn any kind of fuel that any ordinary down-draft kiln, either coal, oil or gas. Address:

WARWOOD KILN CO.,

Southern Address,
Augusta, Ga.

BEAVER FALLS, PA.

We Manufacture

These Buckets

In All Styles, Sizes and Gauges.

Orders Shipped Promptly.

**COLD ROLLED
SPIRAL STEEL CONVEYOR.**



We Also Make Shafting,
Pulleys, Friction Clutches,
Sprocket Wheels, etc.

WEARS BEST, Costs No More.
WE MAKE this Conveyor in All Styles
and Gauges.

SKILLIN & RICHARDS MFG. CO., CHICAGO.

SALEM BUCKETS



FOR SALE—One Lion brick machine. In good condltion.

PROGRESS PRESS BRICK AND MACH.
CO., St. Louis, Mo.
3 2 c

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States.

WESTERN CLAY DEVELOPMENT CO.,
Van Meter, Iowa.

ATTENTION!

Steam Shovels, Cars, Locomotives of all kinds and Rails.

Give us your requirements.

THE MALES CO.,

26 Cortlandt St., New York, N. Y.
1508 First Nat'l Bank Bldg., Cincinnati, O.

FOR SALE.

One Chambers end-cut brick machine and pug mill, line shaft, pulleys and boxes, capacity 30,000 brick per day; also six steel trucks and pallets and covers to hold 400,000 brick. This machinery is as good as new, having been run one season only. It is being taken out to install a plant of 100,000 per day, on account of increased demand. Address

THE ALTAMAHA BRICK & TILE CO.,
4 tf d Theo, Ga.

FOR SALE—BRICK MACHINERY.

One 999 Raymond brick machine.

One Raymond automatic cutting table.

58-ft. carrier belt, 112 wood rollers, pulleys, etc.

Three Victor represses, each fitted with three set of dies.

One 10-ft. Raymond pug mill, complete.

We have discontinued the manufacture of paving brick and offer these machines at attractive prices. Address,

ROBINSON CLAY PRODUCT CO.,
3 3 c Akron, Ohio.

ENGINES AND BOILERS.

Engines, 12x36, 16x42, 18x36 and 20x48, Corliss; also, 40 other sizes; all styles in stock.

Boilers, 84x18, 78x16, 72x18, tubular; also, 60 other sizes; all styles in stock.

Let us know what you need and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.,
1735 Powers St., Cincinnati, Ohio.
1 tf d

DRY PRESS BRICK MACHINERY

New or Second-Hand.

Correspondence solicited.

H. S. SIMPSON,

817 Chamber of Commerce,
CHICAGO, ILL.

[Continued on next page.]

WANTED, FOR SALE, ETC.

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND
CONTRACTING COMPANY,
1 tf d Zanesville, Ohio.

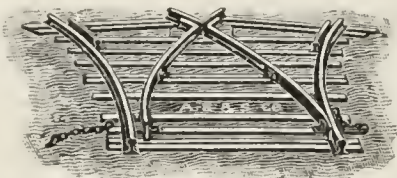
WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH, 5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE CHEAP.

One iron horsepower soft clay machine.
One steam power soft clay machine.
One hand repress.
One disintegrator.
One second-hand sand grinder and sifter.
One 4-mold Boyd Dry Press, never used.
One 250 horsepower heater.
About 500 feet of one-inch wire cable, never used, one-fourth price.
Second-hand dryer cars for sale cheap.
All in first-class condition.

1 tf L THE HORTON MFG. CO.,
Palmsville, Ohio.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

7 tf d THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

(See additional ads under Table of Contents.)

The Department of
Clayworking and Ceramics

Established by the Legislature
in 1902 at the

New Jersey State College,

RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

C. W. PARMELEE, B. Sc., Director.
W. H. S. DEMAREST, D.D., Acting President.

OHIO STATE UNIVERSITY

Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture. Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

For information or catalogue address,
Prof. EDWARD ORTON, JR.,
Department of Ceramics.
DR. W. O. THOMSON, President.
Columbus, Ohio.

The Wonder of the Age, Grateless Furnace (Patented.)



For up draft clamp kilns, and down-draft kilns remodeled.

Also plans for new kilns furnished. Yard rights for sale.

Write for particulars to

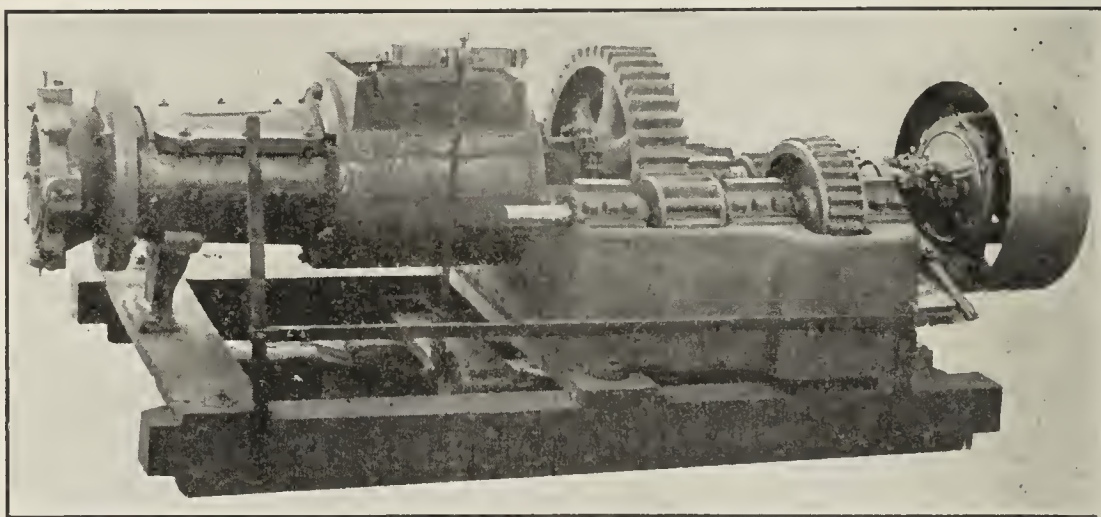
F. E. SWIFT,

514 West Fourth St., Dayton, Ohio.

MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers of Brick and Tile Machines.



No. 5 Auger Tile and Brick Machine with our New Endless Belt Cut-off Table, which has no equal for handling tile of all sizes from 3 to 12-inch. This table has carriers which move with the tile, and can be readily and perfectly adjusted to any size tile.

Our Upright Tile Machines are unequaled for large tile, 10 to 24-inch. These machines are all sold on their merits, and warranted to do first-class work. We also manufacture Soft and Stiff Mud Brick Machines.

Full line of Tile and Brickyard Supplies kept constantly on hand. Get our prices.

MADDEN & CO., Rushville, Ind.

[See ads on pages 742 and 743.]

PHILLIPS & McLAREN CO.

PITTSBURG, PA.

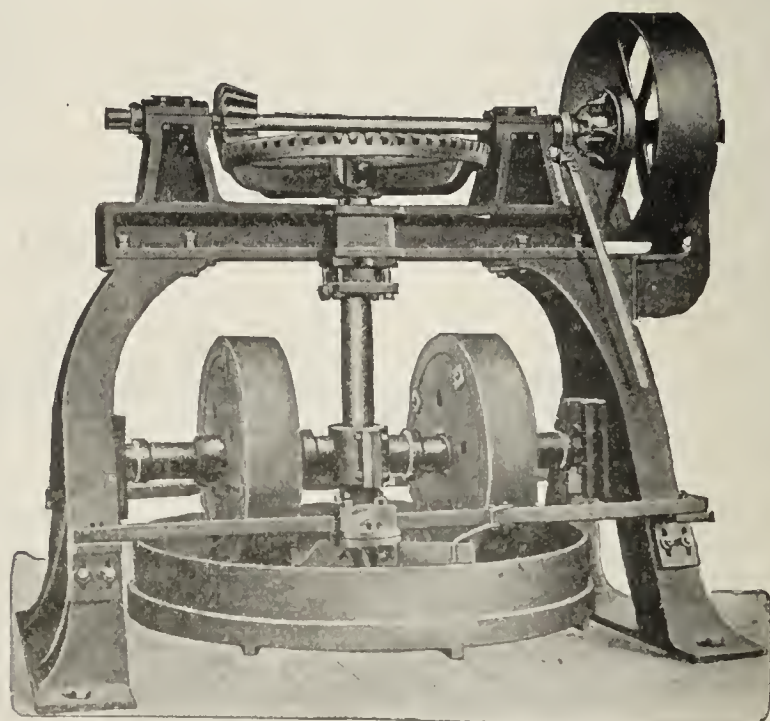
Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.

Also
Rock and Ore Crushers.

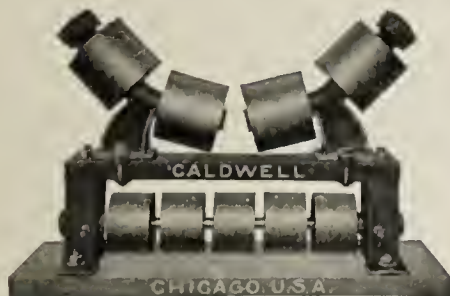
When writing for Prices state
kind of Clay or Material to be
ground and capacity required.

Eastern Sales Agents
BORTON & TIERNEY CO.,

Stephen Girard Bldg.
Philadelphia, Pa.



Improved Belt Conveyors



For carrying all kinds of material, gritty and otherwise. Gradual, uniform curve of belt secured without complicated parts.

Bearings thoroughly lubricated and *dust-proof*. Economy and satisfaction—nothing to get out of order.

We manufacture Complete Handling Equipments.

H. W. Caldwell & Son Co.

Western Ave., 17th-18th Sts., CHICAGO.

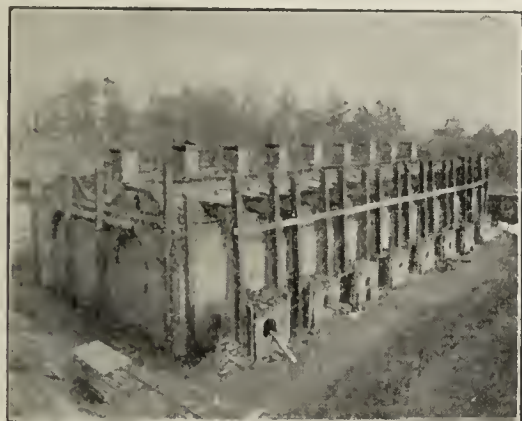
95 Liberty St., New York. Woodward, Wight & Co., Ltd., New Orleans, La.

Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air Brick Dryers show many new features that make them superior to all others.

Economical, durable and strong in construction and operation, having many points of advantage that appeal to practical brickmakers.



Double Up and Down Draft Kiln.

THE FULTON BRICK WORKS.

Richmond, Va., March 29, 1907.

Mr. F. W. Dennis, Norfolk, Va.:

Dear Sir—We are now preparing to build another Dennis Kiln. Kindly send us by return mail your latest prints, showing the furnaces at the corners of the kiln and the updraft holes in the ends.

We are getting fine burns; absolutely all hard.

Yours very truly,

FULTON BRICK WORKS.

W. J. Parrish, Prop.

Wood burning kilns changed to coal burning. Brick plants installed and put in operation. Write for booklet Correspondence solicited.

F. W. DENNIS,

145 Water Street, Norfolk, Va.

MANGANESE

FOR ALL USES.

LUMP, GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS GOODS A SPECIALTY.

SAMPLES AND PRICES ON INQUIRY.

KENDALL & FLICK

WASHINGTON, D.C.

C. K. WILLIAMS & CO.,

EASTON, PA.

Largest Manufacturers in
United States of

Brick and Mortar

COLORING.

Correspondence solicited.

Samples and estimates cheerfully furnished
on application.

GABRIEL & SCHALL

P. O. Box 1712.

205 Pearl Street.

NEW YORK.

Sole Importers in the United States of the

Precipitated



Carbonate
of Barites

The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

Chattanooga Paint Co.,

Chattanooga, Tenn.

Manufacturers of

**Red Oxides for Brick-
makers' Use.**

**Eclipse
Mortar Colors,**

Red, Brown, Buff, Black.

Do You Want
EXPERIENCED HELP?
See Clay-Worker
Want Ads.

THE PIONEER. Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-working industry for the past thirty years.

It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

**The Kells Foundry and Machine Co.
ADRIAN, MICH.**

Mention the CLAY-WORKER

When writing to Advertisers.

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," \$1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

T. A. RANDALL & CO.,
Indianapolis, Ind.

ATTENTION.

Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

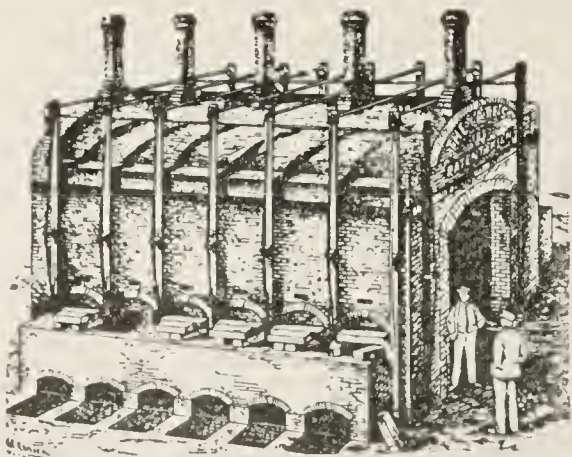
Do you want to buy a

Good Clay Screen?

If So

Correspond with

Stedman's Foundry & Mach. Works
Aurora, Ind.



For Economy of Fuel and Percentage of Hard Burned Brick,

This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

ALFRED YATES,
SHAWMUT, PA.

Or Eastern Terra Cotta, Brick and Tile Co.,
423 Old South Bldg., Boston, Mass.

White Pine Pallets

**For Brick, Roofing Tile,
And Sewer Pipe Boards.**

The Best Are the Cheapest.

Send Specifications and Get Prices.

Mershon, Schuette, Parker & Co.,
Saginaw, Mich.



FLORIDA NEW ORLEANS AND CUBA

REACHED VIA

QUEEN & CRESCENT ROUTE

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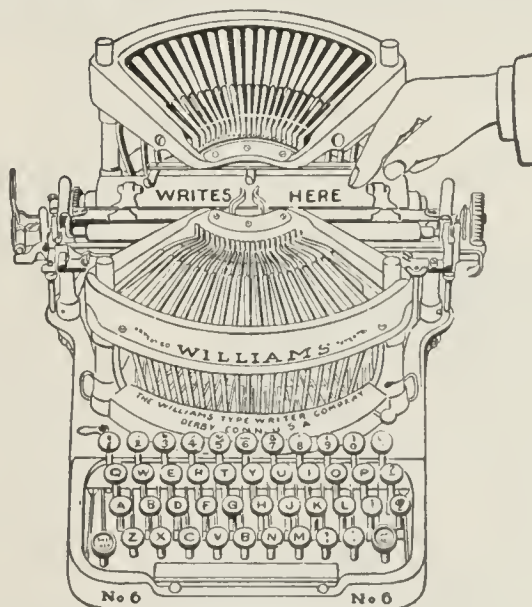


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If you intend to build or rebuild your brick plant acquaint yourself with the

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That's just the thing you need to get prosperous.
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THE secret of **successful burning** of any clay product lies in the **right application of heat**. To apply heat **where it is needed** it is obvious that **draft control is necessary**.

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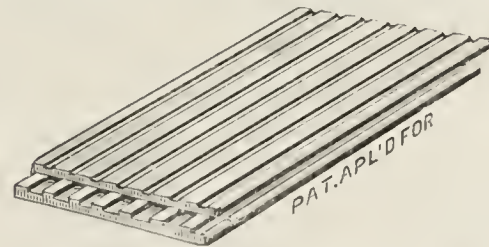
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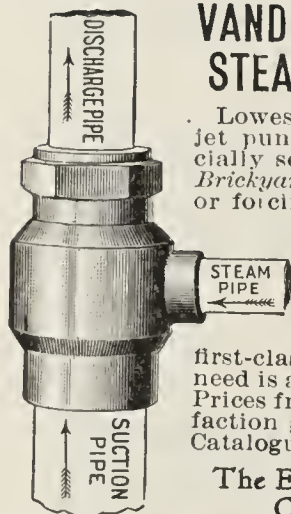
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Sanitary Earthenware. All kinds of Fire Clay Products.

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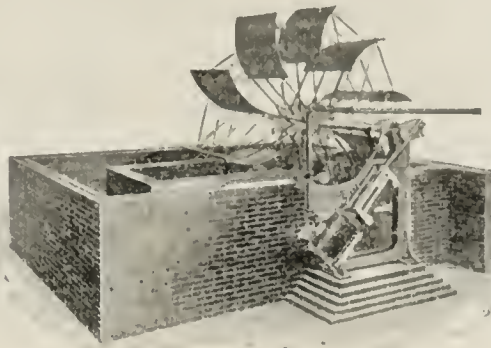
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ONE YEAR, (IN ADVANCE)

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Purposes, and for mines, with long, heavy shafts and two or more journals. No wobbly shafts, and no overhung fan wheels. Just plain fan wheels. Large volume at moderate pressure. Experience of more than twenty-five years. Orders come spontaneously and as liberally as ever. Voluntary testimonials from users everywhere.

Waste Heat Fans, acknowledged by users to be superior to others working side by side.

Cheap and substantial construction. Original Flexible Braces. Air Cooled Ring Oiler Boxes. Moderate Speed. Brick fan house, most durable of all construction. An efficient Cooler made integral with the machine. Lower price owing to cheaper and better mode of construction. Extensively used.



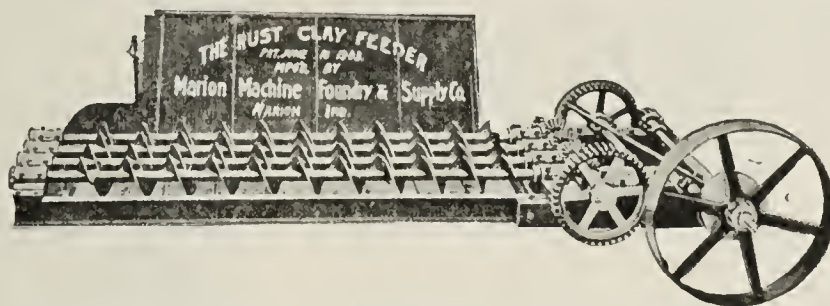
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Manufacturers of Hoisting and Hauling Engines, Ventilating Fans for Mines, Waste Heat Fans for Clay Plants, Roofing Tile Presses, etc.

A New Clay Feeder and Mixer.

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H. W. Cosby, Supt. and Gen'l Manager.

South Boston, Va., Jan. 19, 1907.

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Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men, besides doing the work BETTER and with REGULARITY.

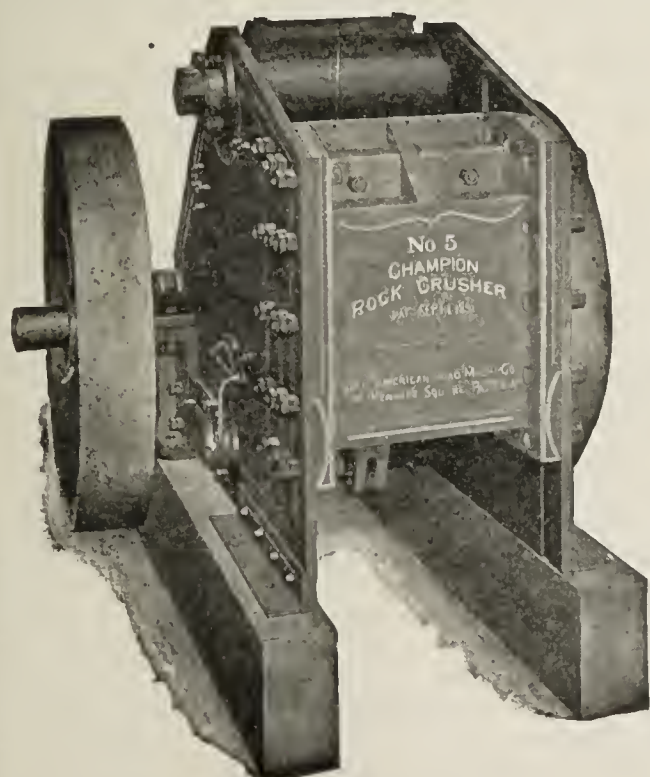
The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

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Yours truly,
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It Looks Better

crushing shale, fire clay, rock and other hard material.

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Splendid stories, beautiful illustrations and important feature articles characterize every issue. Men and women of authority and experience are in charge of the many departments, which include

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These departments cover every avenue of appeal to the home-builder, the home-maker and the home-lover.

All departments are lavishly illustrated with drawings and photographs. Among the famous artists whose work is to be found in THE HOME MAGAZINE are Howard Chandler Christy, Harrison Fisher, George Brehm, A. I. Keller, Worth Brehm, John Cecil Clay, etc.

In the April number of THE HOME MAGAZINE will appear the first installment of a new novel by Francis Lynde, author of The Grafters. The new novel is entitled

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“POST” SELF FILLING CLEANING FOUNTAIN PEN.



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NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

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The CLAY-WORKER, INDIANAPOLIS, INDIANA.



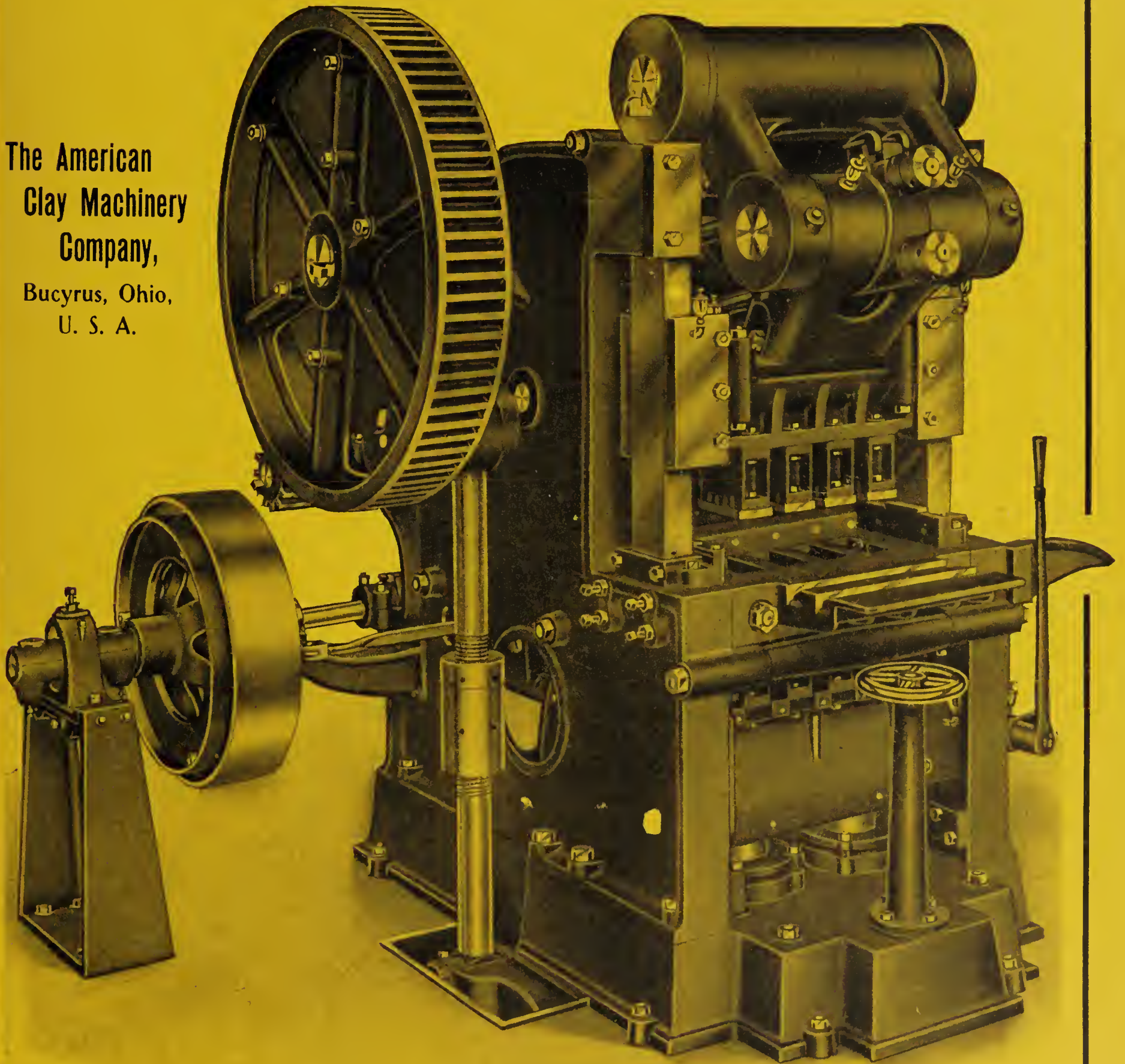
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The American
Clay Machinery
Company,
Bucyrus, Ohio,
U. S. A.

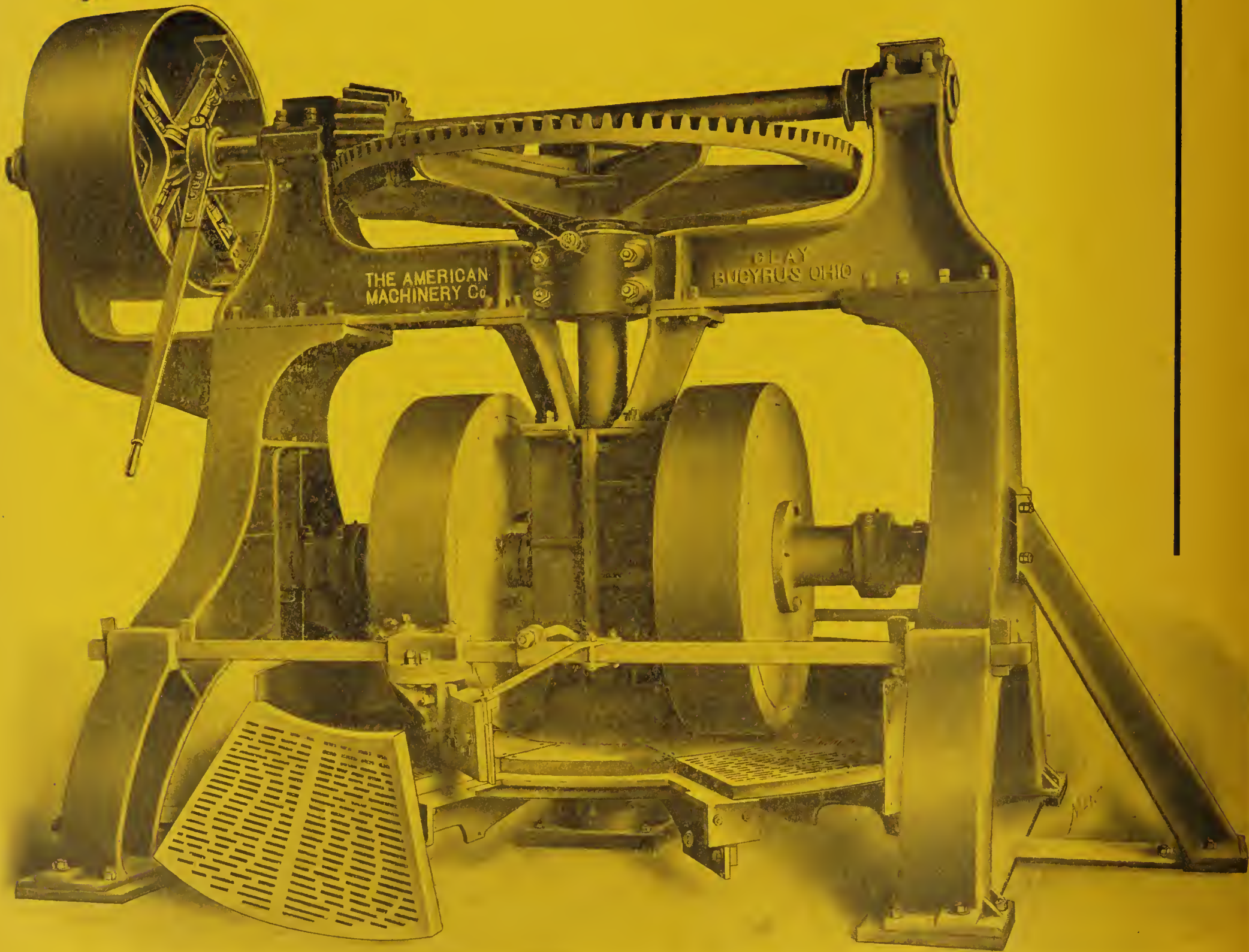


Model "B" Dry Press Brick Machine.



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There is no line of Dry and Wet Pans anywhere that will compare with the American line in extent or quality. These pans are most carefully built upon approved lines. The best of material and the most careful workmanship are a part of their quality insuring construction. Every size and capacity wanted. Write for particulars.



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The American Clay Machinery Co.,
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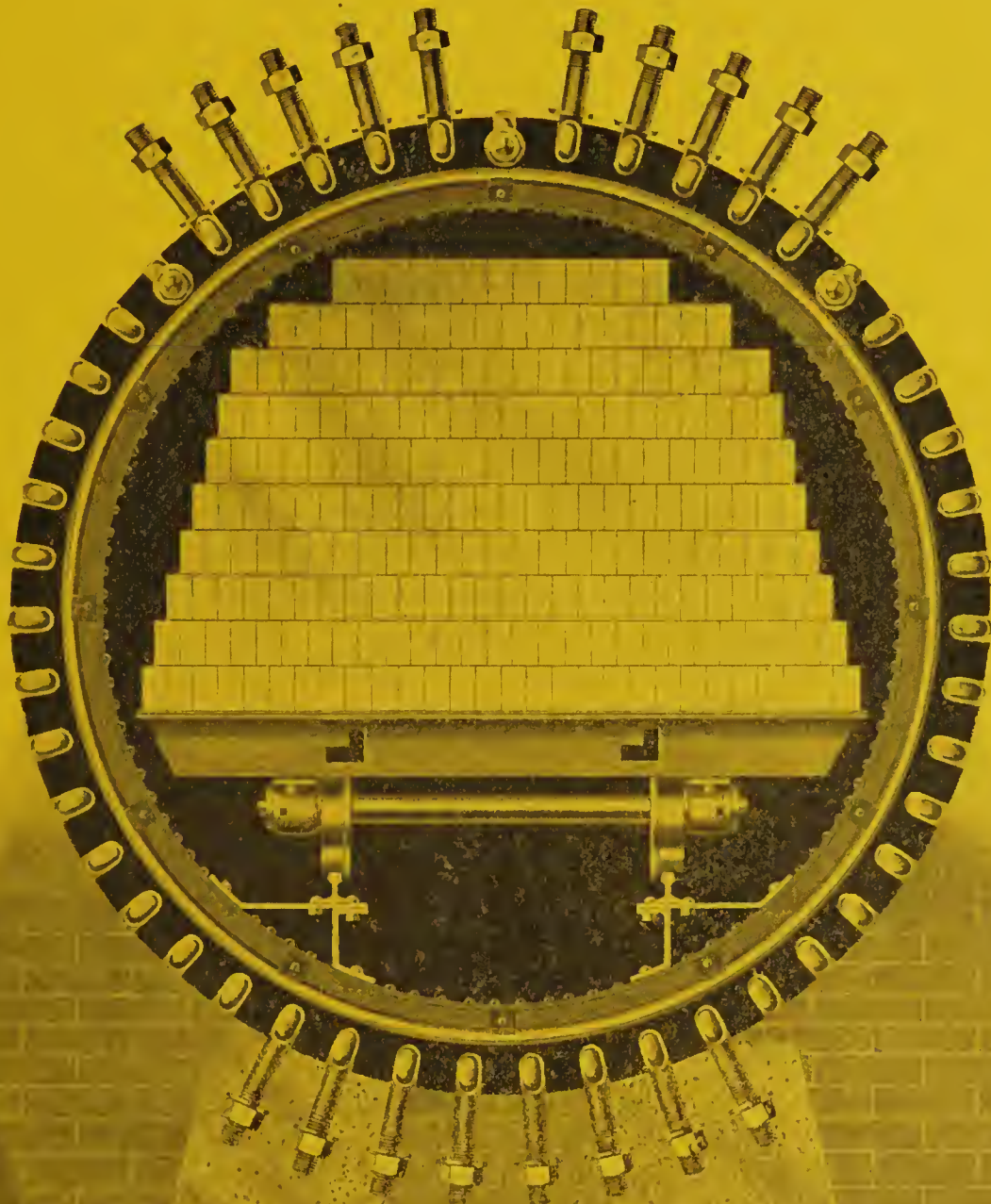
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As builders of machinery for the manufacture of brick by every known process, we have placed upon the market a complete line of Sand-Lime Brick Machinery and appliances. There is no line of machinery so complete for making this class of brick. We have every machine or appliance necessary and equip the entire plant from our own factory. Every machine is substantially and carefully built of the very best material. Being constantly under the supervision of our own foremen we are able to guarantee the quality.

We also build the largest line of Clayworking Machinery and appliances in the world.



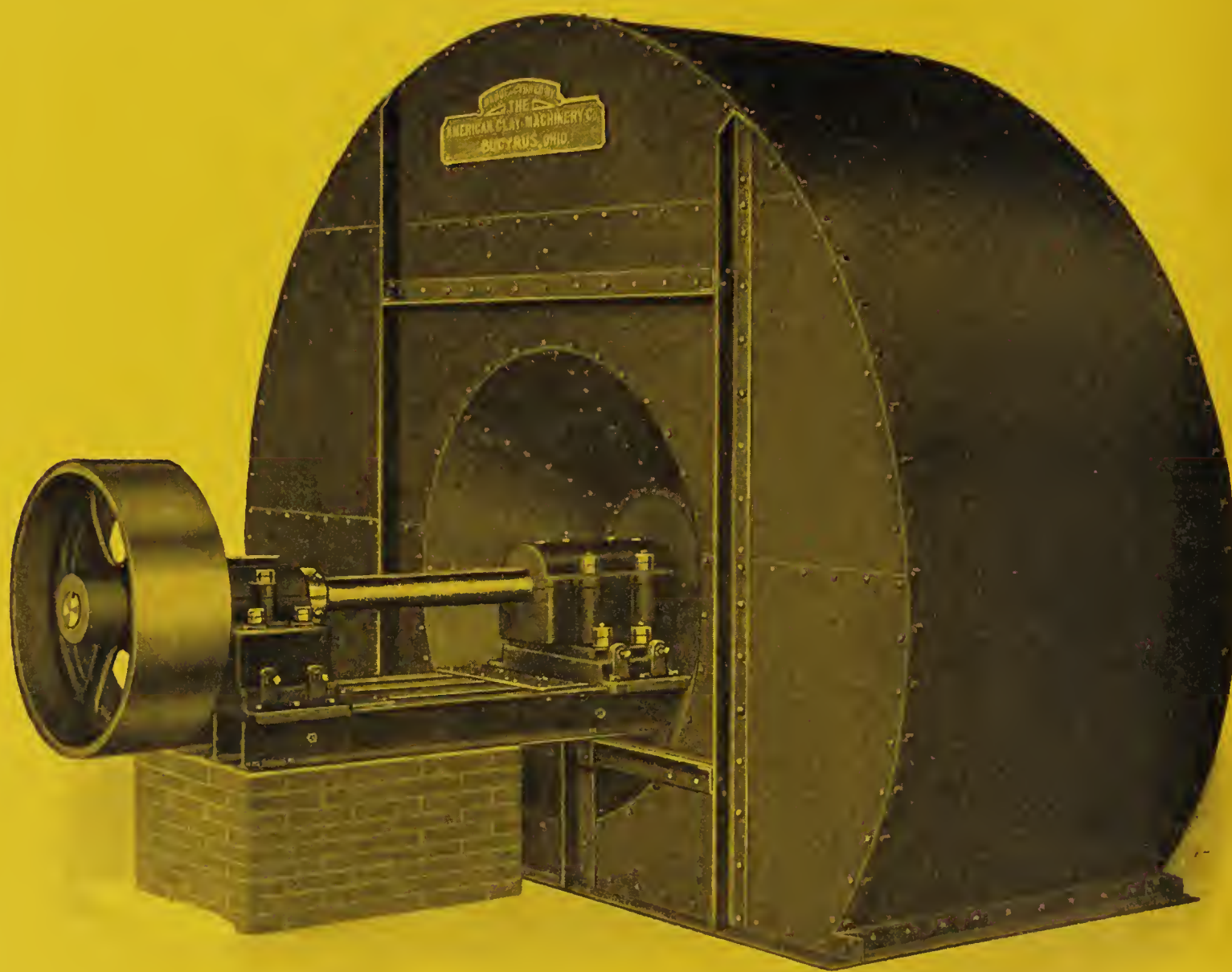
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The quality of your equipment acts as an insurance policy. Without quality in your equipment there is little chance of successful operation.

We are exacting on the point of quality. No opportunity to secure better quality is neglected. That's why we build every part of our equipment in our own factories. We watch the material, construction and workmanship with exacting care. When the equipment is complete we can guarantee it to be free from defects, poor material and workmanship, and the purchaser is assured that he has a standard of quality.



Pulley Driven Steel Plate Fan With Water Cooled Bearing.

We will be pleased to submit a Dryer Layout that will handle your clay successfully and at a marked saving in cost of drying and maintenance. We build every machine and appliance necessary for making every class of Clay Products. Also the most complete and successful line of Sand-Lime Brick Machinery.

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HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

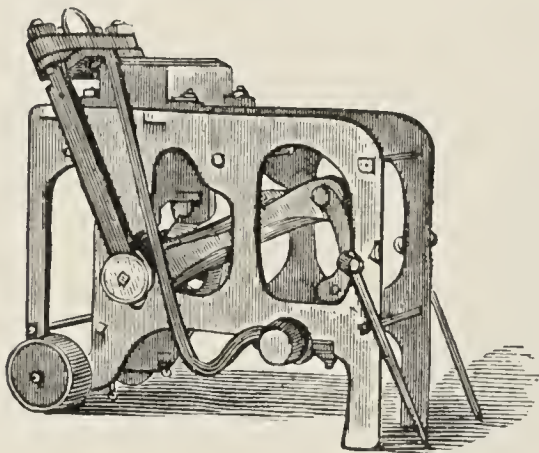
Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

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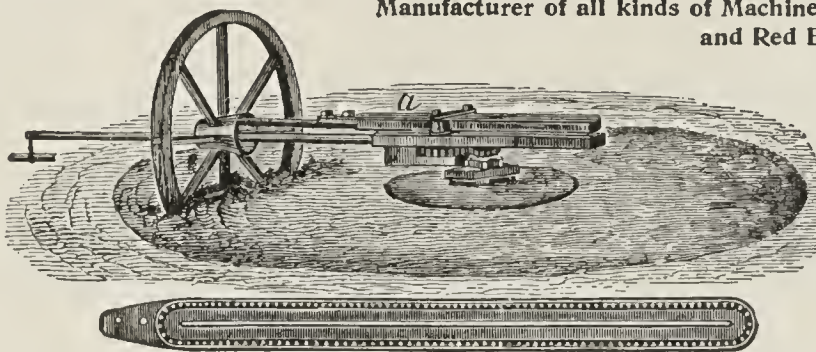


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Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

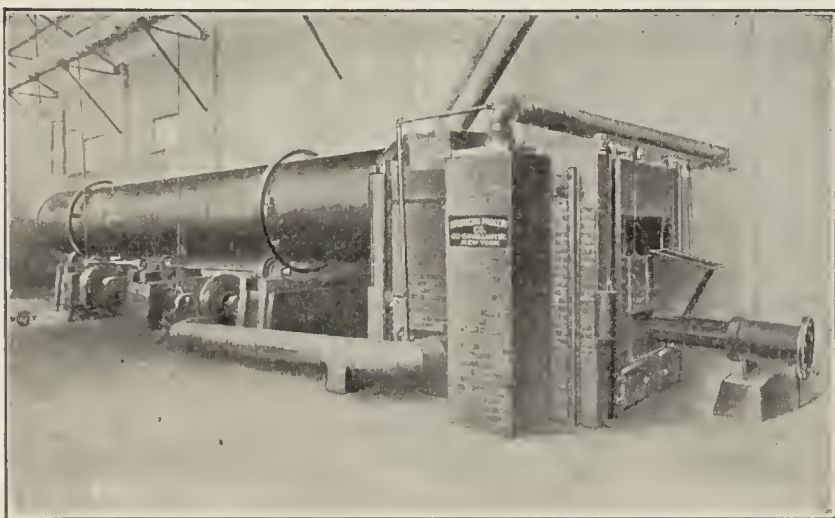
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

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GEORGE CARNELL. 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

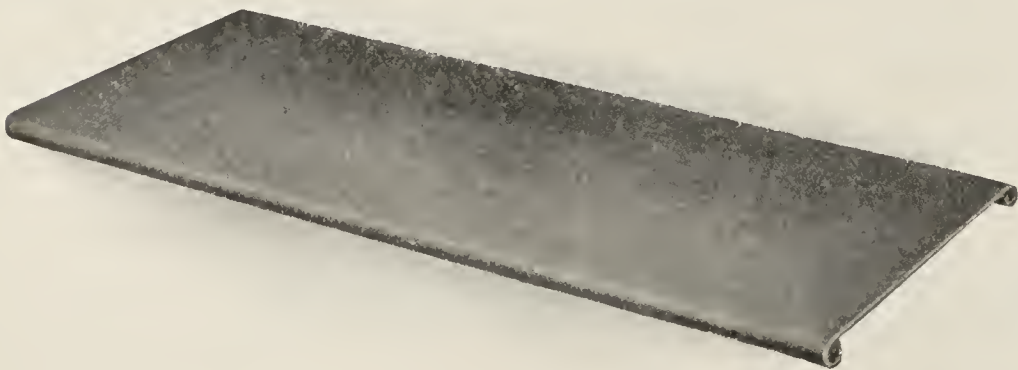
For Clay, Coal, Sand, Marl, etc.

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"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

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The spring rains will leave your clay pits full of mud and water.

A PULSOMETER STEAM PUMP

will drain them, no matter how muddy or gritty the liquid. It requires no engine, belt, oil, packing or special foundation, just a steam pipe from the boiler, and operates as well suspended as stationary. The fact that over 25,000 of them are in use is evidence of their utility. Send for catalogue at once.



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As a Preventative of Scums Use
CARBONATE OF BARYTES
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Oxide Tin,
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Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
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Unequaled facilities for prompt service from four large factories.
Catalogue and estimate furnished promptly on request.

Ludowici=Celadon Company,

General Sales Office—Chamber of Commerce Bldg., Chicago.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Bainbridge, Ga., Dec. 11, 1906.

Mr. John C. Boss, Elkhart, Ind.:

Dear Sir—Replying to your inquiry about the "BOSS SYSTEM of burning brick" will say I have used it for three years, and it gives perfect satisfaction. I could not run without it. It is a great labor and fuel saver. I have recommended it to several, and every one who has seen it at work was simply charmed with it. Wish you all the success your system deserves, and a happy Christmas and New Year.

I am yours, etc.,

L. F. PATTERSON.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

ELKHART, IND.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

An Old-Time Favorite.

Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & CO.,

P. O. Box 756.

Rome, Ga., U. S. A.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1907.

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of 5,000 each,	15,000
2 " 4 "	" 3,000 "	6,000
1 " 5 "	" 2,040 "	2,040
2 " 10 "	" 550 "	1,100
2 " 12 "	" 415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.	
The 10 " " 6 ins. and 4 ins.	
The 12 " " 8 ins. 5 ins. and 3 ins.	

Thus making a total in kiln as follows:

17,870 3-in.	7,100 4 in.	2,810 5 in.	1,100 6-in.
830 8-in.	1,100 10-in.	830 12-in.	

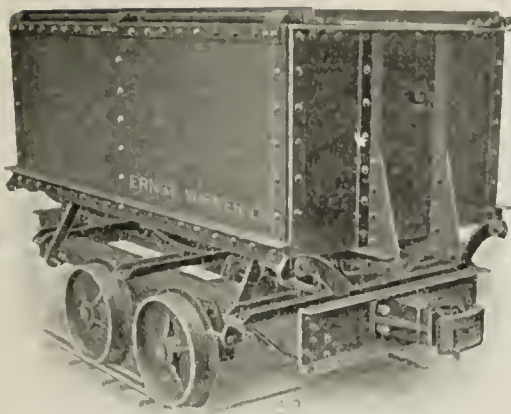
Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am

Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.



The above cut shows our double side dump cars for sand and coal. Built in capacities up to 40 cubic feet and of 36 inch gauge.

We have had

TWENTY YEARS' EXPERIENCE

in constructing

Railway Equipment for All Industries.

Portable, Industrial and Permanent Tracks, Switches, Frogs, Turntables, Transfer Cars, Steel and Wooden Cars of every Description for All Industrial Purposes.

Large stock on hand.

Write Our Dept. 13 for Catalog N.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
COMPANY.

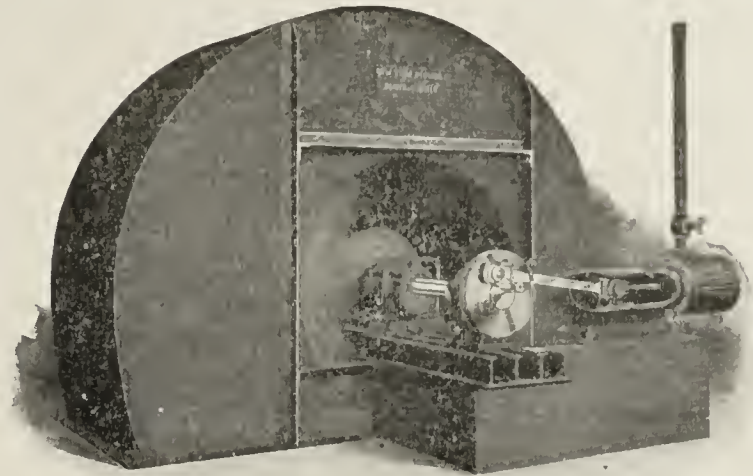
Works: Youngstown, Ohio.
64 Broad St., New York. 37 Farnsworth St., Boston.
Barnaby Bldg., Bisbee, Ariz.
The Youngstown Car Mfg. Co., representatives for West Virginia,
Ohio and Western Pennsylvania.

COAL — HEAT MONEY

All Saved by Using Our
WASTE HEAT DRIERS.

Get Catalogue 56F.

ESTIMATES AND PLANS FREE.



The New York Blower Co.,

DEPT. 14,

Office:

Factory:

Stewart Ave. and 25th Place,

BUCYRUS, OHIO.

CHICAGO, ILL.



B. E. BECHTEL.

We Are
PRACTICAL BRICKMAKERS.

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

Jacob Buhrer's Technical Bureau

At Constance, Germany.



BUHRER commenced work on his father's brickyard in April, 1838, when he was ten years of age, and established his technical bureau in 1860.

BUHRER assumed charge of the construction of kilns and kilns with dryers in which brick and tile are dried with the waste heat of the kiln, and the kilns which are provided with heat collectors, produce plenty of waste heat.

Very fine glazed and unglazed tile are burned in Buhrer's shortened kilns, often by mistake called zig zag kilns.

BUHRER'S kilns and dryers are also well adapted for burning common and face brick. Brick and tile made by the plastic process, of clays of normal quality, may be dried in from 1½ to 4 days, and in four additional days be drawn from the kiln, well burned.

BUHRER demonstrates by his new burning process that

the production of kilns of other systems may be increased from 50 to 100% by means of his ventilators, the output being first class, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% or more of the required goods may be dried in Buhrer's dryer.

BUHRER also builds lime kilns. Fat lime containing 98 to 99% pure lime is burned with 14% coal. The kilns can also be used for burning Portland cement.

BUHRER'S methods have a bearing on all the work done on a brickyard, and all the large works he has built are working with great economy.

BUHRER'S largest plants, constructed without chimneys, are in the hands of prominent men, famous for their success in the ceramic industry.

For any further information, prices, plans, etc., address

JACOB BUHRER, Constance, Germany.

STEAM SHOVELS FOR BRICK YARDS.



We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from ¾ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

Marion, Ohio.

F. H. HOPKINS & CO., Agents
Montreal, P. Q.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL.

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION.

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

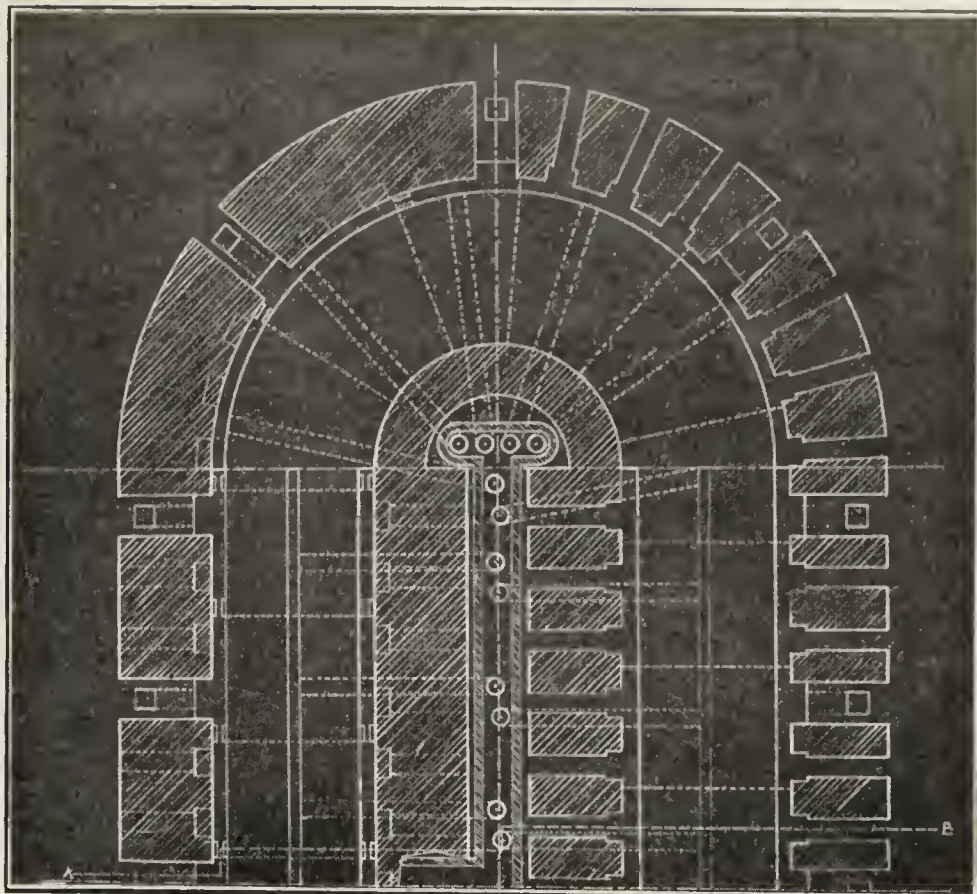
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Avenue, San Francisco, Cal.

Handle Your Clay With One Man and The Thew Steam Shovel.



Type No. 2—For Shales and Fire Clays.

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

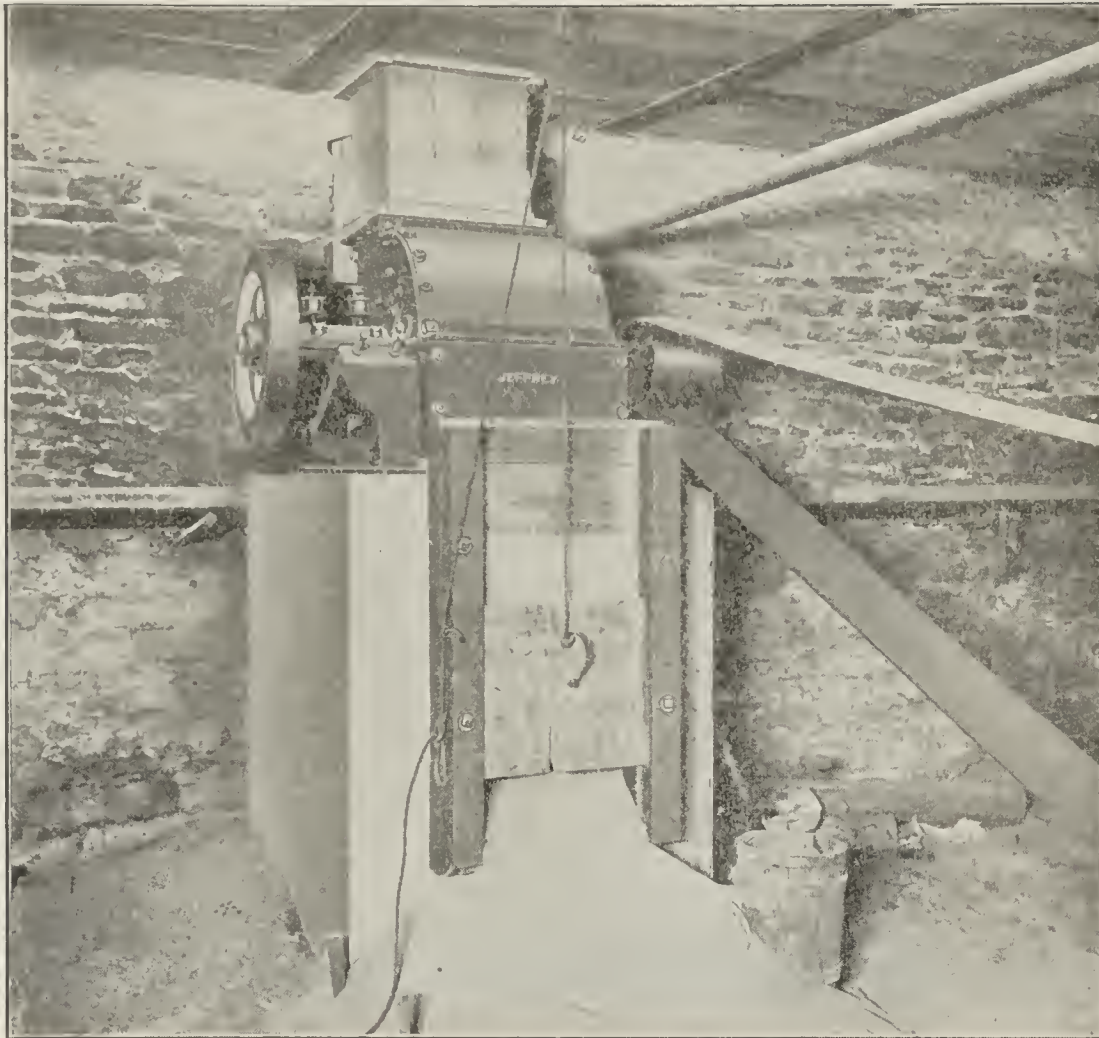
Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.



Crusher Installed for the Cincinnati Gas and Electric Company.
WE MAKE FREE CRUSHING TESTS.

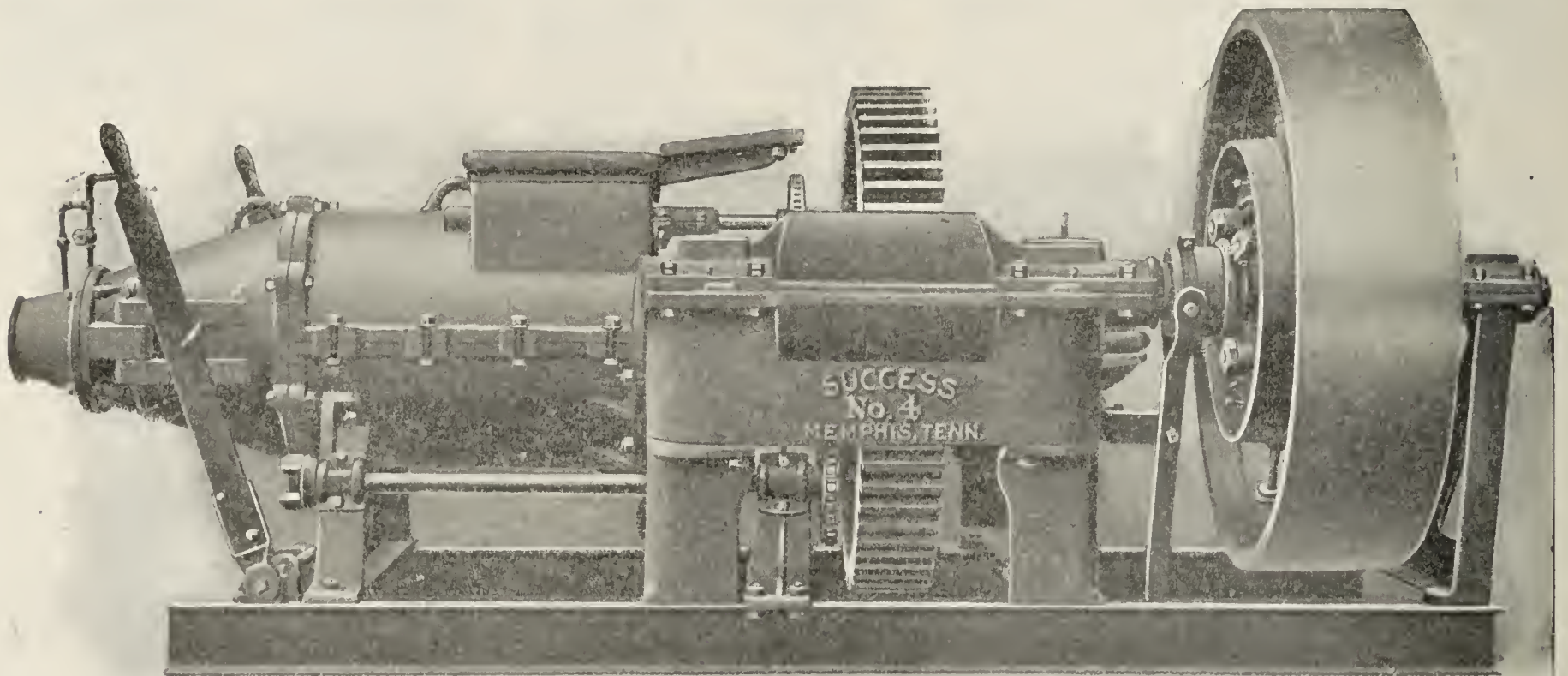
Showing
**RESULTS
PRODUCED**
by
**The JEFFREY
CRUSHER**
on
BROKEN BRICKS.
Reduced to Any Mesh
Desired.

Limestone, Hard Shale,
Fire Clay, Vitrified Fire
Clay and many other ma-
terials treated.

Correspondence invited.

The Jeffrey Mfg. Co.,
Columbus, Ohio, U. S. A.

**ELEVATING
CONVEYING
SCREENING**

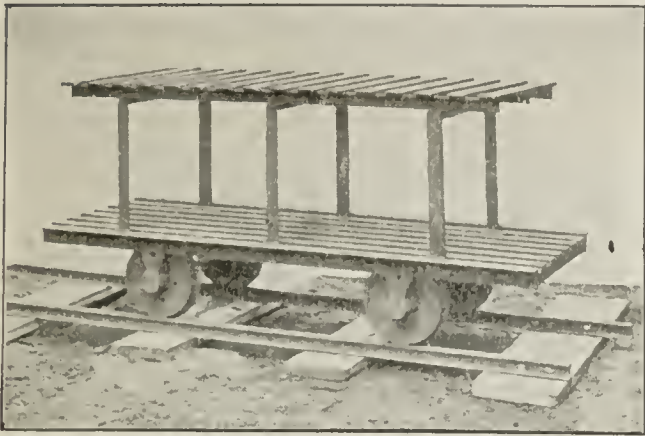


Cut represents our **SUCCESS No. 4 Stiff-Mud Machine**, constructed on **steel** foundation, **self-contained** and fitted with **steel** gears throughout. The strongest, most desirable and modern brick machine on the market.

Success Brick Machinery Company,

1403-4-5 Tennessee Trust Bldg., Memphis, Tenn.

"ADVERTISING THAT IS BACKED BY MERIT."



No. 244.

DOUBLE DECK DRYER CAR.
STEEL DECKS.

The Cleveland Car Co.,

BUILDERS OF
INDUSTRIAL EQUIPMENT,

West Park, Ohio.

AGENTS

The F. W. Braun Co., San Francisco, Cal.
Adreon & Co., St. Louis, Mo.
W. E. Hamilton & Co., Montreal, Canada.
H. S. Roberts, Harrison Bldg., Philadelphia, Pa.

The proof of our statement is known by the number of Brick Plants we have supplied.

Let us have your inquiry for any kind of Cars, Switches, Turntables, Crossings, Transfers, Pallets, Kiln Bands, Doors, etc.

We can supply your needs on anything pertaining to Brickyards, Quarries, Sand and Clay Banks.



No. 52.

TRUNION DUMP CAR
FOR GENERAL USE.

The Exhaust Steam Dryer is THE NATIONAL.

CARROLLTON BRICK CO.

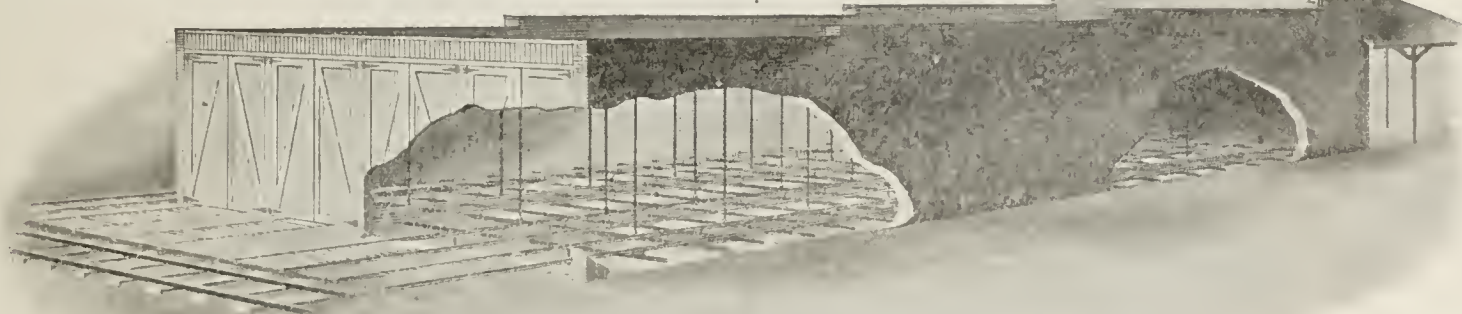
The National Dry Kiln Co.,
Indianapolis, Ind.

Carrollton, Ky.

Gentlemen—In reply to your favor of the 2nd will say our dry kiln which you installed last spring, is giving the utmost satisfaction. We are drying more brick than you guarantee, and can recommend it to anyone as a first-class drier in every respect. Easy to operate and no expensive repairs, and never out of order. Wishing you success, we are,

Yours truly, THE CARROLLTON BRICK CO.

The National Patented STEEL FOUNDATION and STEEL ROOF
SUPPORTS Eliminate all Woodwork Below the Ceiling Line.



We make all kinds of Cars for carrying Brick, Turntables, etc.

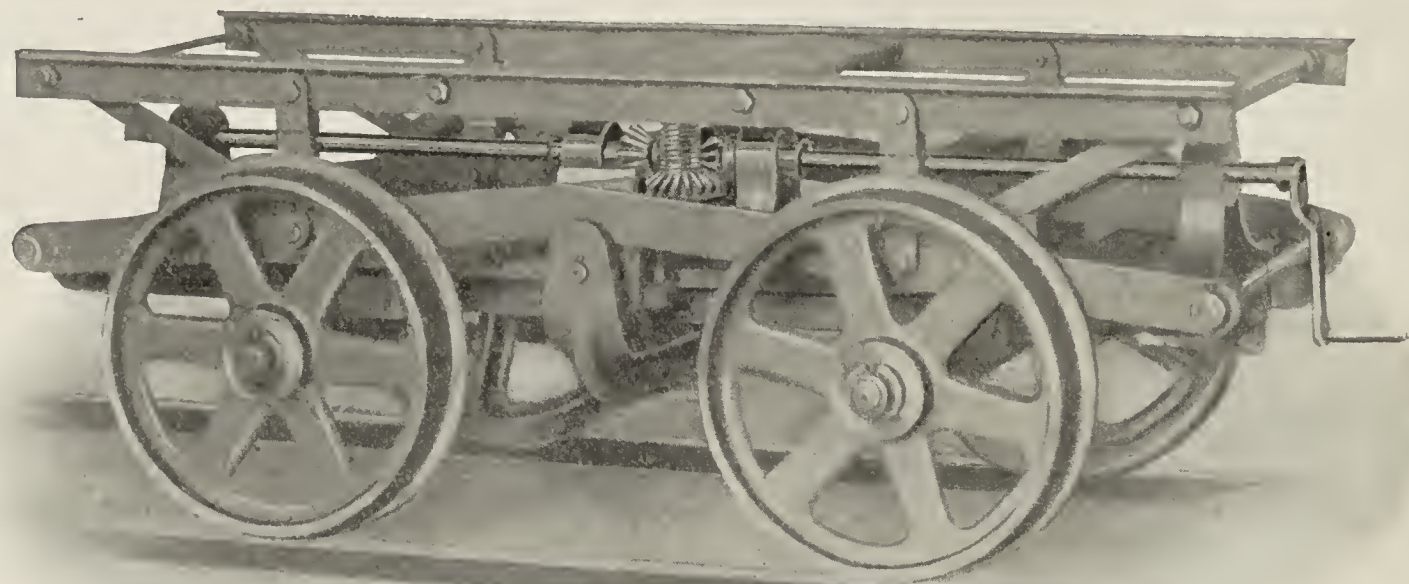
The National Dry Kiln Company,

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

INDIANAPOLIS, IND.

COMPETITION COMPELS

the brickmaker to reduce the cost of manufacture to the lowest possible point. If **two** men properly equipped will accomplish what **all** your truckers now do, and at the same time deliver the ware to the setters in perfect condition, can you afford to continue as you are? An inquiry from you will receive prompt attention.

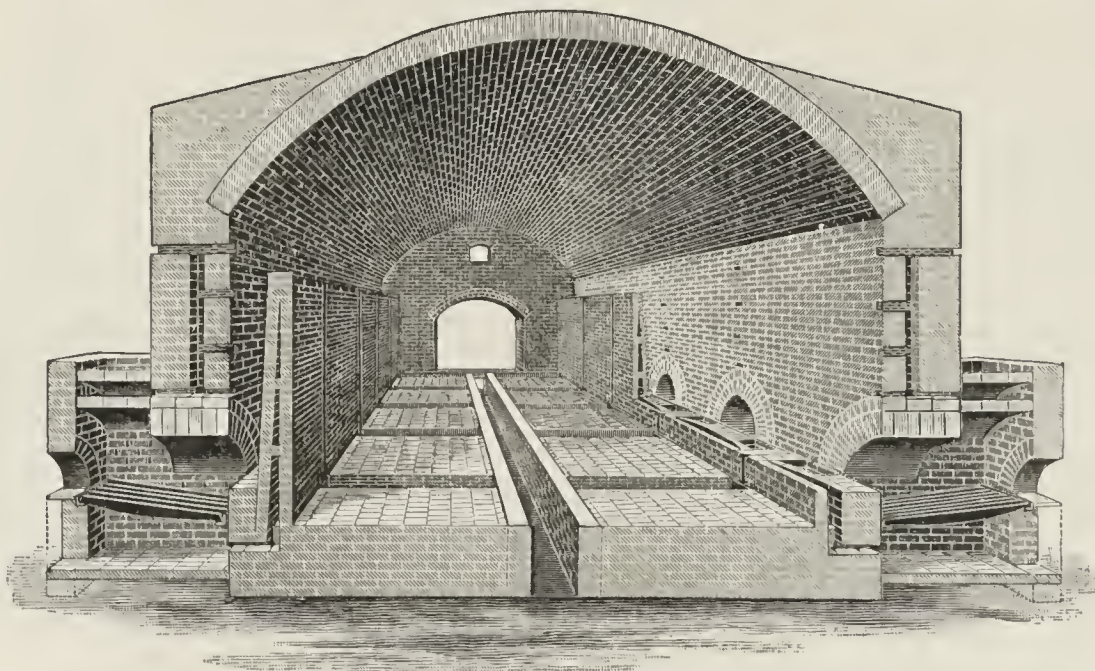


OPEN AIR AND ARTIFICIAL DRYERS—Car and Carless.

The Drymore System, 7th and Chestnut Sts., St. Louis, Mo.

The EUDALY ^{DOWN DRAFT} KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

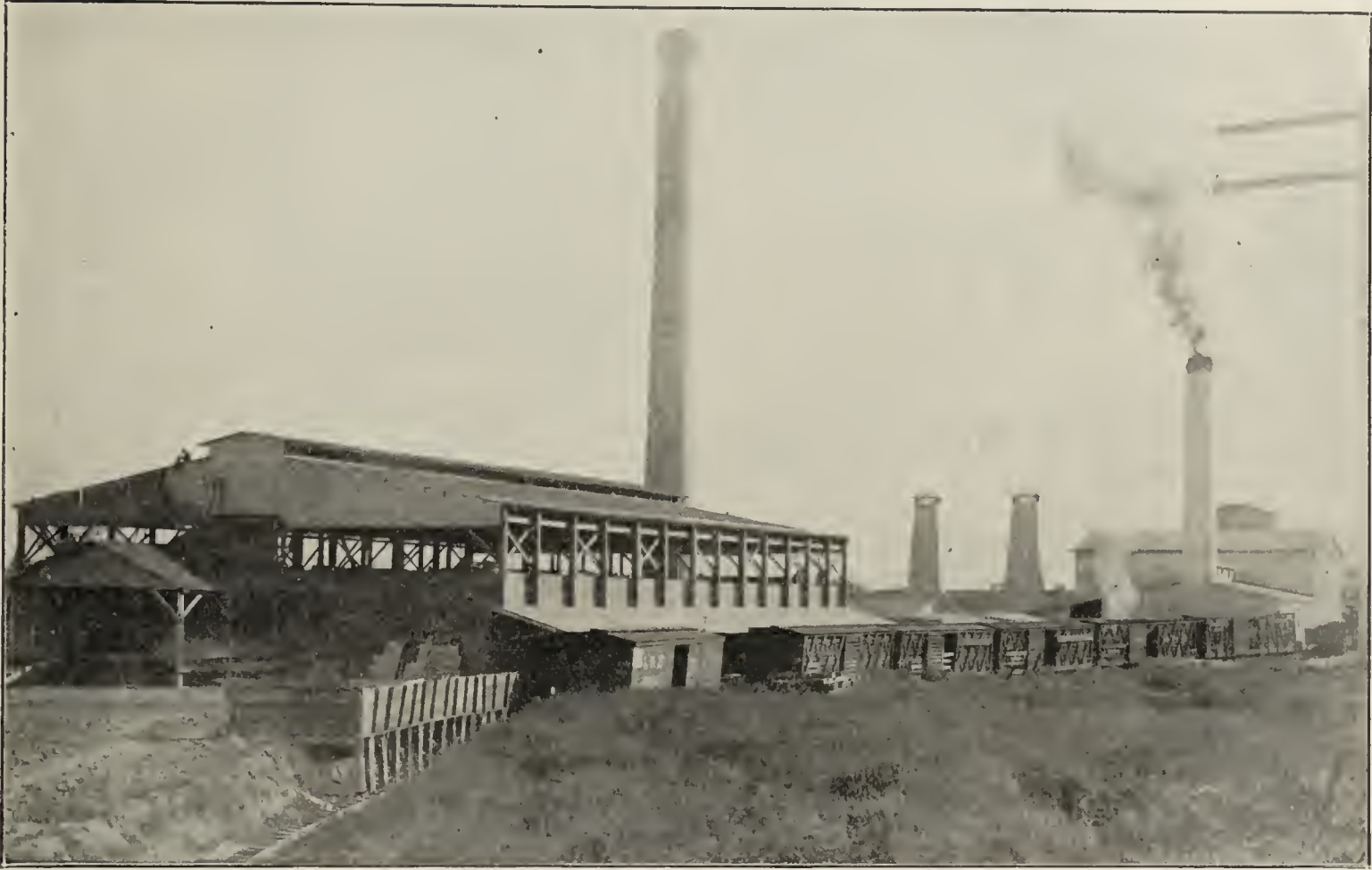
The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.

The Youngren Continuous Kiln

Producer Gas Fired.



THE YOUNGREN GAS FIRED CONTINUOUS KILN AT THE PLANT OF THE INDIANA DRAIN TILE COMPANY, BROOLYN, IND.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO

Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untying knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the issue. Enclosed find \$.

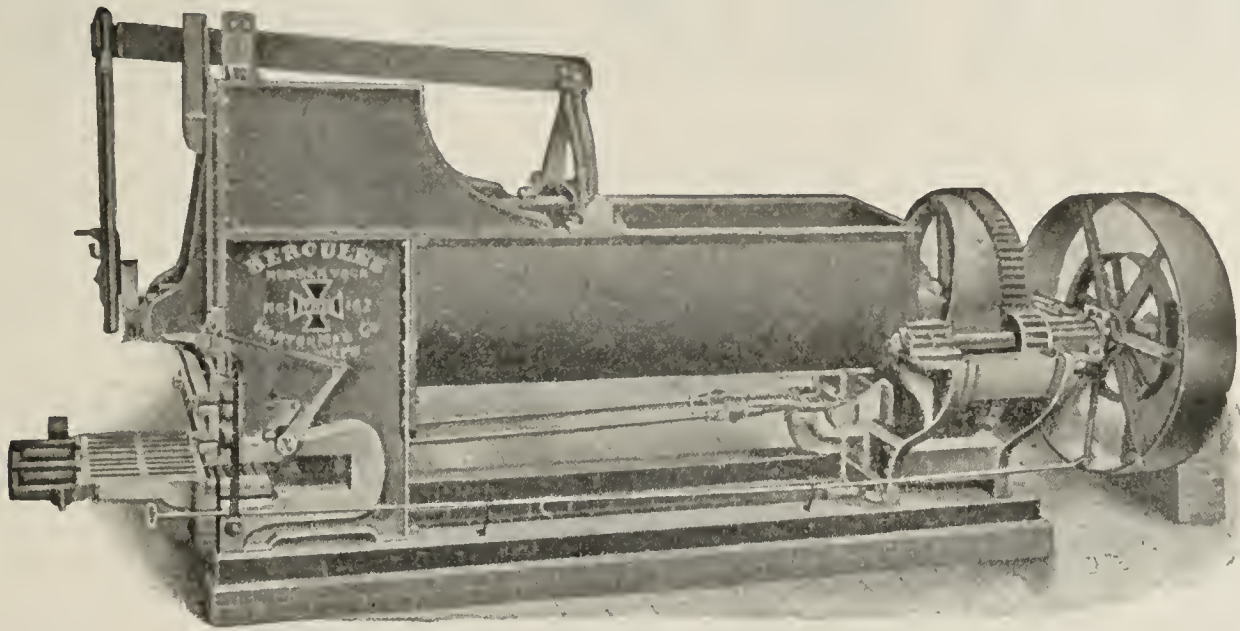
Name

Postoffice

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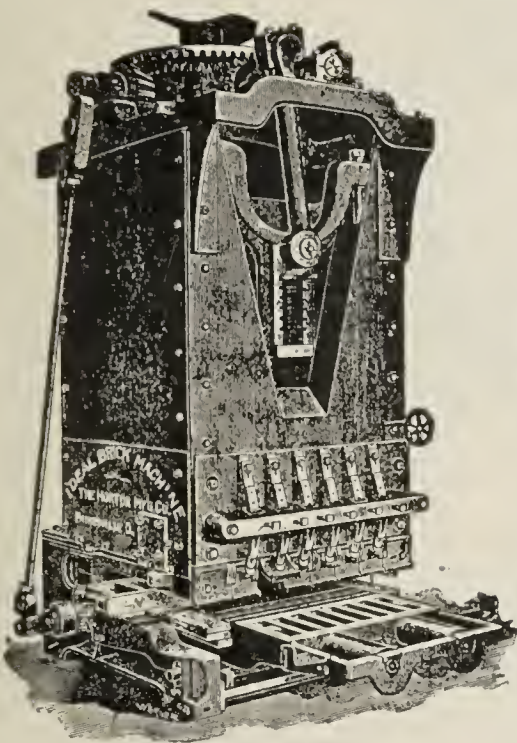
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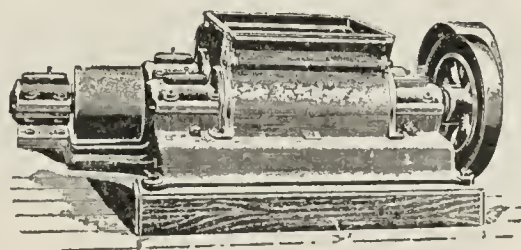


Hercules No. 4 Brick Machine.

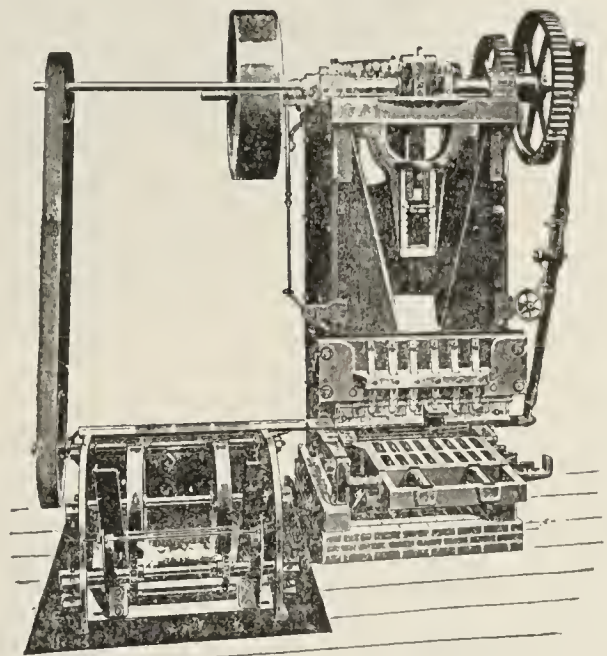
Let Us Have Your Inquiries Today.



Ideal Horse Power.

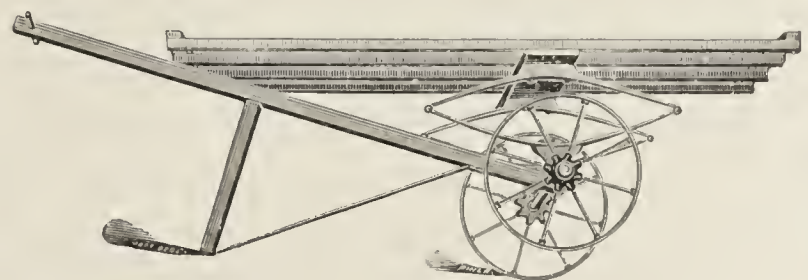
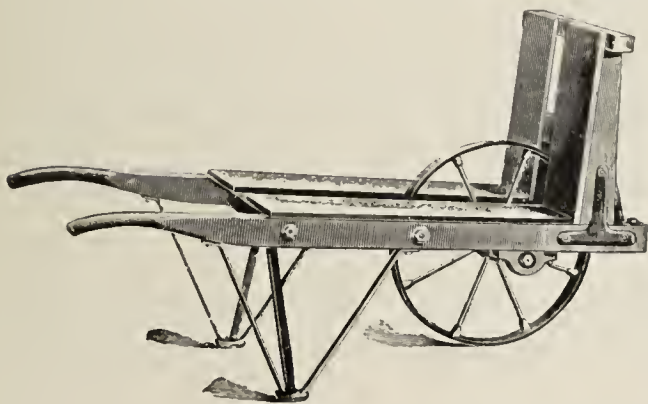


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Ideal Steam Power and Sander.

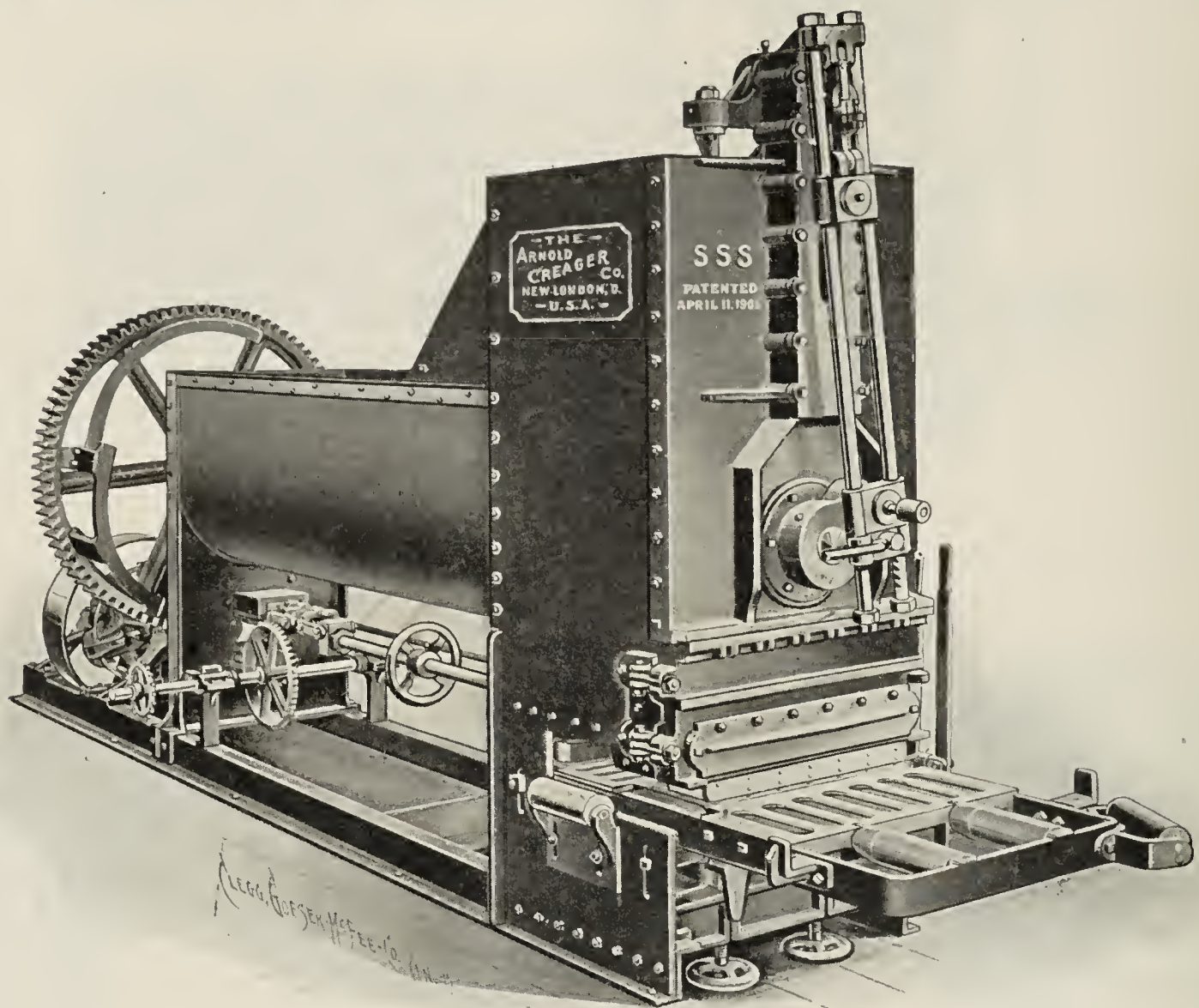
OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

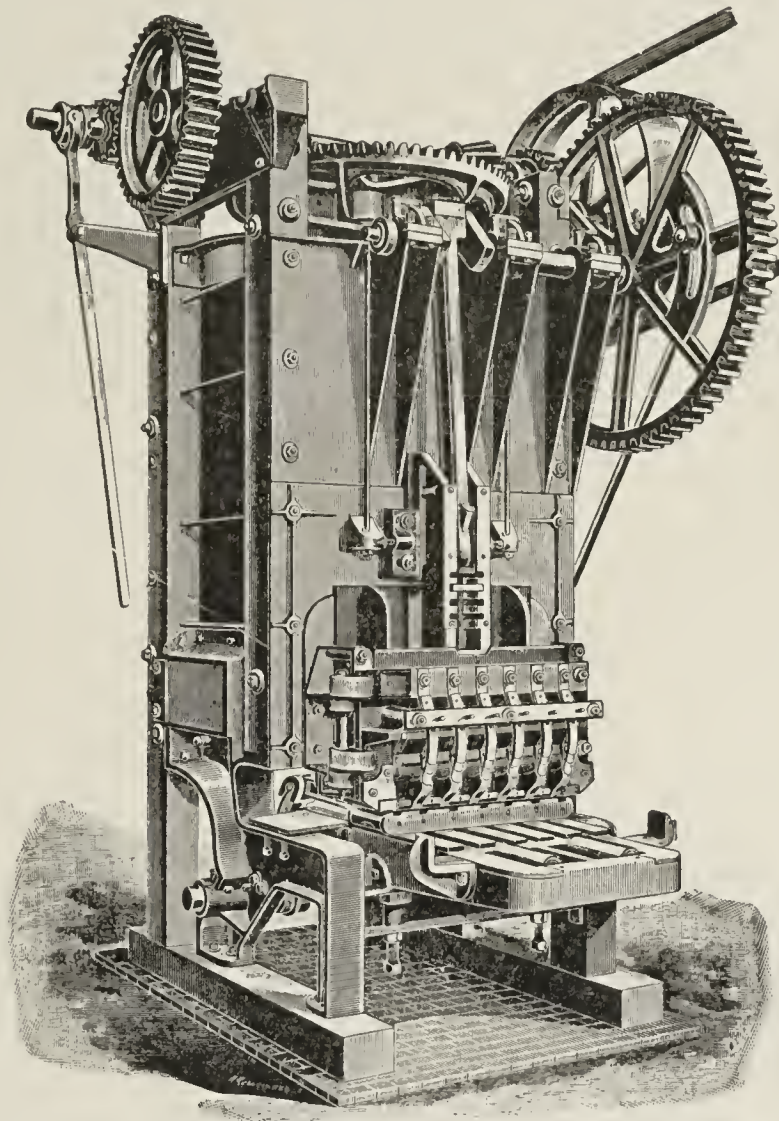
NEW LONDON, OHIO.

CINCINNATI, OHIO.

CABLE "AUTOMATIC".

EARNING CAPACITY.

The thing which gives value to any machine is its earning capacity. The earning capacity of brick machinery depends as much on strength and thorough construction as anything. Most brickmakers have learned this in the expensive School of Experience. When a machine is broken down its earning capacity and its value is gone. Continued results, therefore, determine the economic value of a machine rather than first cost. On this basis New Haven Machines have proven to be the least expensive on the market.



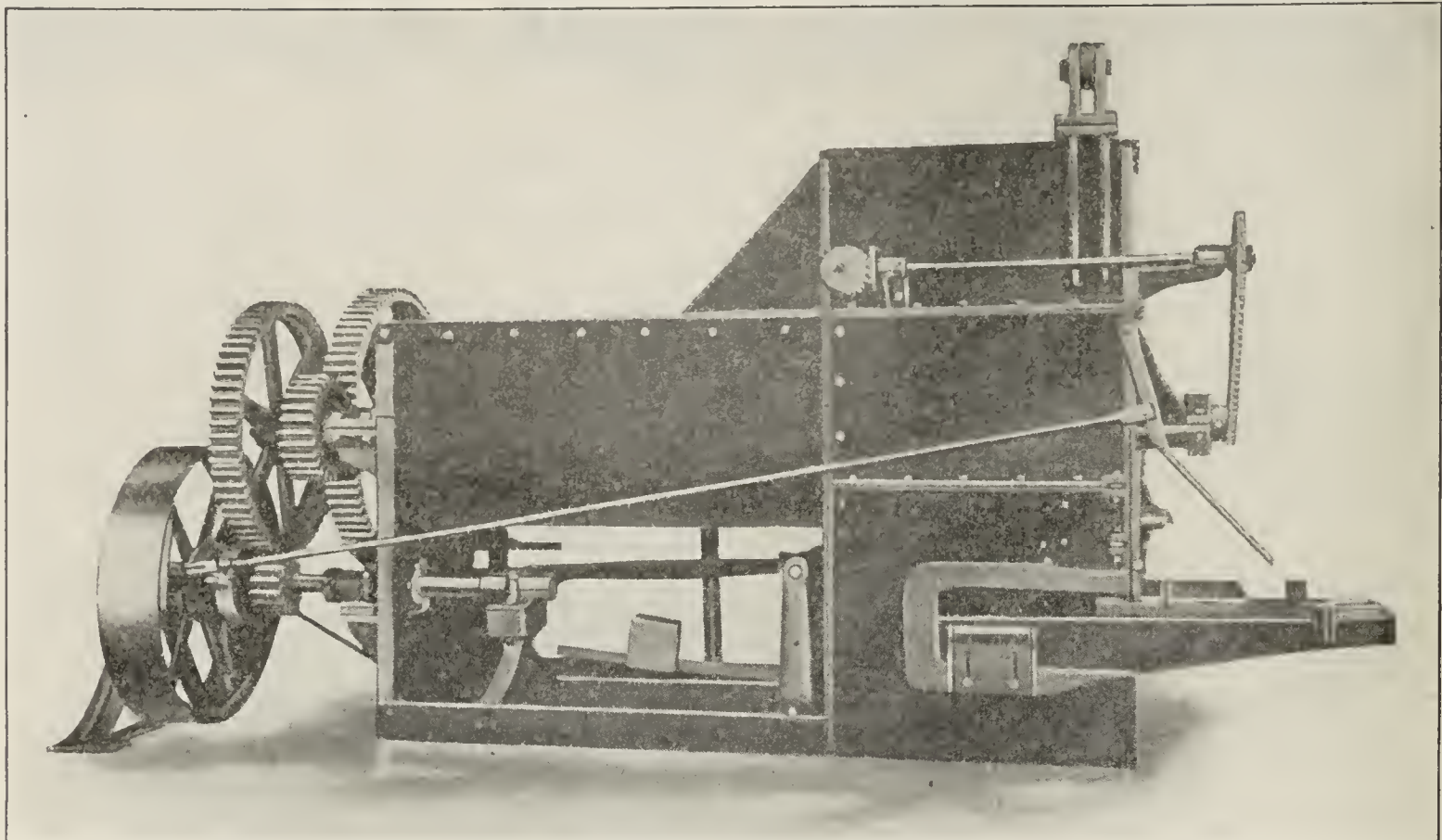
“New Haven” Vertical Brick Machine.

Because of their simplicity, unusual strength, and excellent construction, “New Haven” Vertical Brick Machines are seldom out of repair, and hence earn more and are much more valuable to their owners than the light weight affairs that break so often. They do better work than is possible with less powerful machines. It will pay any prospective buyer to think seriously about this matter of earning capacity, and look into the merits of the “New Haven” Machine from that point of view.

The EASTERN MACHINERY CO.,

 **NEW HAVEN, CONN.**

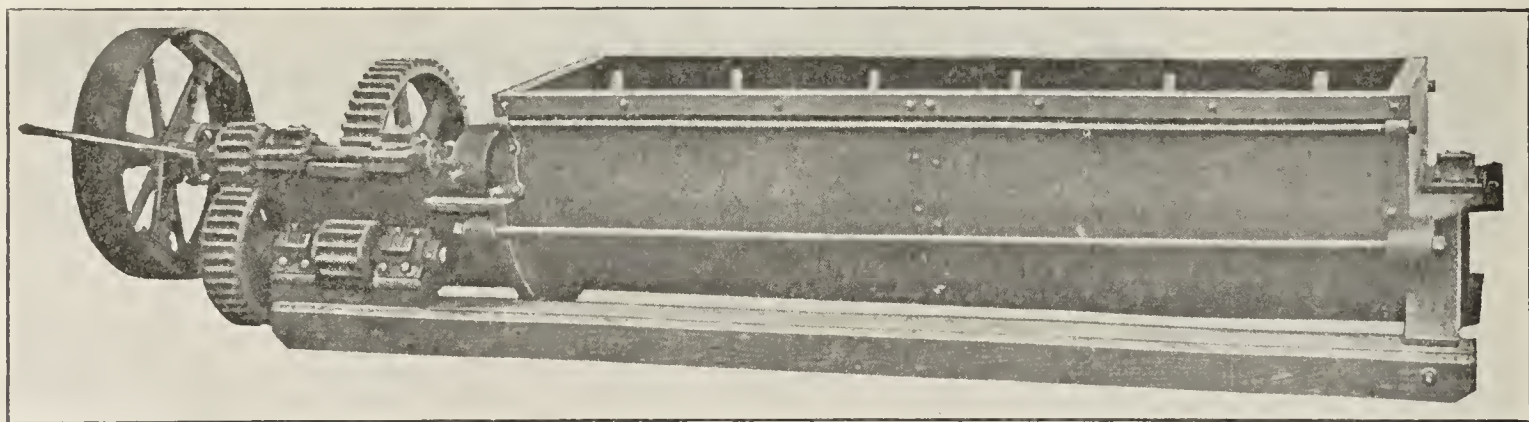
THE DUKE OF WELLINGTON BRICK MACHINE.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine of large capacity, strong and heavy, with vertical press. To meet this demand, we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

Compound-Geared Horizontal Pug Mill or Granulator.



Built for Side, Bottom or End Delivery, as ordered. Tub is boiler steel. Shaft is $3\frac{1}{2}$ inch square steel. Length, 10 to 14 feet, according to order. **Capacity**—35,000 to 50,000 brick per day. Friction Clutch Pulley, 36x8 inches. **Speed**—200 to 300, according to capacity desired. **This is a Massive Machine**, very heavily constructed, and intended for the hardest work. The gears have 5-inch face. The end-thrust bearing is very large and heavy, and of the best design.

Don't place your order for Machinery or Supplies until you have seen my 1907 Descriptive Catalogue. Mailed free on application.

For small capacity yards there is nothing that is quite as good as the "Quaker" Machine, which is made for horse power as well as steam.

JAMES W. HENSLEY,
Indianapolis, Ind., U. S. A.

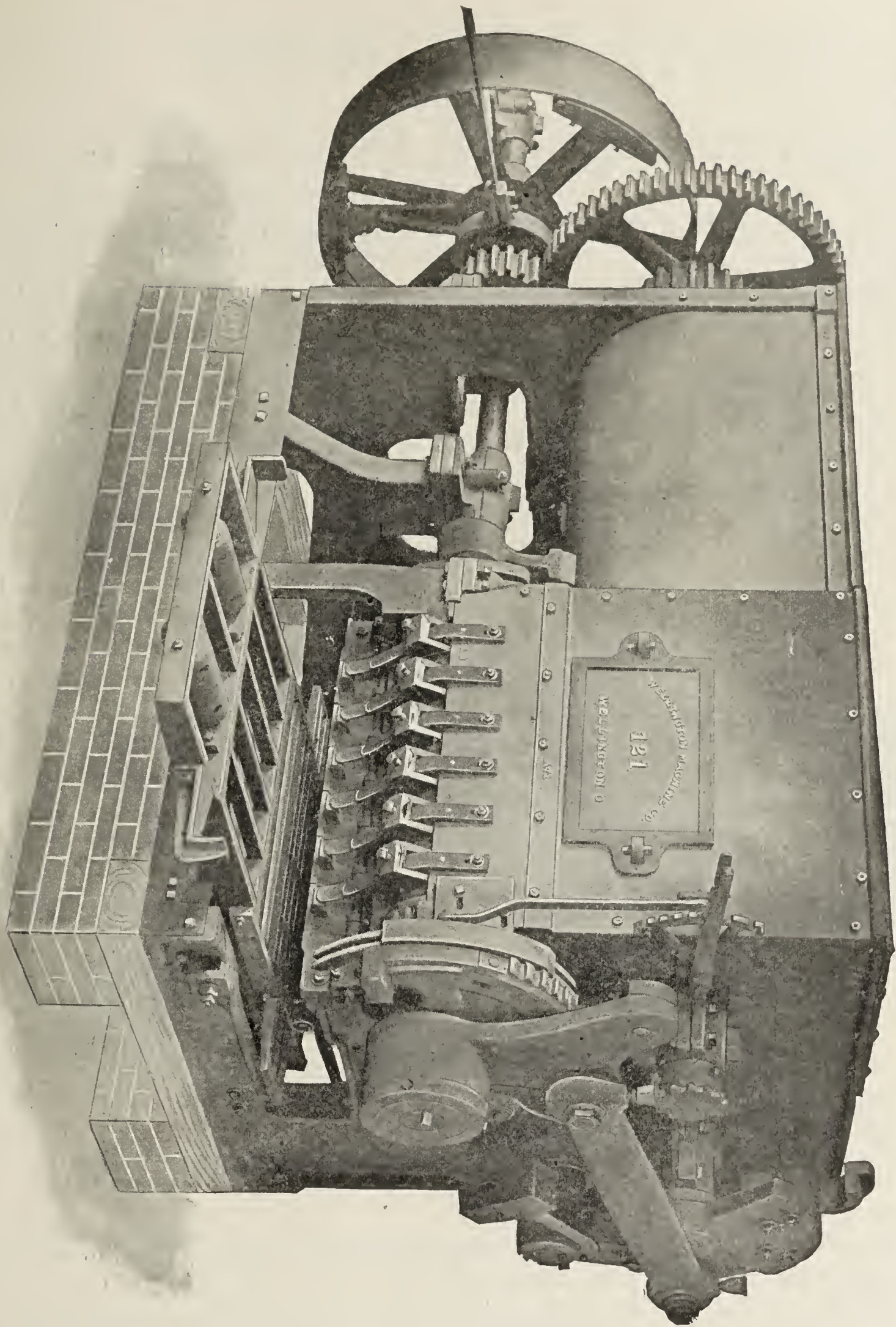
Let me give you full particulars.

List of users furnished on application.

OVER
235
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Brick
Machines
in use

OVER
565
"Quaker"
Machines
in use.

WRITE
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Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

ROLLER-BEARING
BARROWS.

The Wellington Machine Co.,

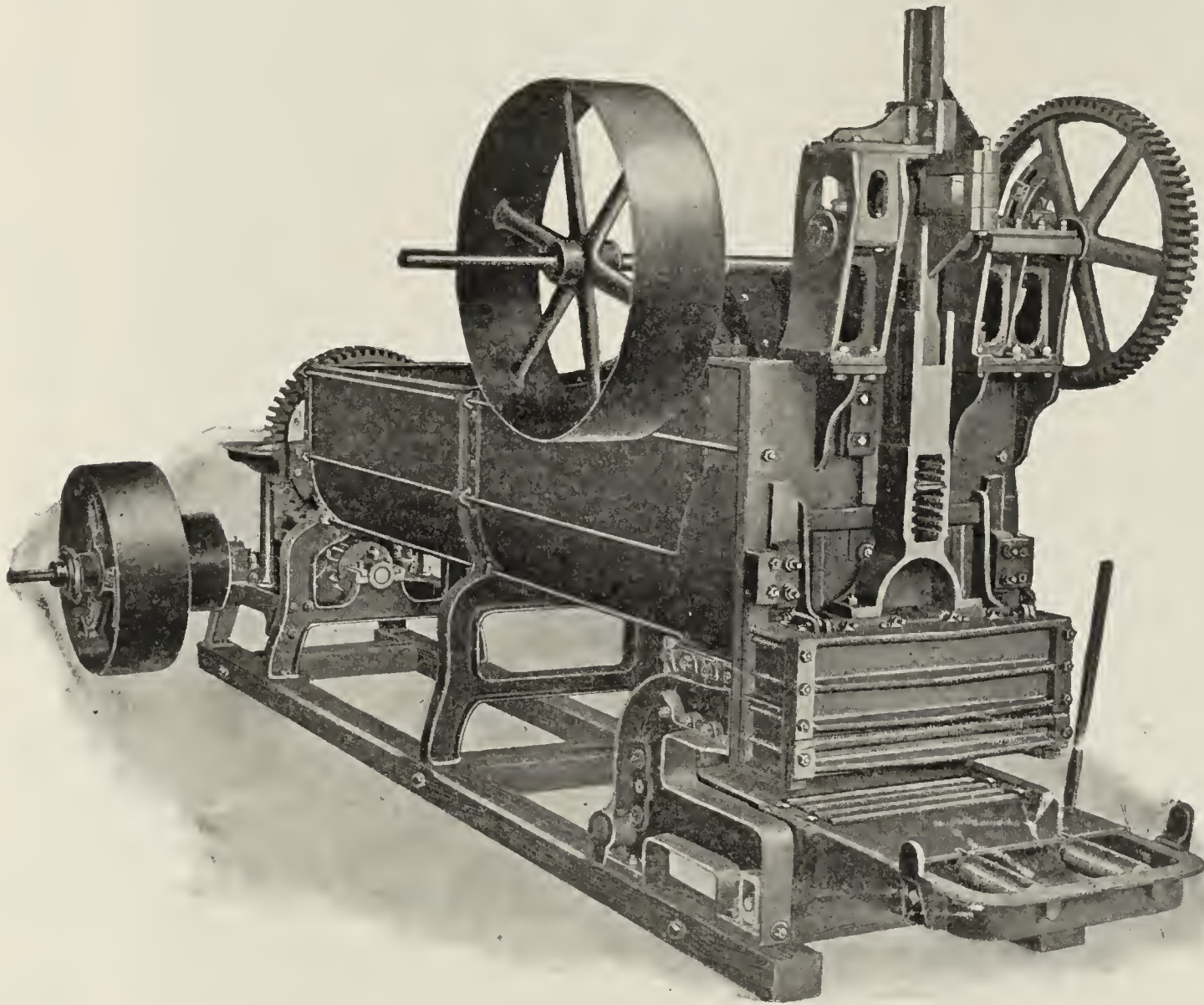
WELLINGTON,

OHIO.

Send for Catalogue.

The Potts Horizontal Brick Machine.

The equipment of Sand Mould Brick Plants is our specialty. We manufacture the complete plant—Brick Machine, Disintegrators, Mould Sanders, Granulators, Winding Drums, Clay Cars and Steam Dryer. This makes a one-man proposition, and we are responsible for the satisfactory working of the entire plant from The Clay Bank to the Kiln.



The only
Sand Mould
Brick Machine
made
in which
Cast Steel
Gears
are used
exclusively.
They can not
be broken.
Steel shaft
large
in
diameter.

ALL IRON AND STEEL.

Heavy, Strong and Durable. Large tempering capacity, insuring brick that will have clean, sharp corners and smooth surfaces.

Great strength enables working the clay stiff and filling a six brick mould perfectly. Every claim made fully guaranteed.

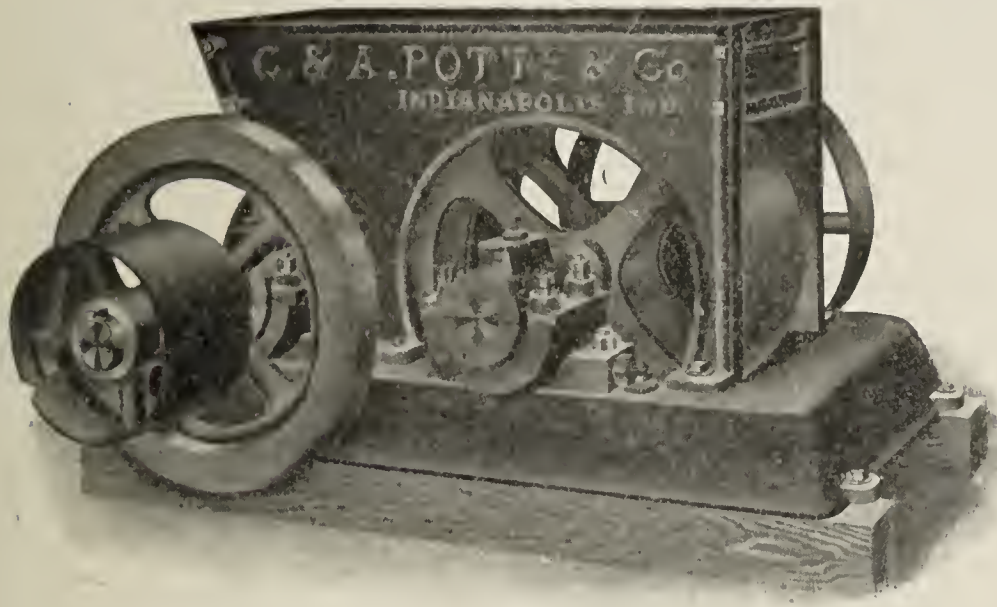
C. & A. POTTS & CO.,

Indianapolis, Ind.

Mention the Clay-Worker.

CLAY DISINTEGRATORS

Either Single or Compound.



Having chilled rolls made from a special grade of iron.

Steel shafts. Ring oiling bearing, long and large in diameter. Adjustable steel bars.

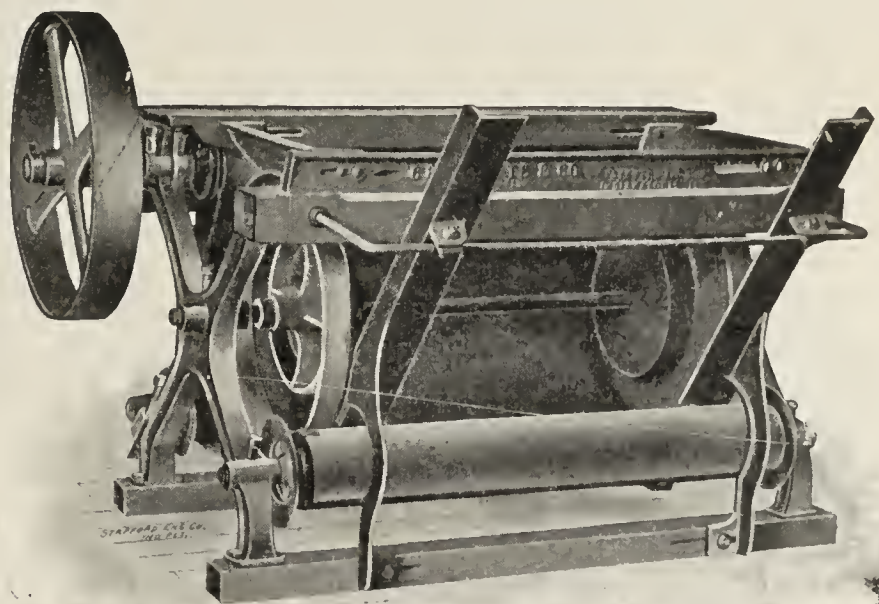
The Potts Disintegrator is the standard machine. All others are imitations. Grinds the clay and separates the stone. No choking or clogging from wet, sticky or hard dry lumps.

MOULD SANDERS

which have no place for the moulds to catch. No unusual wear on the moulds. No chains, sprockets or gears to wear and break.

Does not waste or spill the sand.
Sands the moulds perfectly.

Every machine guaranteed and shipped subject to trial.



We manufacture a complete line of Clayworking Machinery, Granulators or Feeders Winding Drums, Clay Cars, Trucks and Barrows, a Dryer which is no experiment, and which will dry the most tender clay in from eight to ten hours.

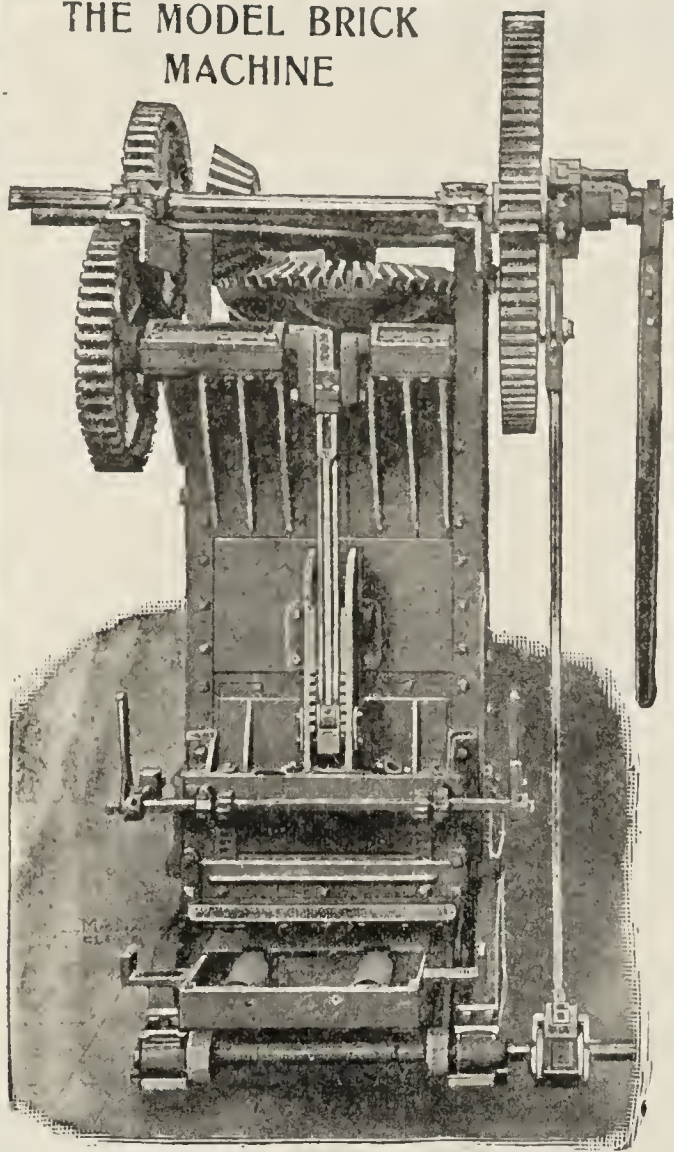
We furnish everything from Clay Bank to Kiln, and GUARANTEE RESULTS.

C. & A. POTTS & CO.,

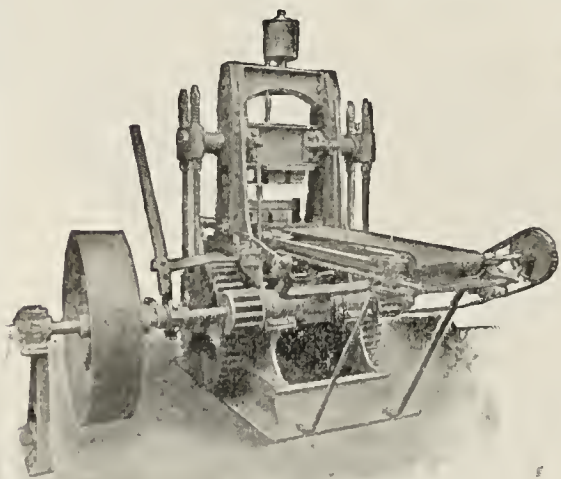
Mention the CLAY-WORKER

Indianapolis, Ind.

THE MODEL BRICK
MACHINE



BUILDERS OF UP-TO-DATE
CLAY-WORKING PLANTS



HAND OR STEAM REPRESSES

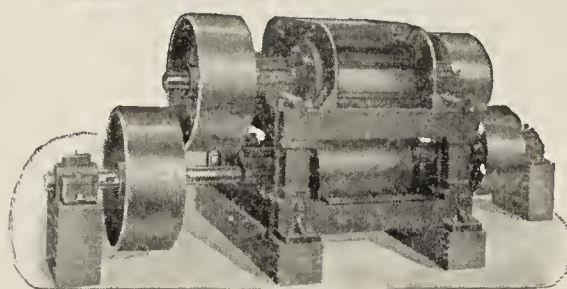
"MARTIN"
LANCASTER, PA.

CLAY CARS = DRYER CARS



**LET YOUR
LIGHT SHINE
=IT'S DE BOSS
OF THEM ALL=**

BUILT OF ALL IRON AND
STEEL = MARTIN'S STYLE "P"
STEAM POWER BRICK MACHINE
BUILT OF THE BEST MATERIALS

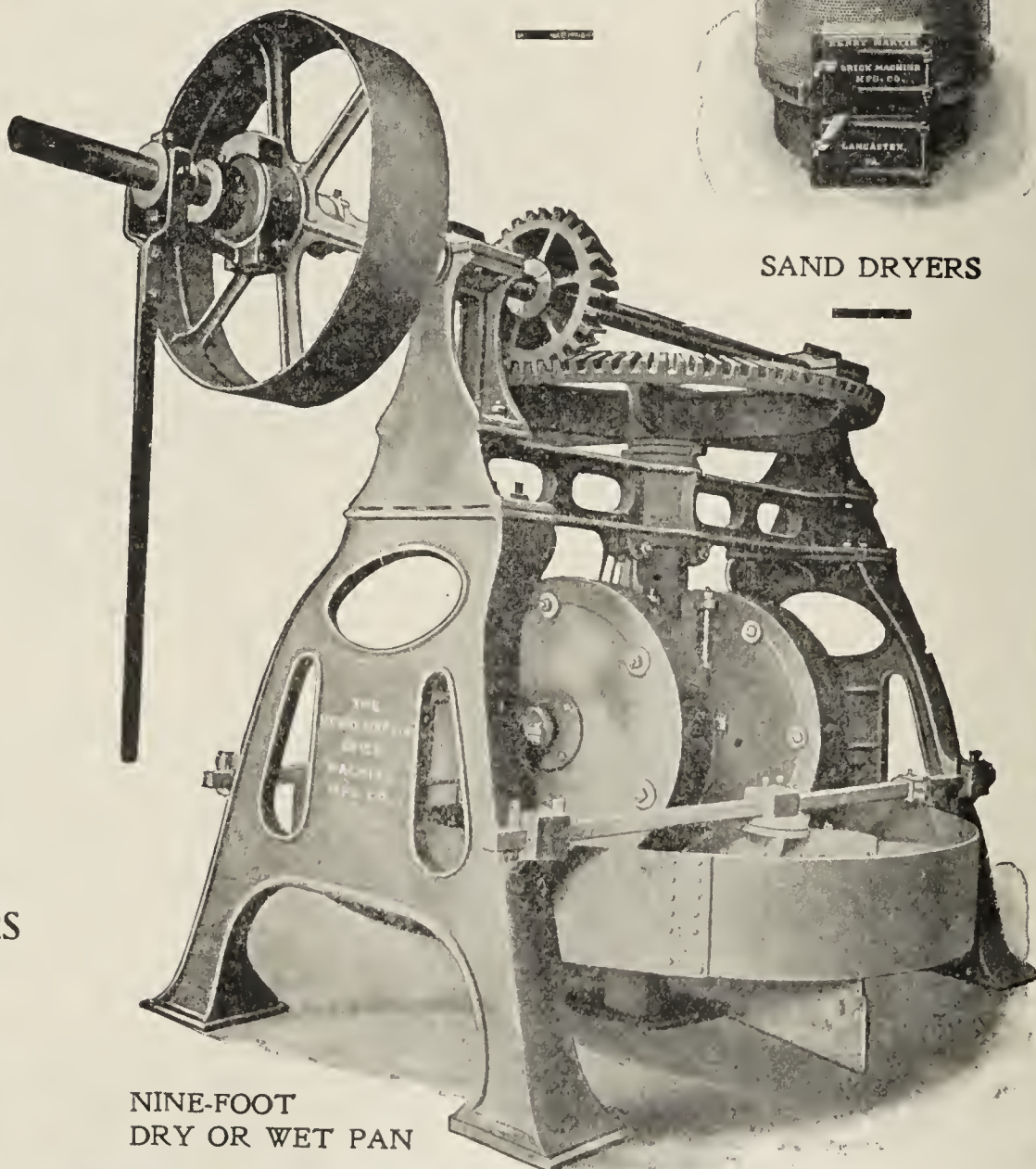


HIGH-SPEED DISINTEGRATORS

OUR LINE OF CRUSHING MA-
CHINERY IS THE MOST COMPLETE



SAND DRYERS



NINE-FOOT
DRY OR WET PAN

THE "MARTIN" RACK PIPE STEAM BRICK "DRYER SYSTEM"



PATENTED

February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.



This Drier and the design in arranging it are under the protection of the United States Government by virtue of patents granted. Patents also have been taken out in the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS.

Brick
Dried
In From
Six to
Twelve
Hours.

Building
Practically
Fire=
Proof.

Labor
Saving
Through=
out.
Good
Results.



No Fans
No Blowers
No Tunnels
No Cars

All Iron
And Steel
Construc=
tion
Excepting
Roof.

Can We
Dry Your
Brick—
Write Us
Today.

ADAPTED FOR SOFT MUD OR STIFF MUD BRICK.

Superior in Every Respect to Any Other System—Labor-Saving Through-
out—Dispenses With Truckers and Car Pushers—Pallets Auto-
matically Returned to Brick Machine—Quick to Install and
Low in Price and Takes Up Very Little Yard Room.

The Sale and the Construction of the "MARTIN" Rack Pipe Steam Brick
Dryer is Under the Direct Supervision of the Factory Office at Lancaster, Pa.

For further information address

The Henry Martin Brick Machine Mfg. Co., Inc.
LANCASTER, PA., U. S. A.

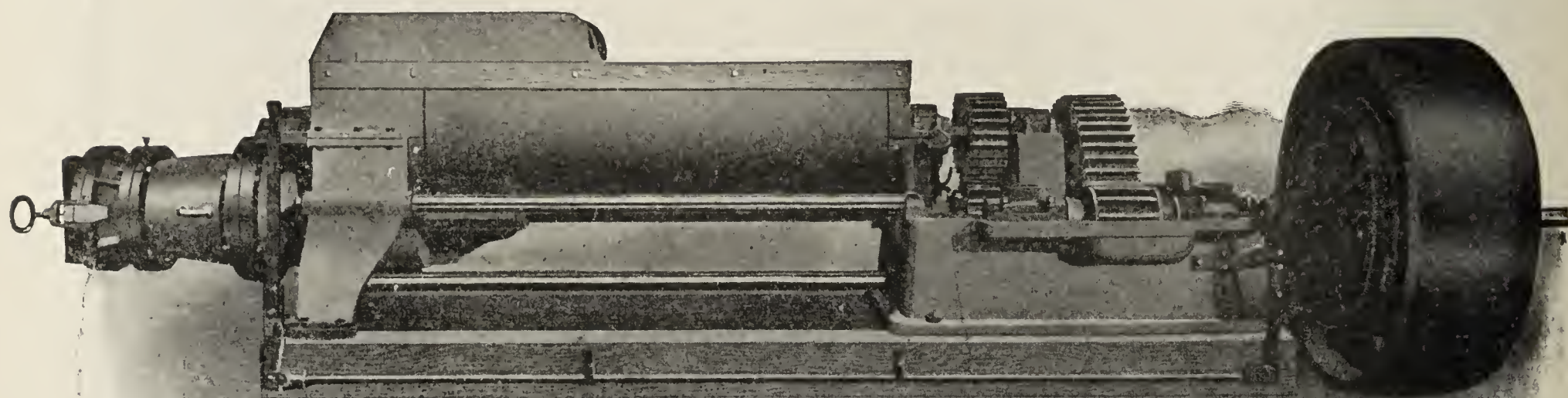


The J. D. Fate Co.

Richland County,

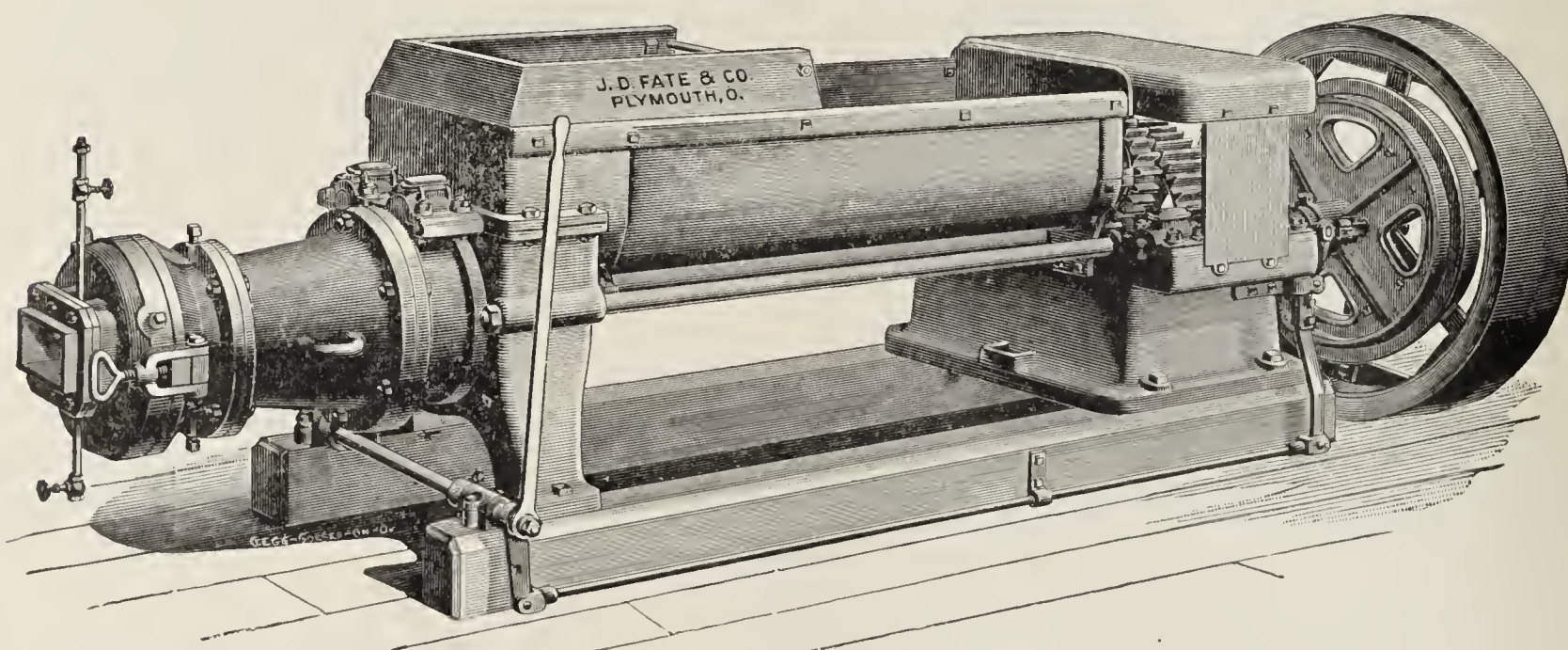
Plymouth, Ohio.

Imperial Combined Machine.



This is our middle size Combined Machine and is a favorite with the brick maker who wants to make from 30,000 to 40,000 brick per day, and more so with the tile maker who wants very large capacity in drain tile, combined with the very finest quality. Look at the cut of this machine with vertical attachment.

Hummer Combined Machine.



This was the first of our Combined Machines, and one of the best for the clayworker with a medium capacity plant, either of Brick or Tile, or both.

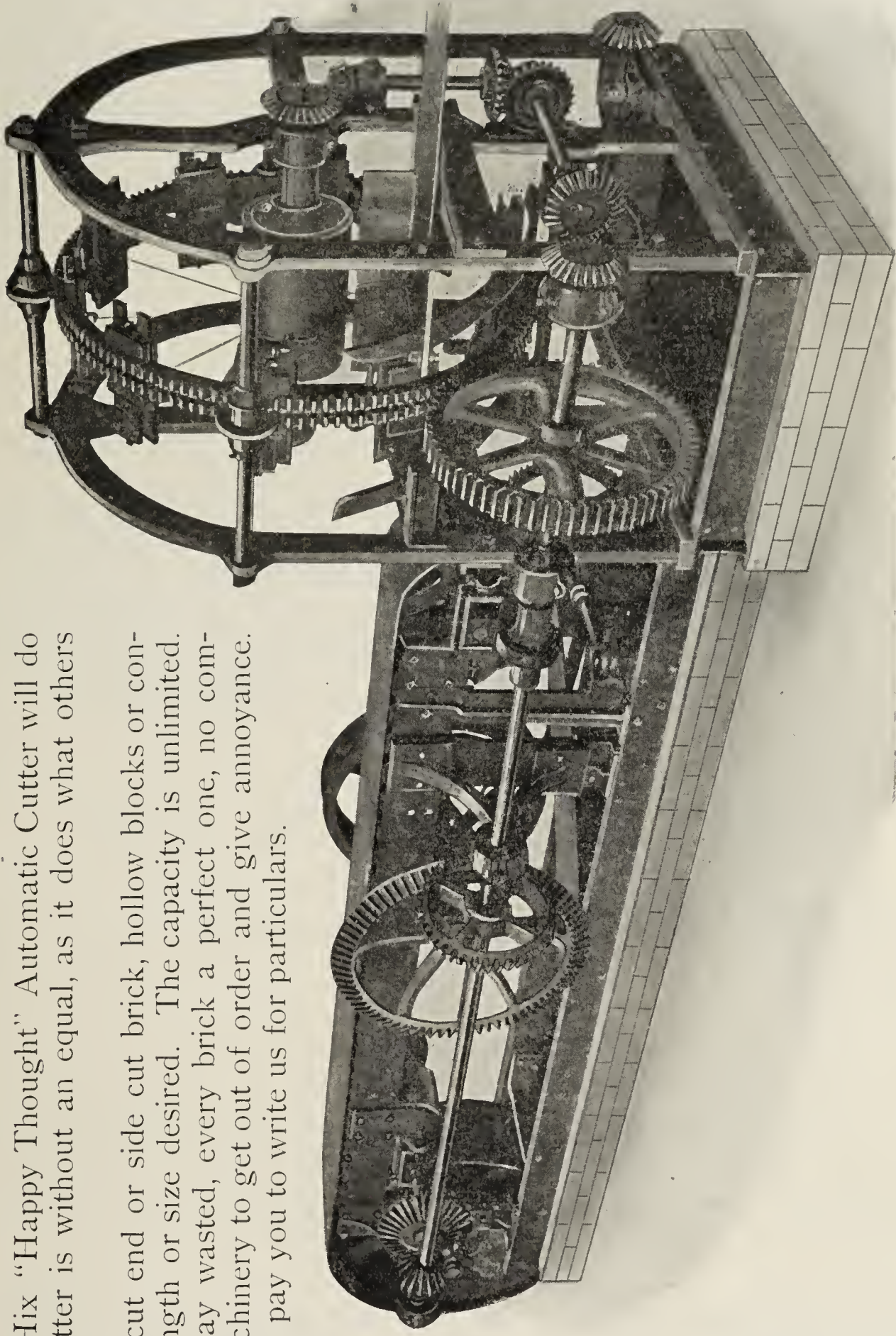
Are You Interested in a Cutter That Will Double Your Profits For 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal, as it does what others can not do.

Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited.

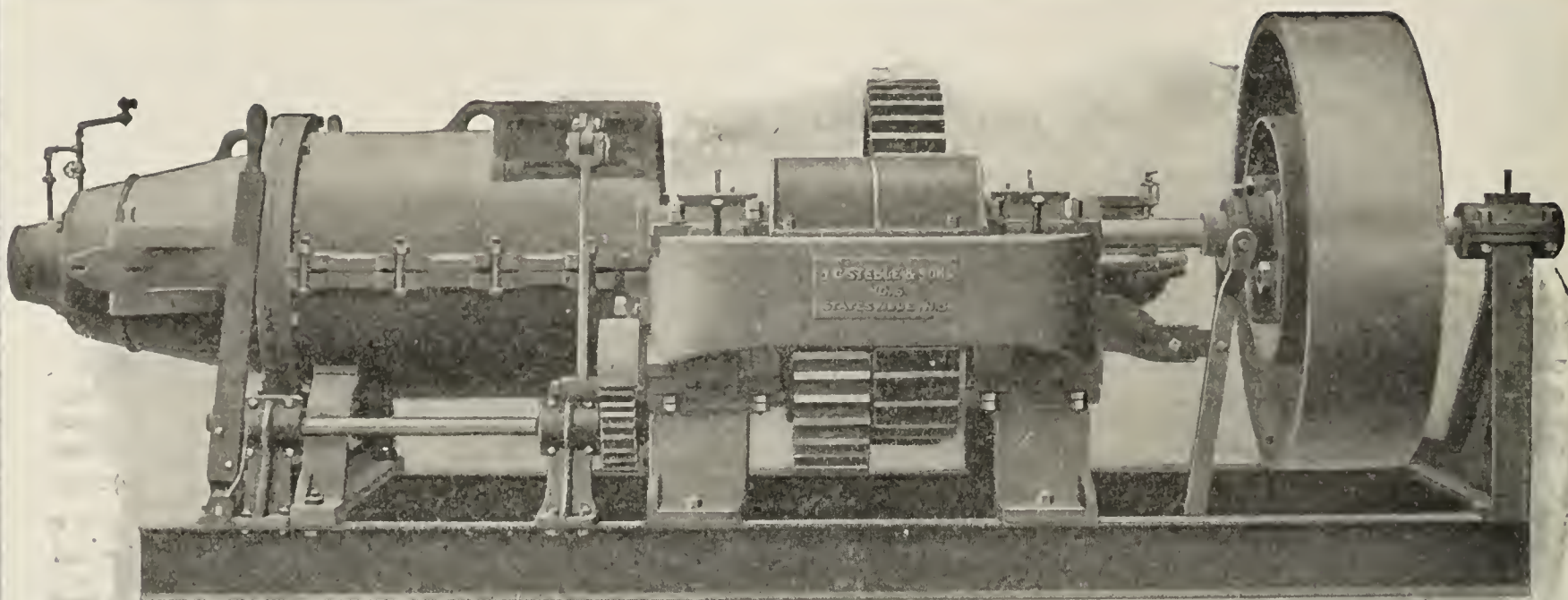
No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

It will pay you to write us for particulars.



THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

THE WALLACE MFG. CO., Frankfort, Ind., U.S.A.



No. 5. CAPACITY 50,000 to 100,000 PER DAY.

Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen :—After using your machinery for some years, which included the Nos. and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

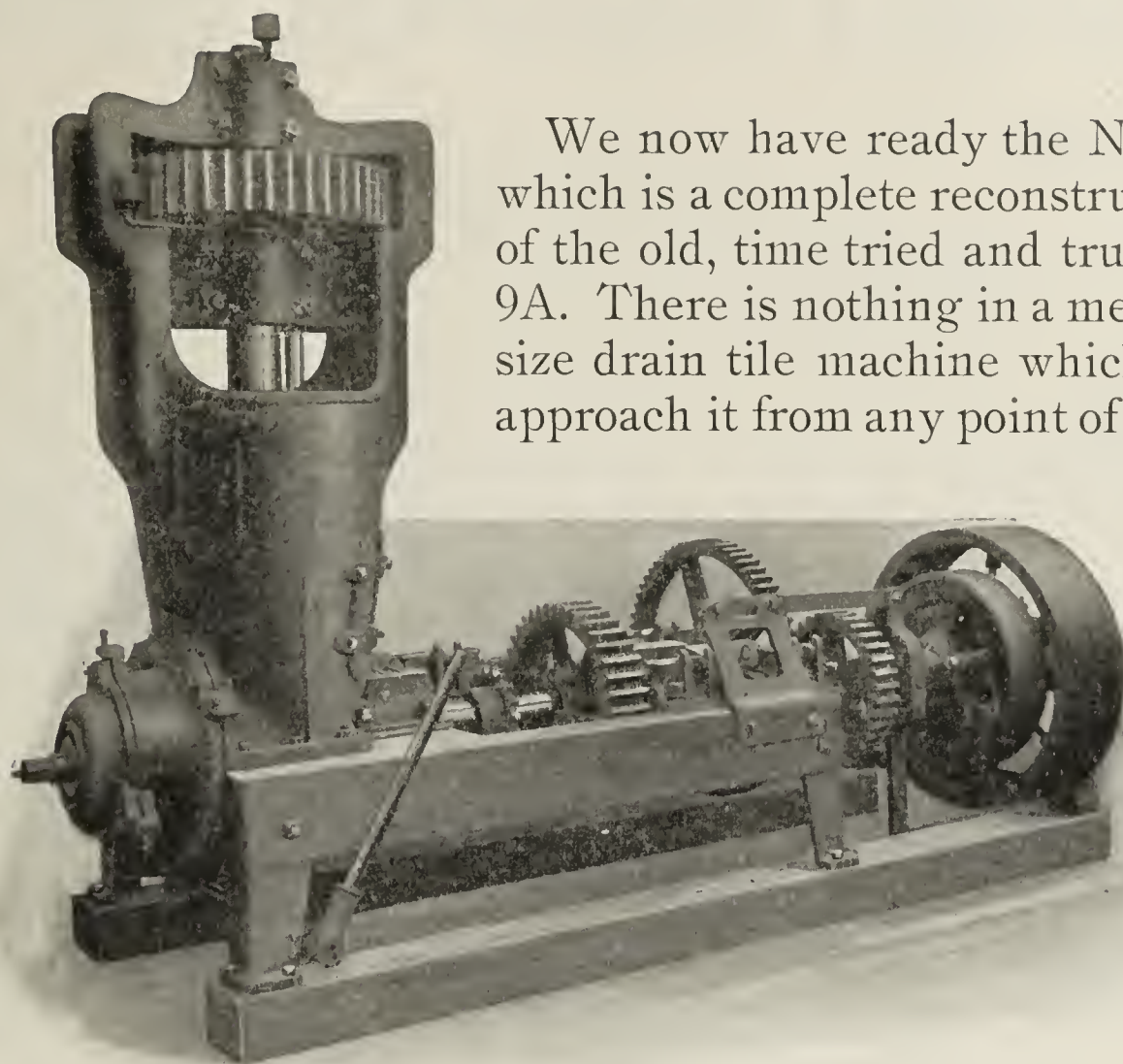
Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.

Drain Tile Machines



We now have ready the No. 9B which is a complete reconstruction of the old, time tried and true No. 9A. There is nothing in a medium size drain tile machine which can approach it from any point of view.

The Brewer No. 9B

Is built along the most modern lines. Gear frame and upright cylinder are both one piece castings, machined together. Knives are forged from hard high-carbon steel. Up-thrust bearing, marine pattern. Augers and casings white-iron.

The gears are wider face, the shafts are larger and the whole machine 1,000 pounds heavier than the No. 9A.

Ask for further particulars.

H. Brewer & Company,

Tecumseh, Mich.

HOME OF HOOSIER CLAY MACHINERY.

ESTABLISHED 1878.

INCORPORATED 1906.



New Factory of Madden & Co., Manufacturers of Hoosier Brick and Tile Machinery.

Hoosier Upright Tile Machines are in a Class by Themselves. Machines for all Sizes of Tile—3 inches to 30 inches.

Hoosier Cutting Tables for Brick and Tile are unsurpassed for accuracy and service.

WATCH FOR OUR NEW CATALOGUE.

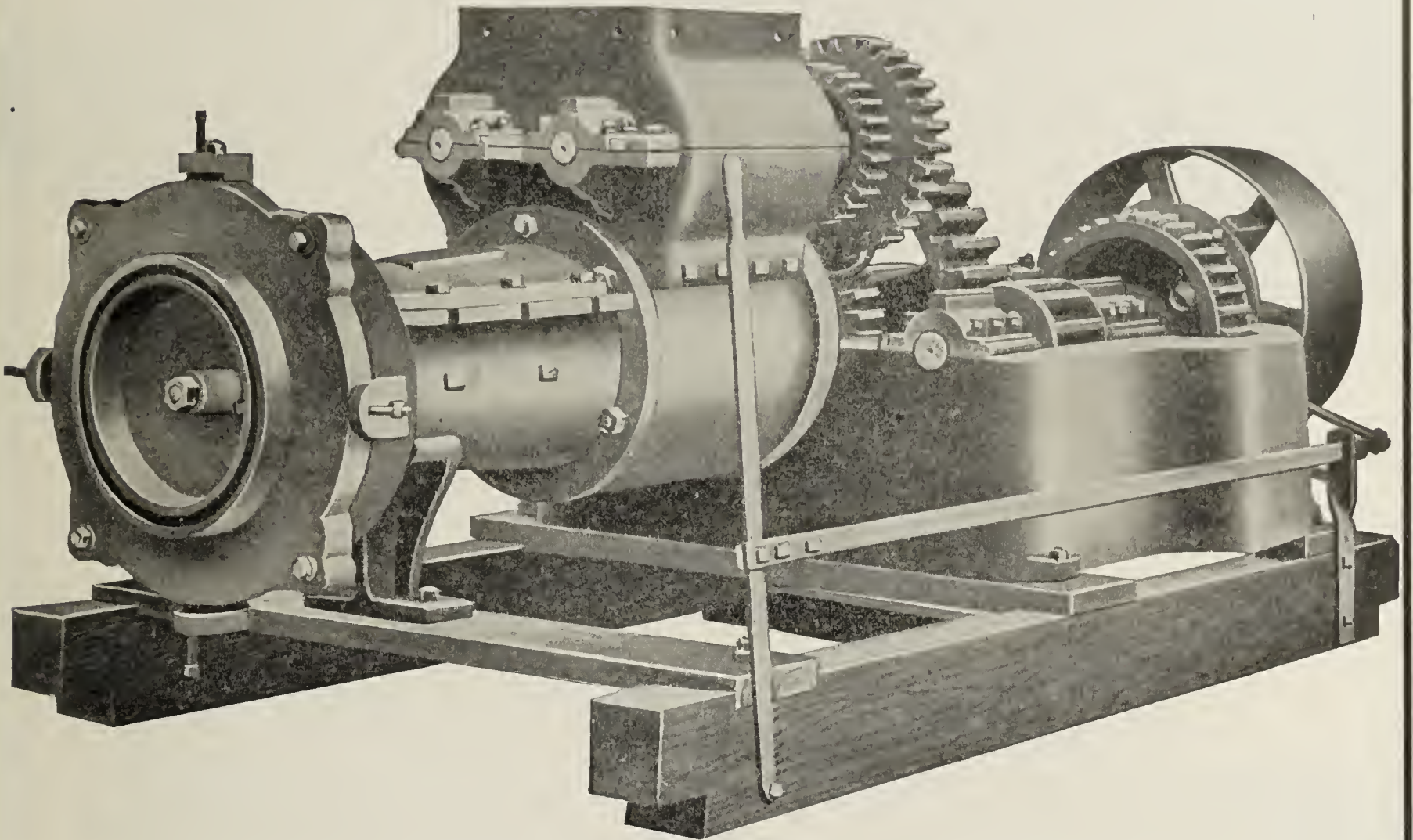
Write us for information.

MADDEN & COMPANY, Rushville, Ind.

Hoosier Clayworking Machinery

1878—Twenty-nine Years' Experience—1907

Brick, Tile and Hollow Block Machines



Note **DESIGN, STRENGTH** and **SIMPLICITY** of this machine.
THIS IS OUR NEW MODEL Stiff Mud Machine with extra pugging
 and feeding attachment, the use of which practically eliminates lamination.
 Made in two sizes for capacity up to 100,000 per day.

AUSTIN BRICK AND TILE WORKS.

ED. BARR, Proprietor.

Manufacturer of PAVING AND COMMON BRICK AND DRAIN TILE.

Dealer in St. Louis Fire Brick and Fire Clay.

Austin, Minn., December 29, 1906.

MADDEN & Co., Rushville, Ind.

Gentlemen—It affords me pleasure to give my testimonial of the efficiency of Madden machinery. Fifteen years ago I put in an outfit of your machinery in Mason City, consisting of a 5 B Brick and Tile Machine, Pug Mill and Granulator, which has been in continuous operation ever since, and has worked enough clay to make a string of tile to encircle the globe. The machine is rated at 25,000 brick per day, and the last time I saw it, it was making tile at the rate of 36,000 4-in. tile a day, which was about a month ago. There has been three other outfits of Madden machinery installed there. Eleven years ago I installed an outfit of your machinery in Austin, consisting of 5 B Brick and Tile Machine, Pug Mill and Granulator in which I have worked a great variety of clay from the fattest to the leanest, and the machinery does its part well.

I consider the Pug Mill the best mixer I ever saw. It operates with mill level full of clay from one end to the other and with little power.

I don't think my repair bill has exceeded \$300.00 in 10 years on the brick machinery.

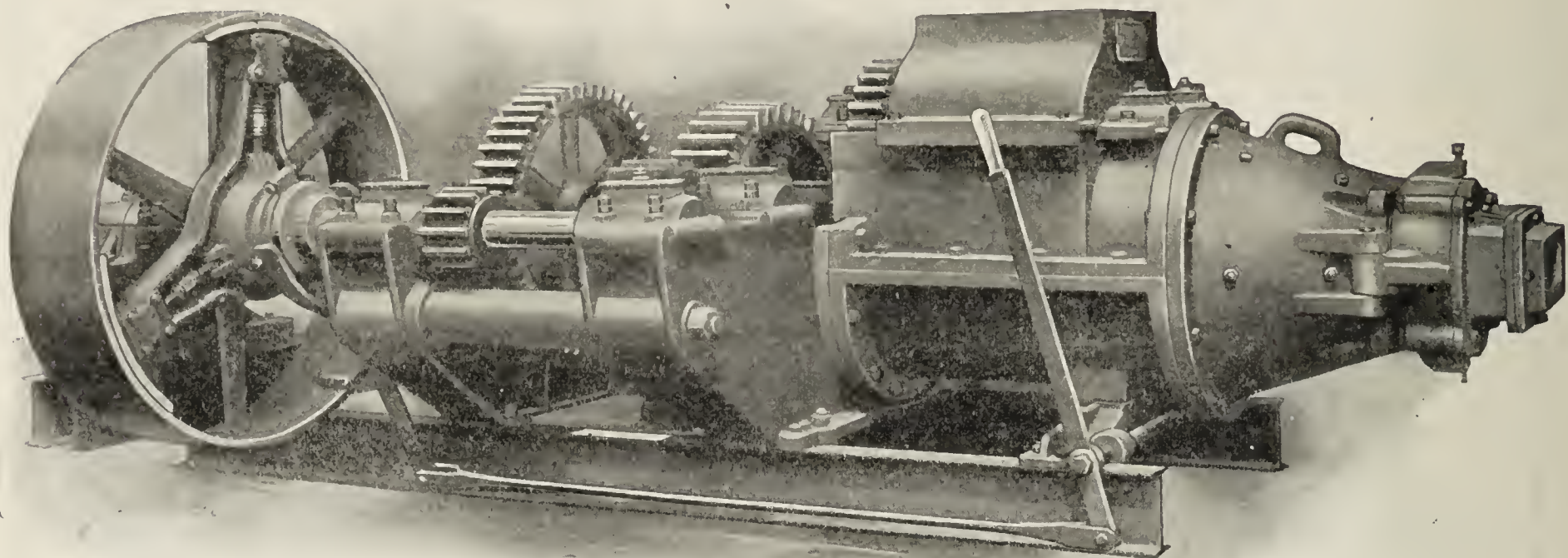
Yours respectfully,

ED. BARR.

For further information address

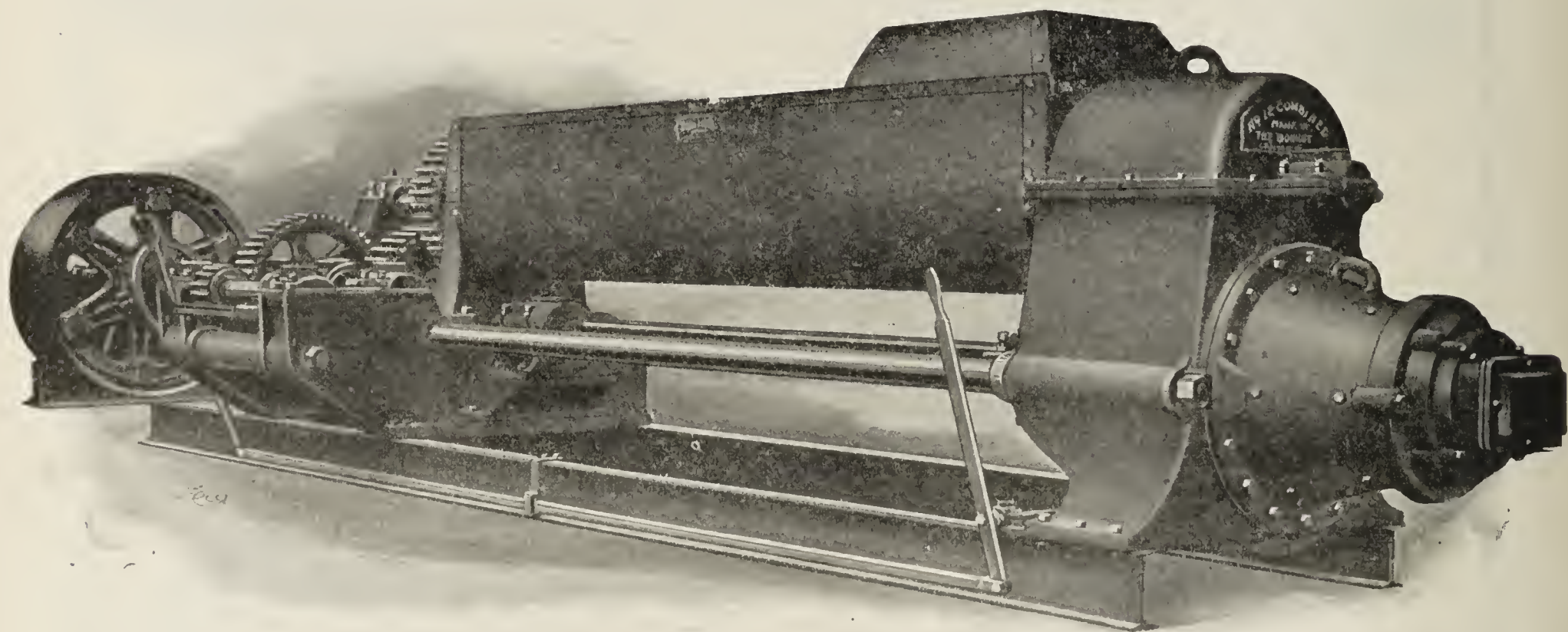
MADDEN & COMPANY, Rushville, Ind.

Modern Brick Machinery



No. 10½ Auger Brick Machine.

50,000 to 75,000 capacity per day. Steel gearing, all wearing parts accessible. The best machine for those difficult clays.



No. 12 Combined Brick Machine and Pug Mill.

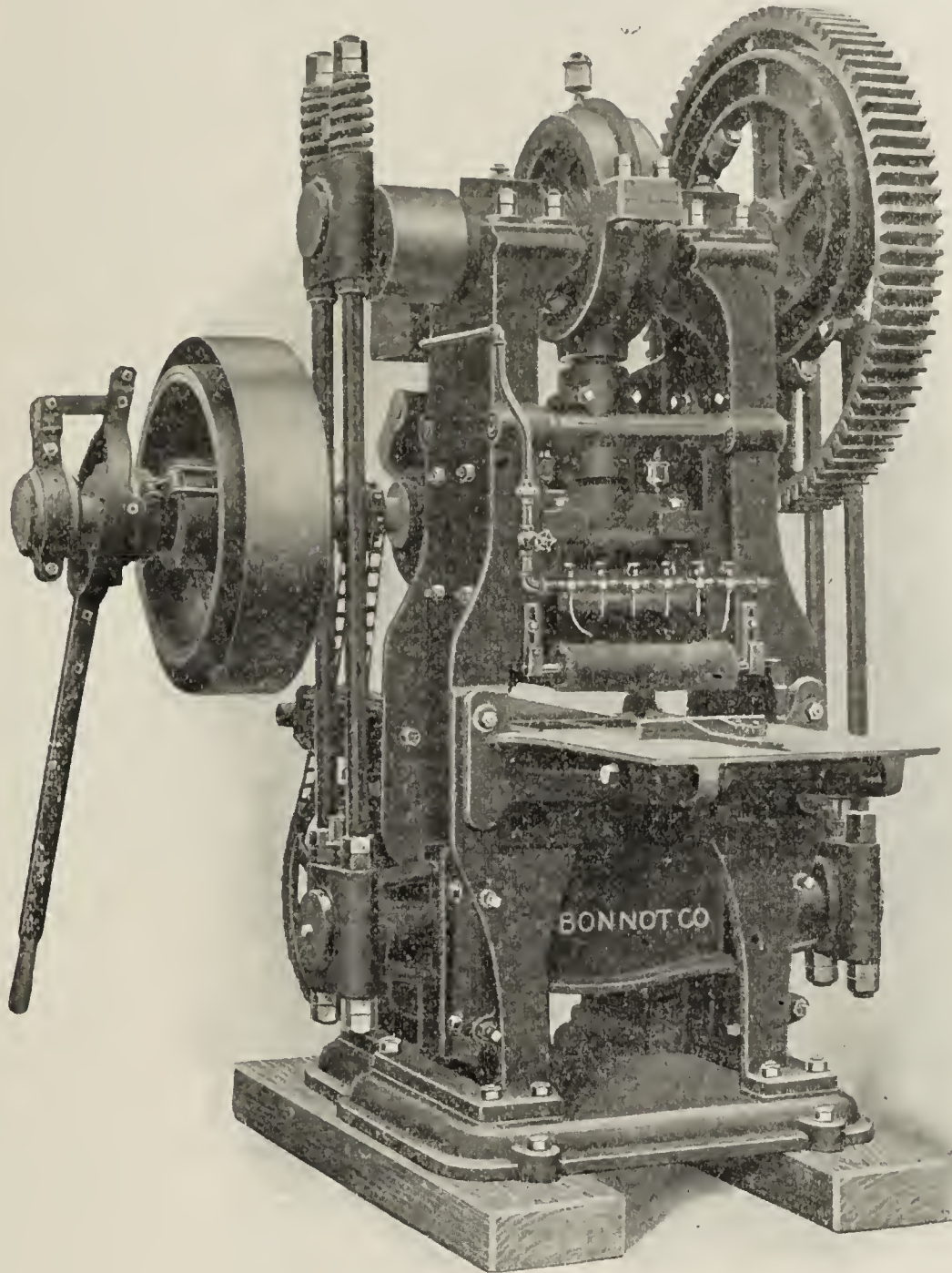
All steel gearing and very heavy construction throughout. Main thrust bearing is outside of frame and can be rebabbited without dismantling the machine. Capacity 100,000 to 125,000 per day.

THE BONNOT COMPANY, Canton, Ohio.

To Lessen Your TROUBLES Use Our PIANO WIRE SCREEN.

DO YOU WANT THE BEST REPRESS?

The
Canton
Repress
has
fewer
parts.
No toggles.
Heavy
Pressure.
Convenient
Adjustment
for
Changing
Thickness
of Brick.



Pressing
strain
taken on
the heavy
steel
side rods.
Large
shafts
and
bearings.
No
wearing
parts
below
the die.

The Canton Repress

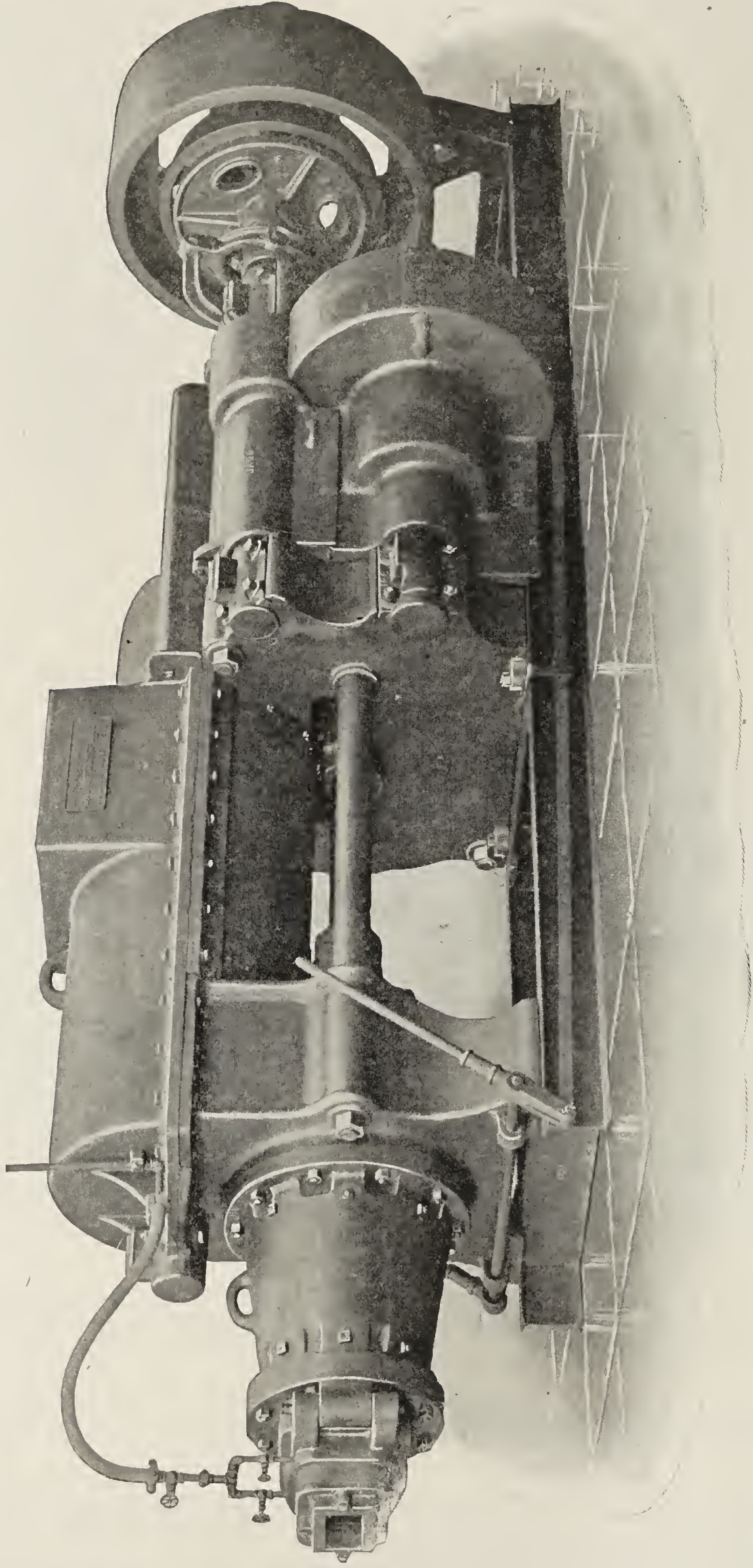
More points of merit than any other repress made.

THE BONNOT COMPANY,

Canton, Ohio, U. S. A.

Write for our Circular No. 12, just issued describing the latest designs of brick machinery.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

Size of hopper, 26-in. x 26-in.

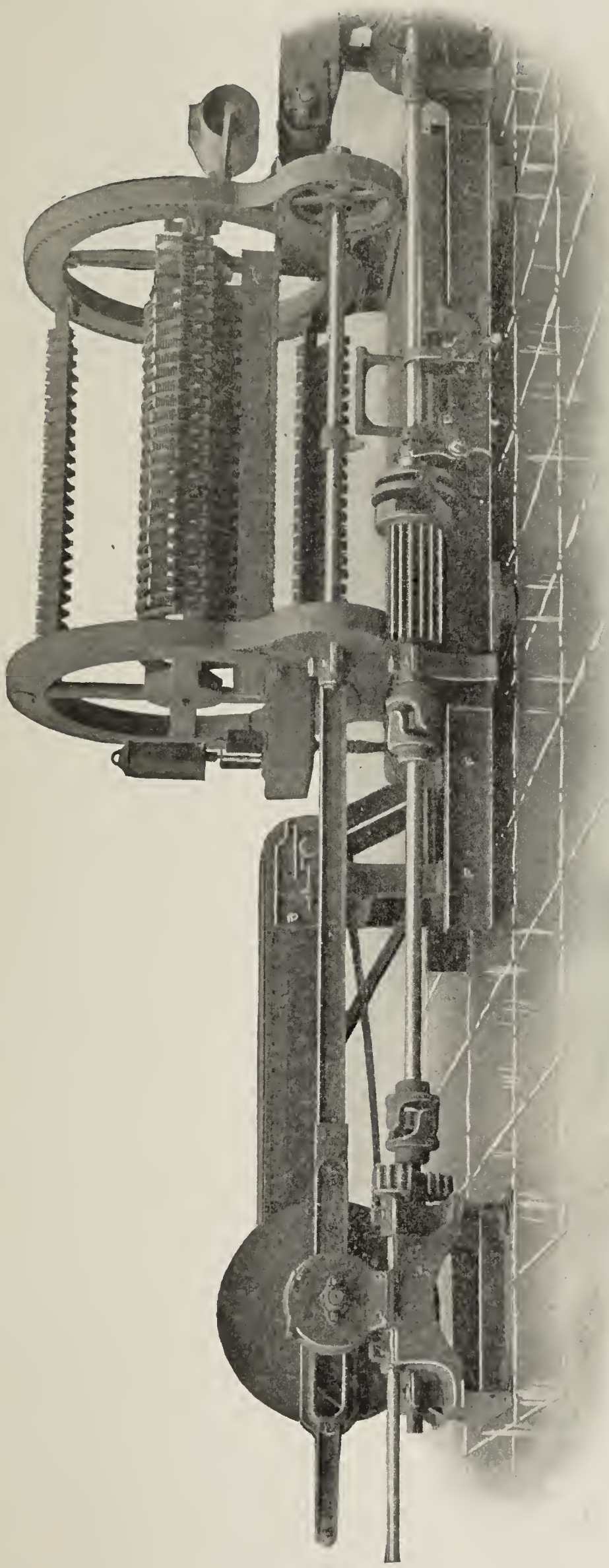
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

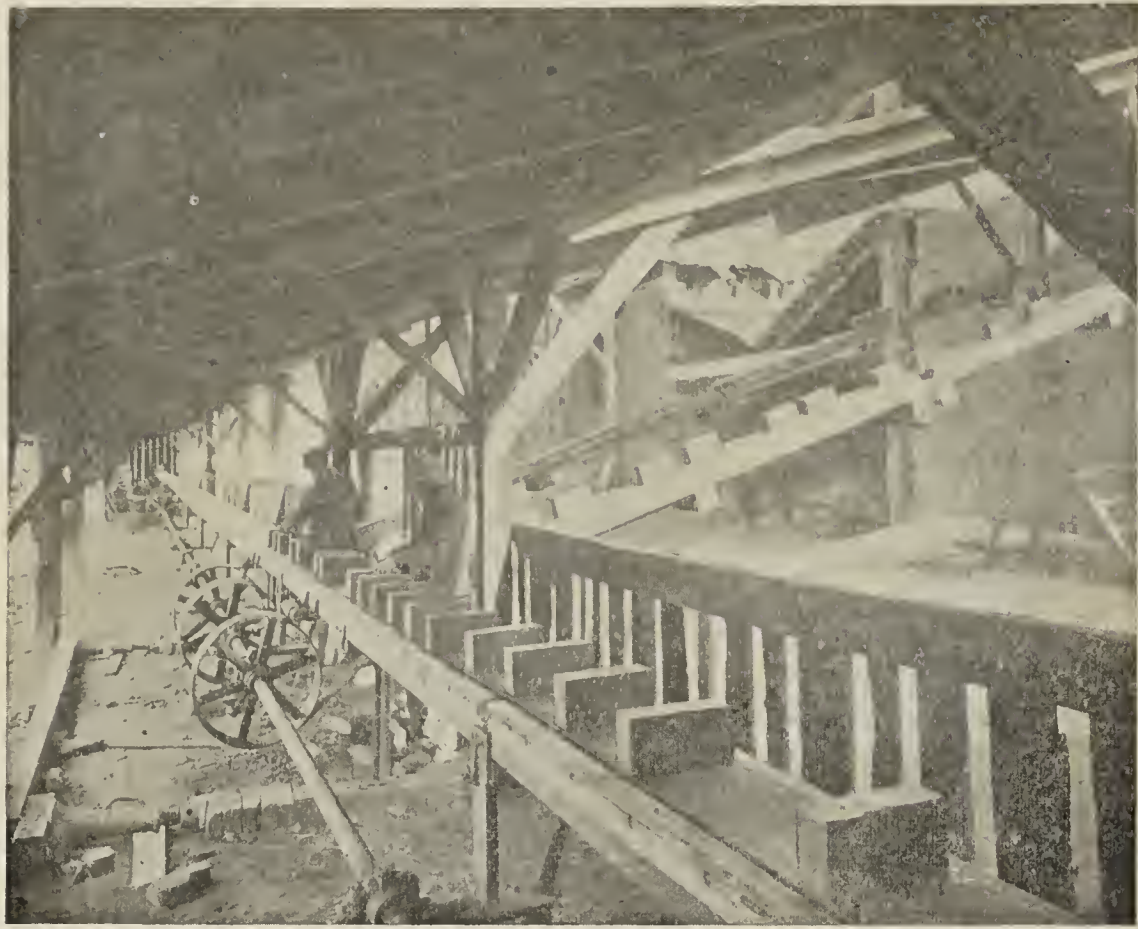
We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled.

If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.



Howard-Park Brick Co., Chattanooga, Tenn.
Two transferrers (boys) take care of 80,000 brick per day.

The Scott Kiln=Drying System

(Alex A. Scott Patents)

Consists of Two Factors:

1. A belt conveyor to take the bricks from the machine out to and into the kilns, from which they are taken by the setters and immediately set in the usual way for burning.
2. The **drying** of the bricks **in the kiln** after they are set.

The saving in the cost to manufacture amounts to at least \$1 per thousand.
Will you investigate?

American Blower Company

Detroit, Mich.

New York
141 Broadway

Chicago
Marquette Bldg.

Atlanta
Empire Bldg.

The Richardson-Lovejoy Piano Wire Screen



Patent Applied For.

Will screen more clay to a given degree of fineness than ANY perforated metal or woven-wire screen of five times the area.

Guaranteed against breakage. Upkeep insignificant. No attendance.

All wires of the same length.

Each wire separately tensioned and separately removable.

No piano board taper bolts to slip—Each wire tightened by a special hook-bolt that cannot loosen.

A stationary screen with simple device that vibrates the wires and prevents clogging. Sent to any responsible manufacturer on 30 days' trial.

Special circular "SCREENS" to all who are interested.

The Richardson-Lovejoy Engineering Co.

Geological Examination of Properties
Analyses and Tests
Mines and Mining
Plans and Specifications for Plants
Driers, Kilns and Gas Producers
Correction of Faults of Manufacture
Special Mechanical Devices, Molds and Dies
Testing and Controlling Apparatus
Books for Clayworkers

PUBLICATIONS

"Burning Brick in Down Draft Kilns".....	\$1 00
"Kiln Records".....	1 00
"Drying Brick".....	.25
"Scumming and Efflorescence".....	.50
"Brickworks Engineering".....	Free
"Brick Kilns".....	"
"Testing and Controlling Apparatus".....	"

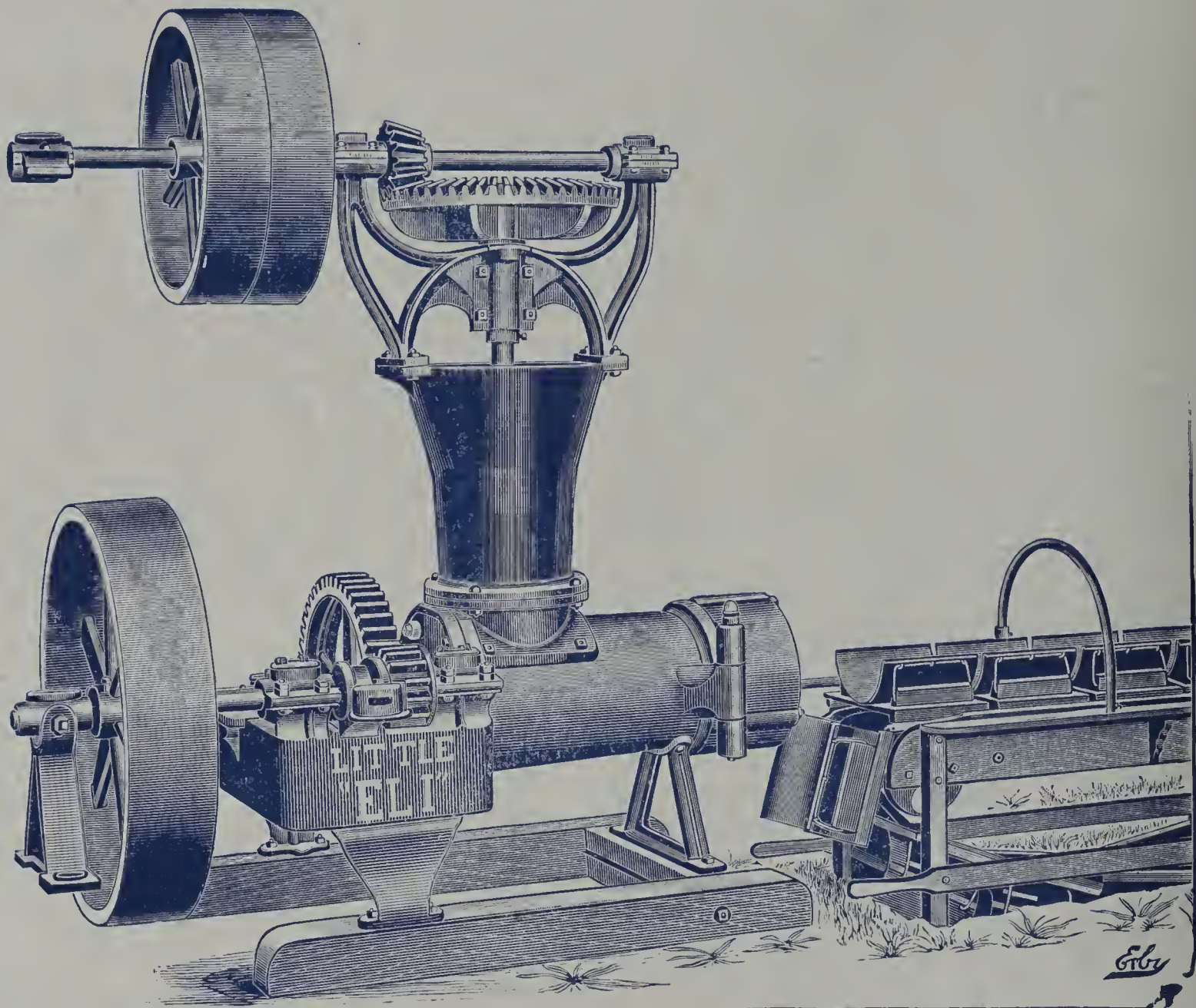
Consulting Engineers and Factory Architects

1534 North High St., Columbus, Ohio.

Our Smallest Machine for Brick, Tile, etc.

Capacity 18,000 or over First-Class Brick, or 8,000 to 12,000 3-inch Tile daily.

Horse Power required, 12 to 15.



MIXES THE MATERIAL THOROUGHLY. POSITIVE FEED. NO LAMINATION. INCREASES CAPACITY. IMPROVES QUALITY. IT HAS THE HINGED NOSE, EXTRA LONG, WHICH ALLOWS THE DIES TO BE MOVED TO OR FROM THE AUGER NEARLY SIX INCHES. WRITE FOR PRICES AND DETAILS.

Michigan Brick and Tile Machine Co., Morenci, Mich.:

Seattle, Wash., Oct. 31, 1902.

Gentlemen—"Eli" is still doing excellent work for us after ten years of faithful service making millions of brick out of clay that would put many brick machines out of business in the first round.

Yours very truly,

DENNY CLAY CO. (By Geo. W. K.)

Michigan Brick and Tile Machine Co., Morenci, Mich.:

Seattle, Wash., Nov. 26, 1902.

Gentlemen—The "Eli" brick machine that we bought from you was put into service at our works in 1893. Up to date we have made something over fifteen million brick on this machine. This includes shale paving brick and fire brick from highly refractory clays, in fact the clays we have run through "Eli" are of a character that will find a weak spot that there may be in any part of the machine. This output amounts to upwards of one hundred and five million pounds of clay. While this is a comparatively small run, based on Eastern concerns, in the time that has elapsed, yet we do not believe that there is a brick machine in the country today that is in better condition after the services rendered, than is our "Eli," for to all appearances, "Eli" is as good as the day he was installed.

Very truly yours,

DENNY CLAY CO.

Michigan Brick and Tile Machine Co., Morenci, Mich.:

Seattle, Wash., June 20, 1904.

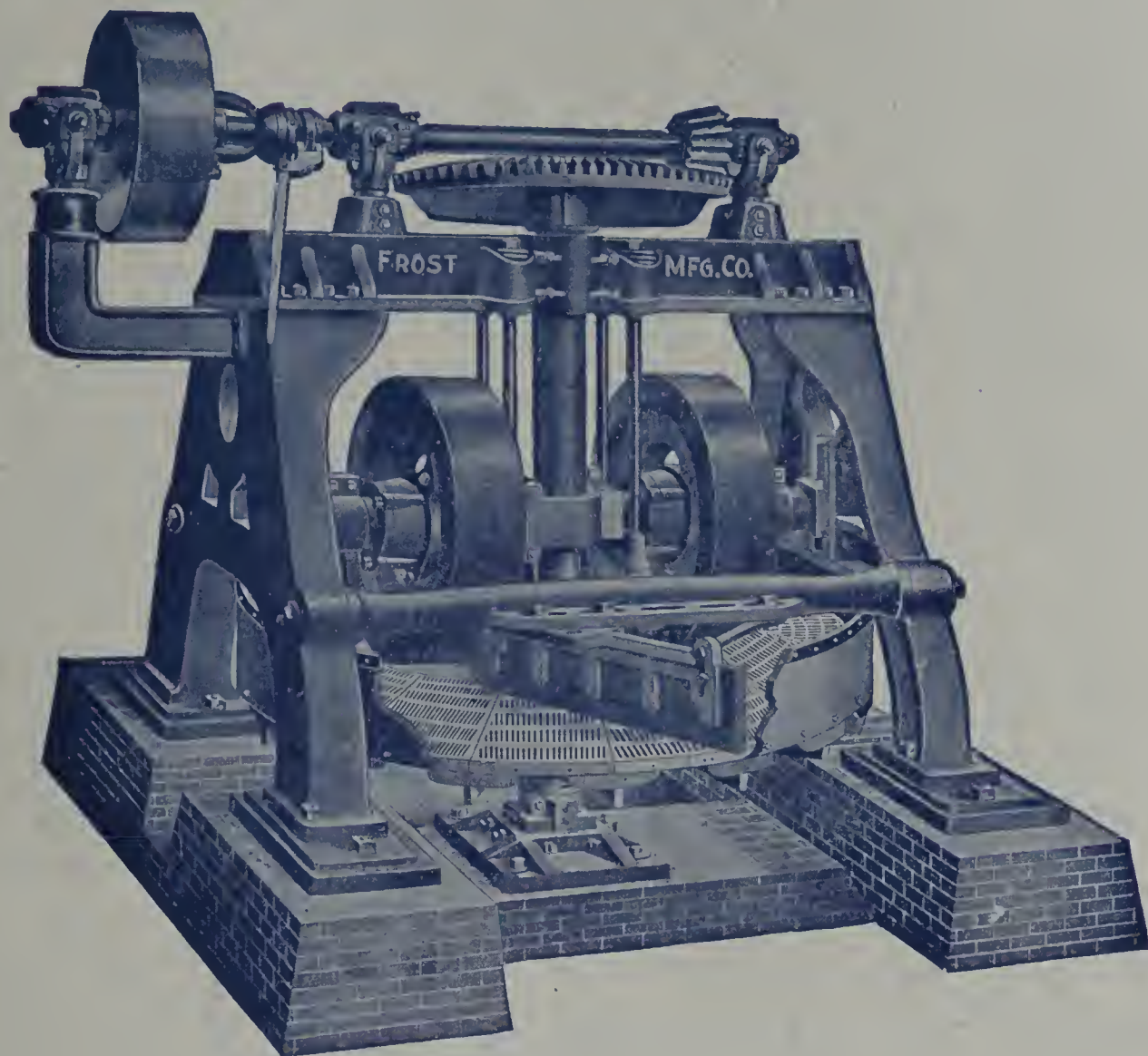
Gentlemen—Your informant was mistaken, and you were right in the matter of our having replaced the brick machine that we bought of the — — —. This machine is doing fairly good work for us. I am free to say, however, that if we had an order to place today for another brick machine, that we would buy the "Eli," as we have now tried different machines, "Eli" among them, and none are so satisfactory as the machine you make, and we have many times regretted that we did not buy your large Eli when we were East the last time, though at that time we were desirous of placing our order with some firm that could equip the whole plant and do it quickly, and it was for this reason only that we did not place our order with you.

Yours very truly,

DENNY CLAY CO. (Per Geo. W. K. Mgr.)

Michigan Brick and Tile Machine Co., Morenci, Mich.

FROST DRY PAN



When you buy a Pan buy a FROST Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.

SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address: "FROSTMANCO," Chicago.



As the bricks from the "A B C" Waste Heat Dryer are **bone dry** when set, there can be no discoloration and little liability of burning an uneven color due to the chemical action set up by the vapors mixing with the gases from the fires. Again, bone dry bricks are much stronger, hold their shape better, can stand rougher handling without injury, there is a lower percentage of loss, and no possibility of "kiln marking" by setting under their own weight in setting.

Ask for Bulletin 159C.

American Blower Co.,

DETROIT.

New York. Chicago. Atlanta. London.

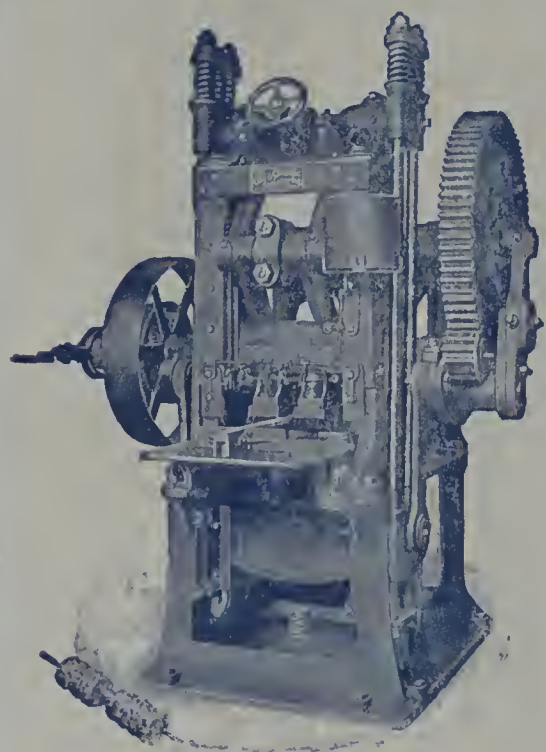
REMEMBER THIS

After having tried one of the contrivances which appeals to you for screening your clay on account of cheapness and small space required, **You** will come to us to solve your **Screening Troubles**. We have outlived a hundred of such repeated attempts, and are at present removing these make believe screens. As soon as the user can get over the shock of having been deceived, **The Perfect Clay Screen** can be adjusted according to requirements. **Can you do this with any other screen?** We Positively Guarantee It, and allow you to be the judge before you pay for it. Dunlap's Rolling Fire Box Door Has Equal Merits.

Write today for information.

Dunlap Mfg. Co.

Bloomington, Ill.



THE RICHARDSON REPRESS.

OUR DRYER CARS ARE THE STANDARD.

The Ohio Ceramic Engineering Co.

Cleveland, Ohio.

The Richardson Repress is Reliable.

That it holds up and does first-class work is proven by the increasing demand from old customers.

The Screening Problem solved by our Piano Wire Screen.

Fire did us some damage; new shops are about up. Enlarged facilities and new tools will enable us to do even better work than before.



DUMP CAR.

THE CLAYWORKER

PUBLISHED MONTHLY BY
T A RADDALL & CO
INDIANAPOLIS..



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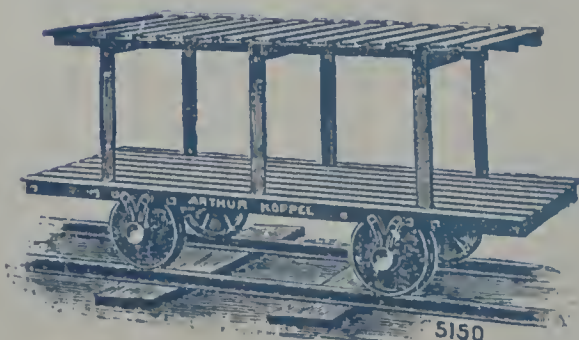
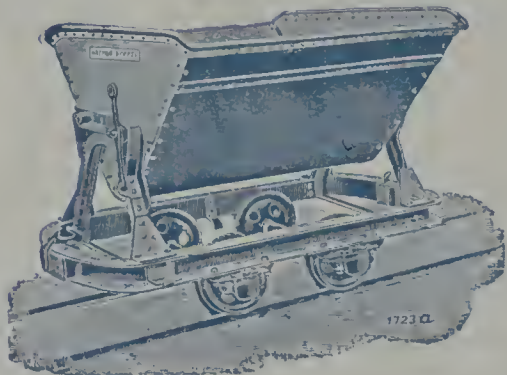
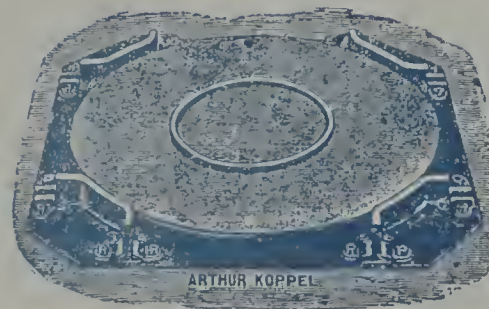
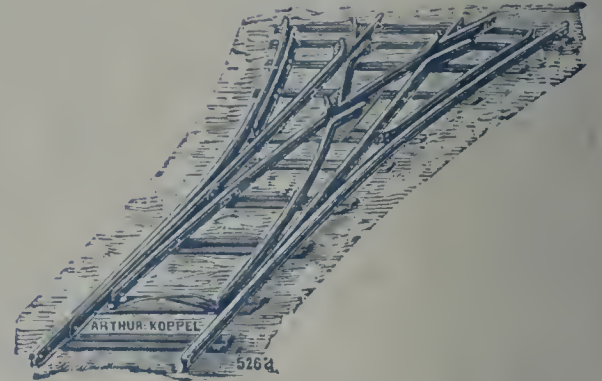
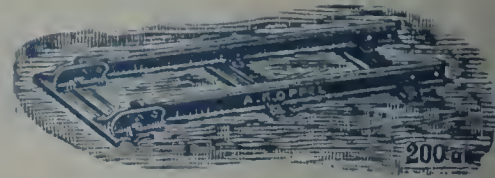
Works at



OUR COMPLETE INDUSTRIAL RAILROADS

FOR MINES, QUARRIES AND BRICKYARDS, INCLUDING RAILS, STEEL TIES, PORTABLE TRACK, SWITCHES, FROGS, TURNTABLES, CROSSINGS, WHEELS, AXLES, SPARE PARTS, PLATFORM CARS, STEEL DUMP CARS, DRYER CARS, LOCOMOTIVES, ETC.

WRITE FOR
CATALOG
No. 41.



A LARGE STOCK

ALWAYS ON HAND AT OUR WAREHOUSES READY FOR PROMPT DELIVERY. CATALOGUE "C" WILL INTEREST YOU. IT DESCRIBES EVERYTHING WE MANUFACTURE.

ARTHUR KOPPEL COMPANY

1515 Chronicle Bldg., SAN FRANCISCO
1639c Monadnock Block, CHICAGO
136 Morris Bldg., NEW YORK
1607 Machesney Bldg., PITTSBURGH

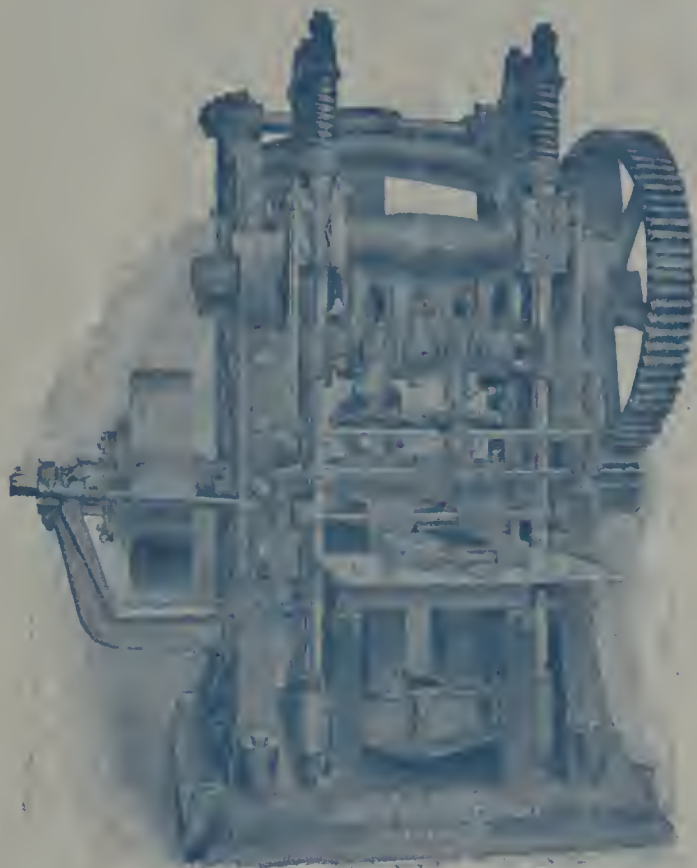
Works at



Trade-Mark.

THE CHAMBERS BRICK MACHINERY.

Weight about 11000
pounds
Capacity 2000 bricks
per hour.



Single Crank move-
ment. Working
Machinery all above
the Mold Box.

Philadelphia Repress, No. 2.

Automatic End-Cut and Side-Cut Auger Machines.



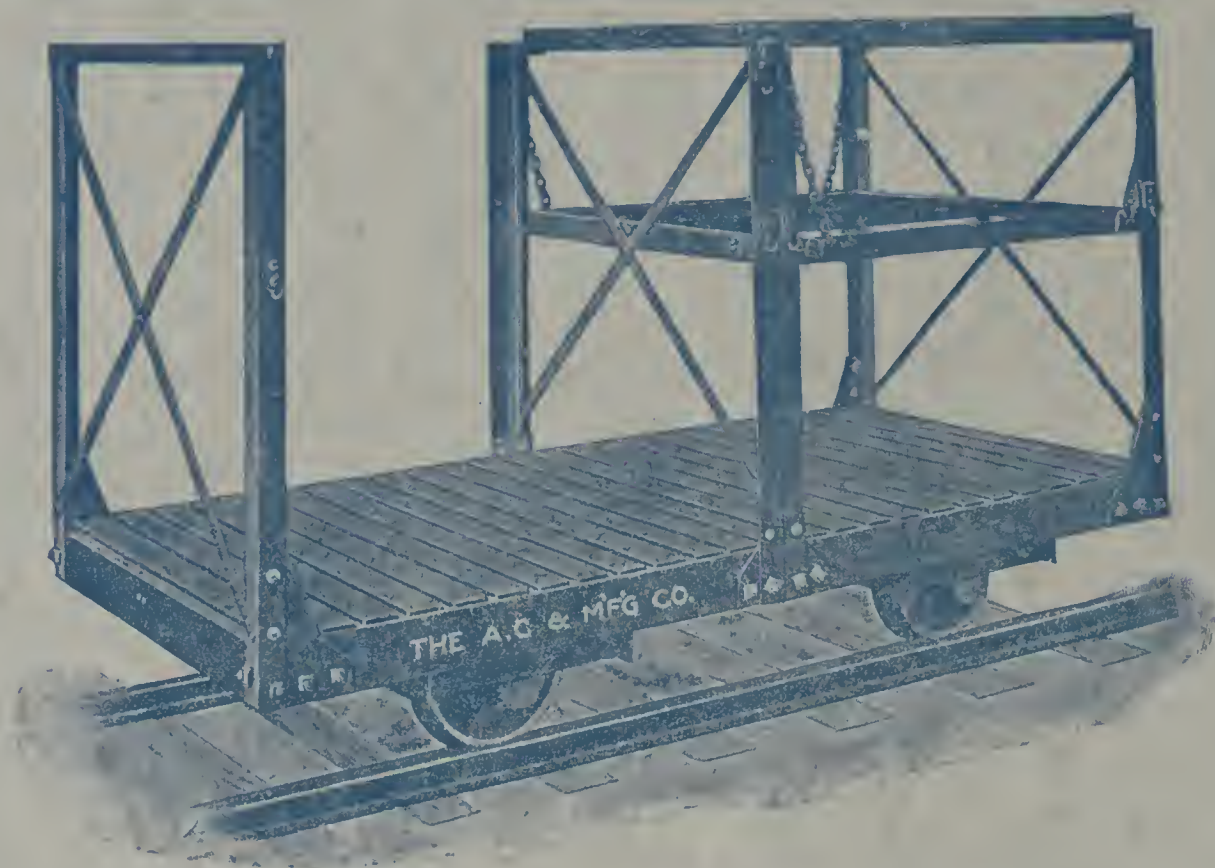
Capacity—Strength—Materials—Workmanship—Design, all of the best
and all are factors in the satisfaction given users of our machinery.

CHAMBERS BROTHERS COMPANY

Chicago Office:
E. R. FRAZIER, 59 West Jackson Blvd.

Fifty-Second and Media Streets
PHILADELPHIA, PA.

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 823.)

G. E. LUCE ENGINEERING CO.,

601 Plymouth Building,
CHICAGO, ILL.

Practical Design and Supervision of Brick Plant Construction.

From our long experience in various clayworking fields we are able to offer suggestions which will bring your old plant to its highest efficiency or start your new one a little better than the best.

A careful study of the drawings we exhibited at the St. Louis Convention would convince you OUR PLANTS MAKE BRICK. If you were not there send for copy of one of the most complete Brick Plant drawings ever exhibited.

THE HARRINGTON AND KING PERFORATING CO



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
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TO SAY THE LEAST,

it must be disappointing to the brick manufacturer who has spent his time and money making **supposed** Dryer improvements, to find, upon completion of the work, that both time and money have been spent in vain.

The brick maker who installs a

RODGERS WASTE HEAT DRYER

takes no such chances, for the Rodgers Dryers NEVER DISAPPOINT—THEY MORE THAN SATISFY.

THE BEST IS ALWAYS CHEAPEST IN THE END.

L. E. RODGERS ENGINEERING CO.

Waste Heat Dryer Specialists,
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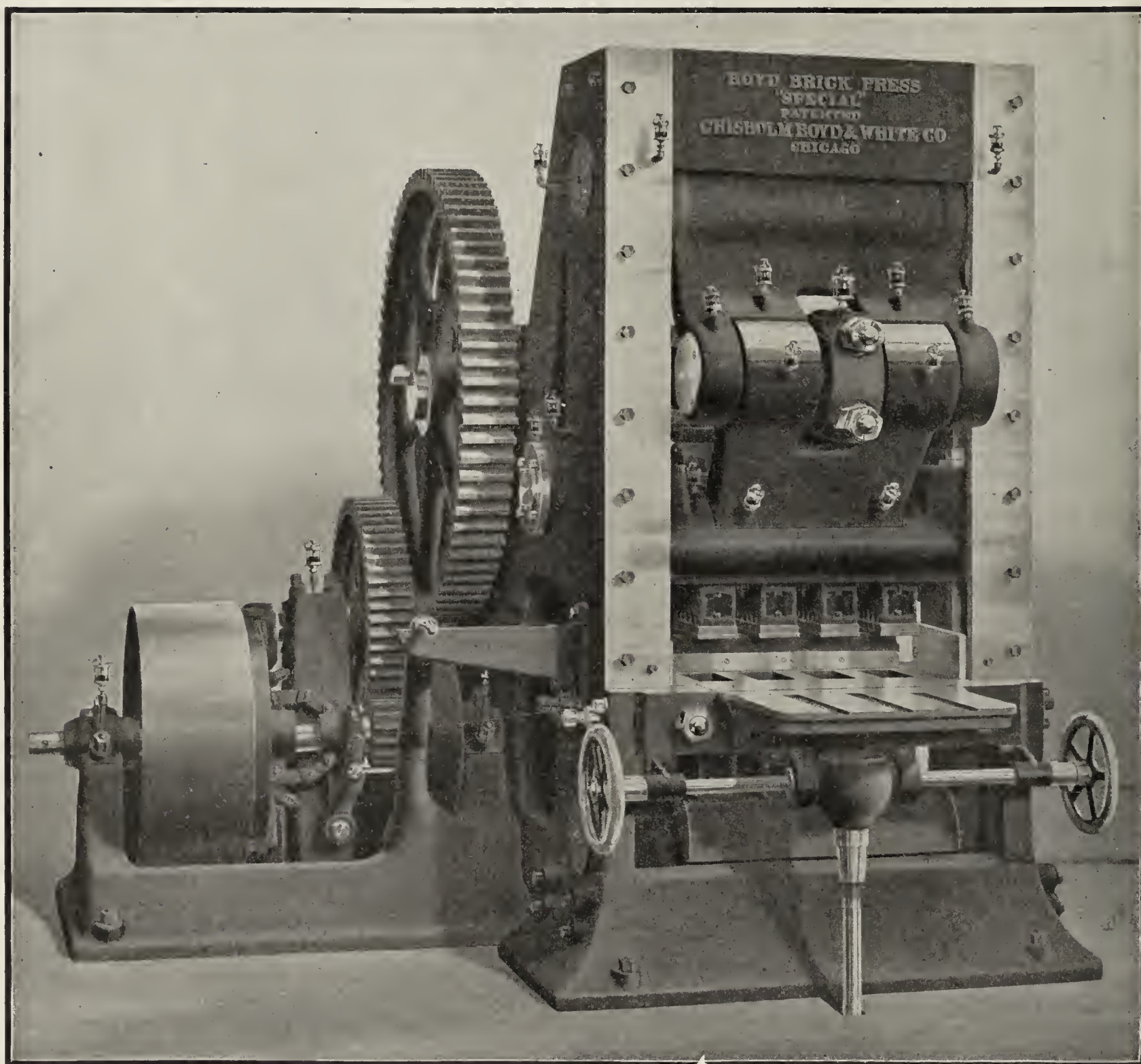
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Four-Mold "Special."



The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles to the art of brickmaking. Built in two, four and six mold sizes.

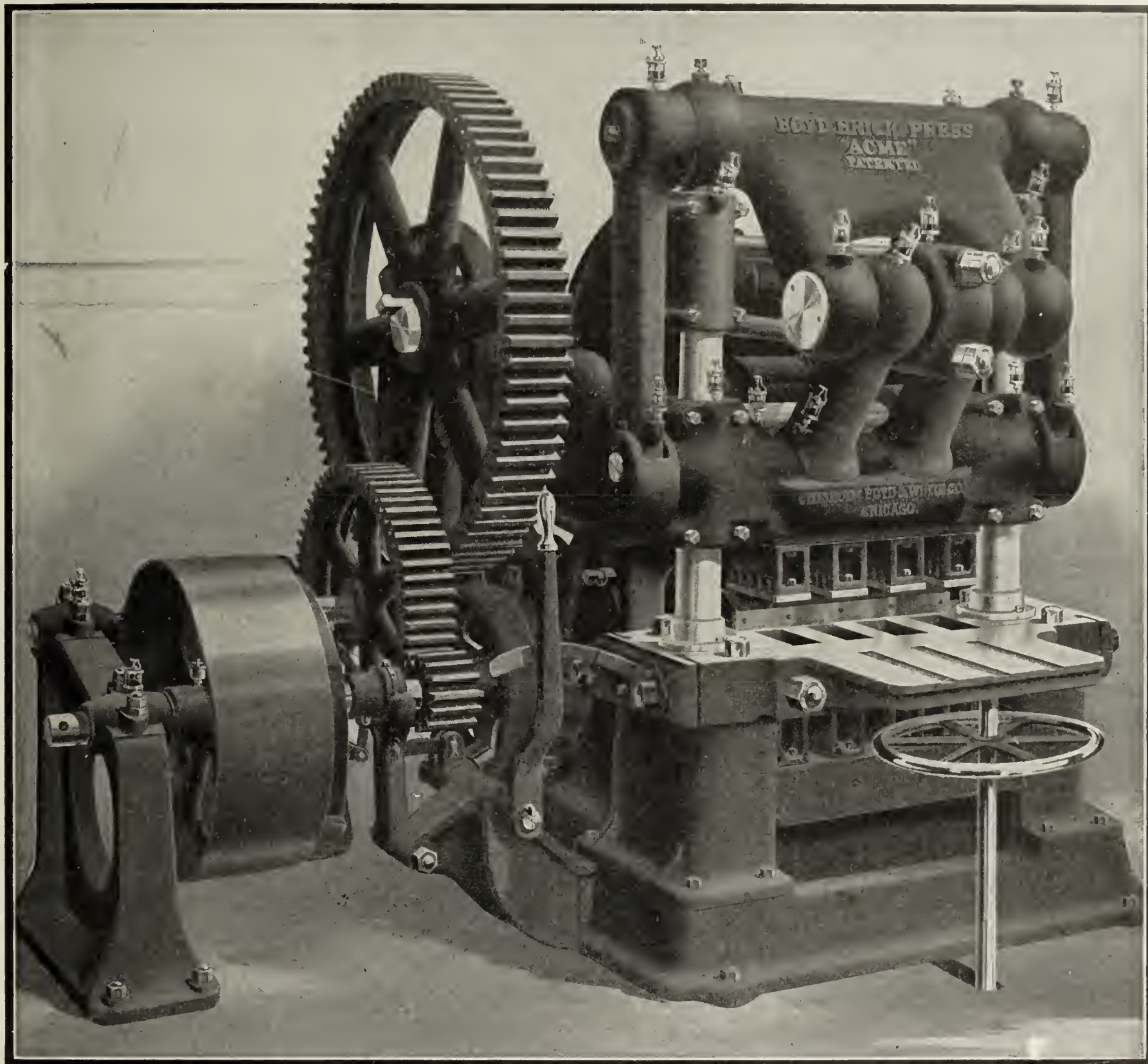
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Acme."



ITS NAME A GUARANTEE.

THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales.

THE BOYD BRICK PRESS was the standard at the start, and is the standard now. Steady progress, merit and improvements have kept it at the front.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for general Catalogue No. 15.

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The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

THE ONLY PERFECT BRICK PRESS

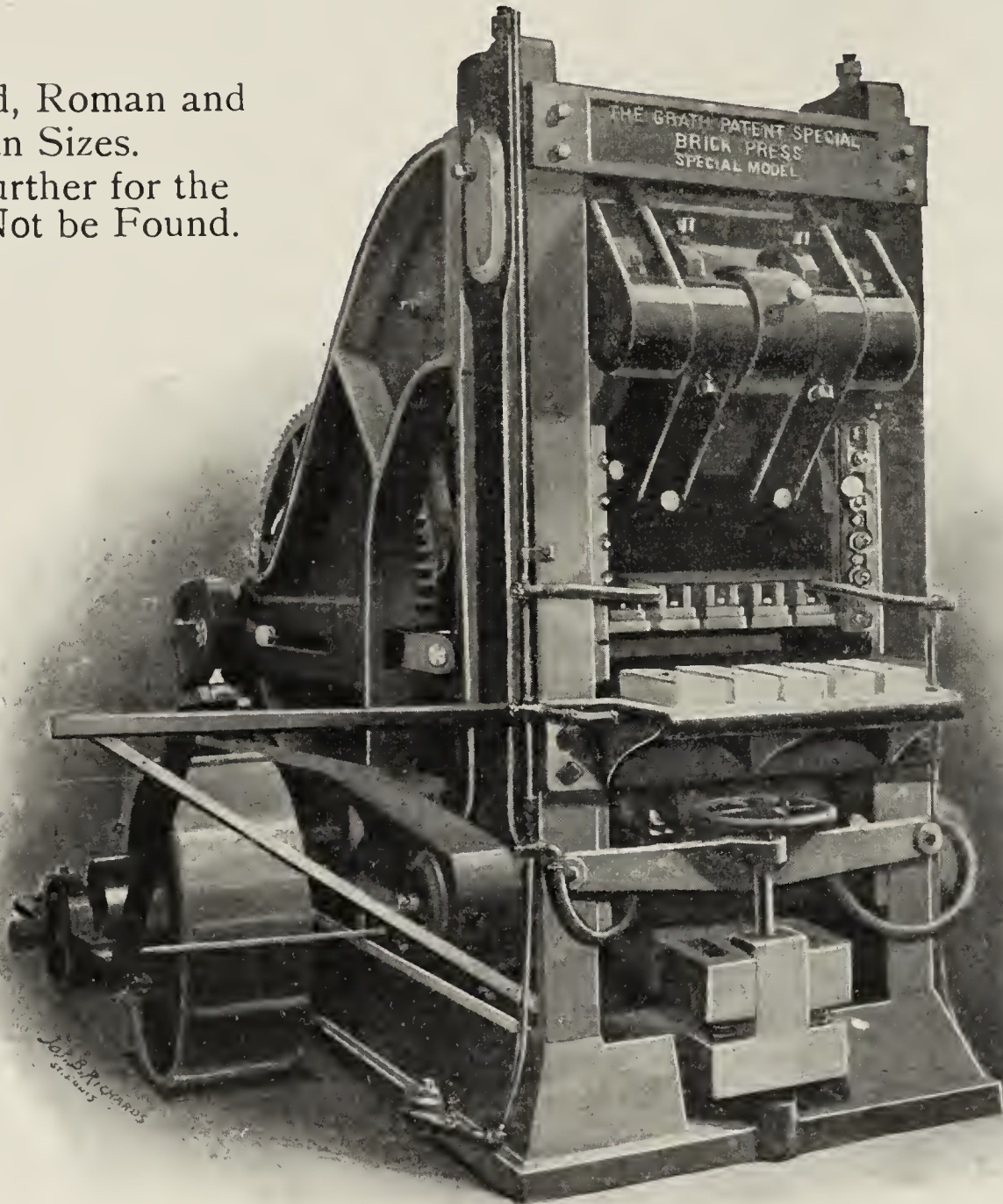
For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

Special Large Model Making Five Standard Size Brick.

For Standard, Roman and Norman Sizes.

Seek No Further for the Equal Can Not be Found.

The Best
is the
Cheapest
for the
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urer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
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Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

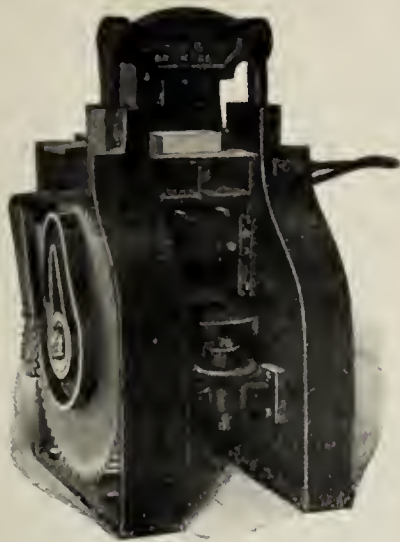
SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not top heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

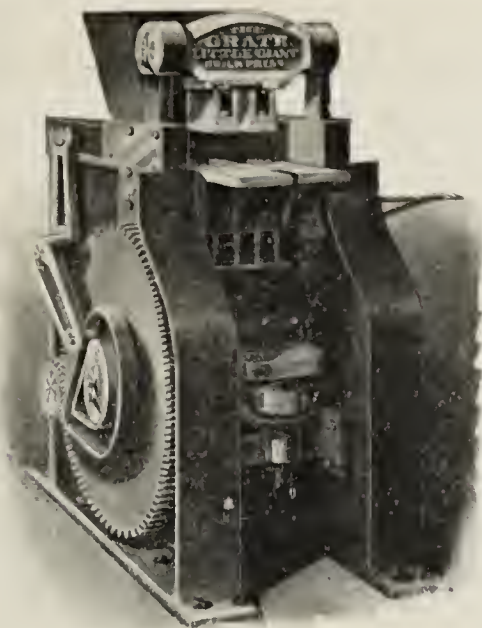
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

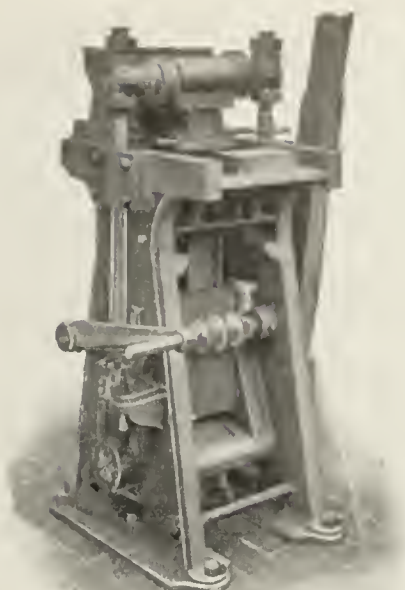
St. Louis, Mo., U. S. A.



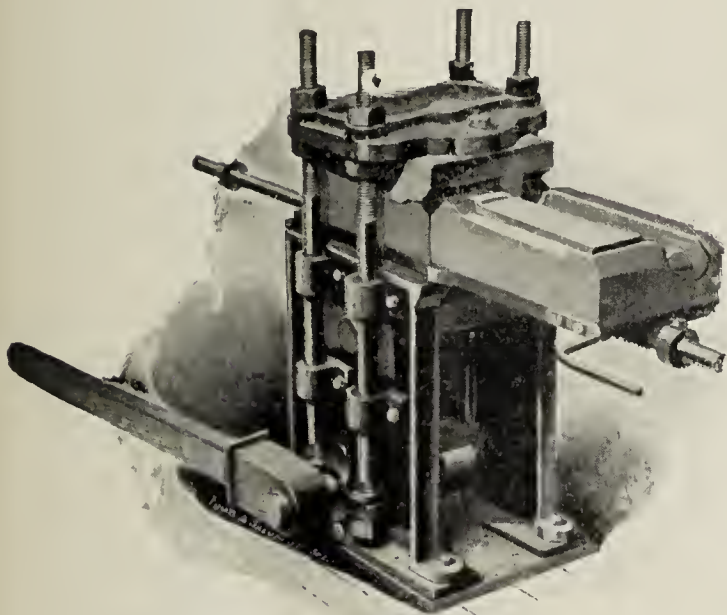
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



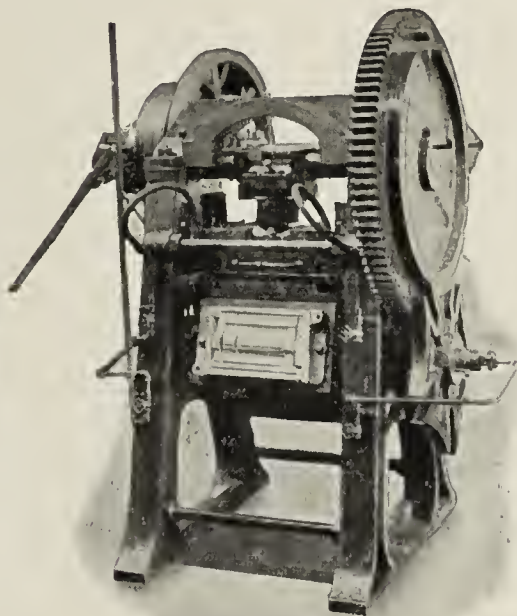
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



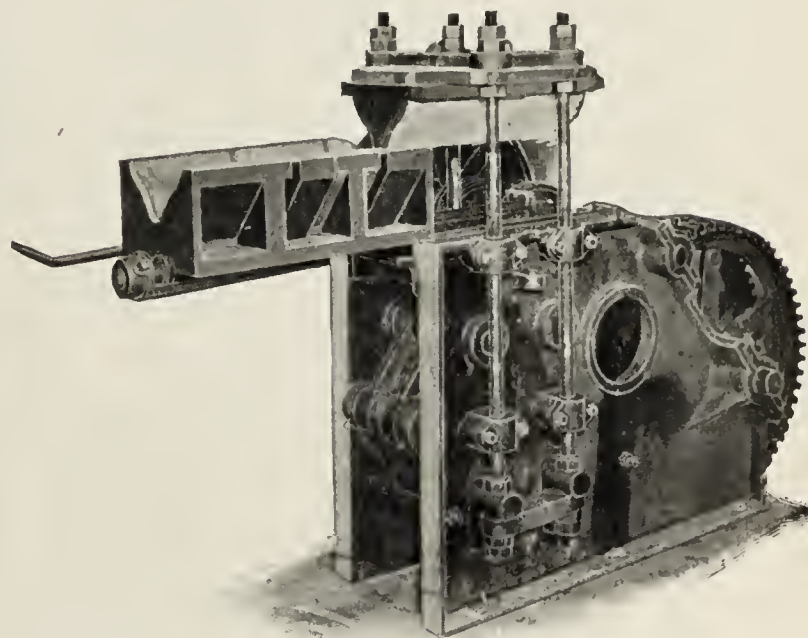
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
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From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
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For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
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Strongest and Simplest Made.
For Plaster or Metal Dies.
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The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

The New Grath Down=Draft Continuous Kiln.

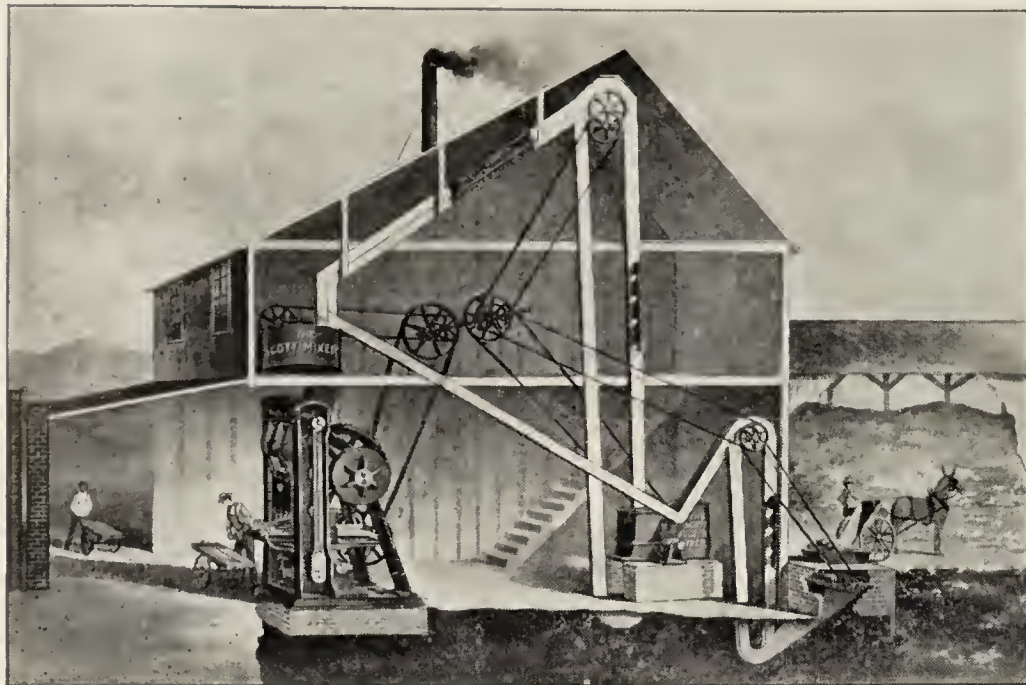
Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the *ordinary single* down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get *advantage* of all *waste* heat from your burning chamber, which you *lose* and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in *same* manner as the direct, through the furnaces up the bag and down through the ware. *Simple* and *sure* in operation. GUARANTEED.

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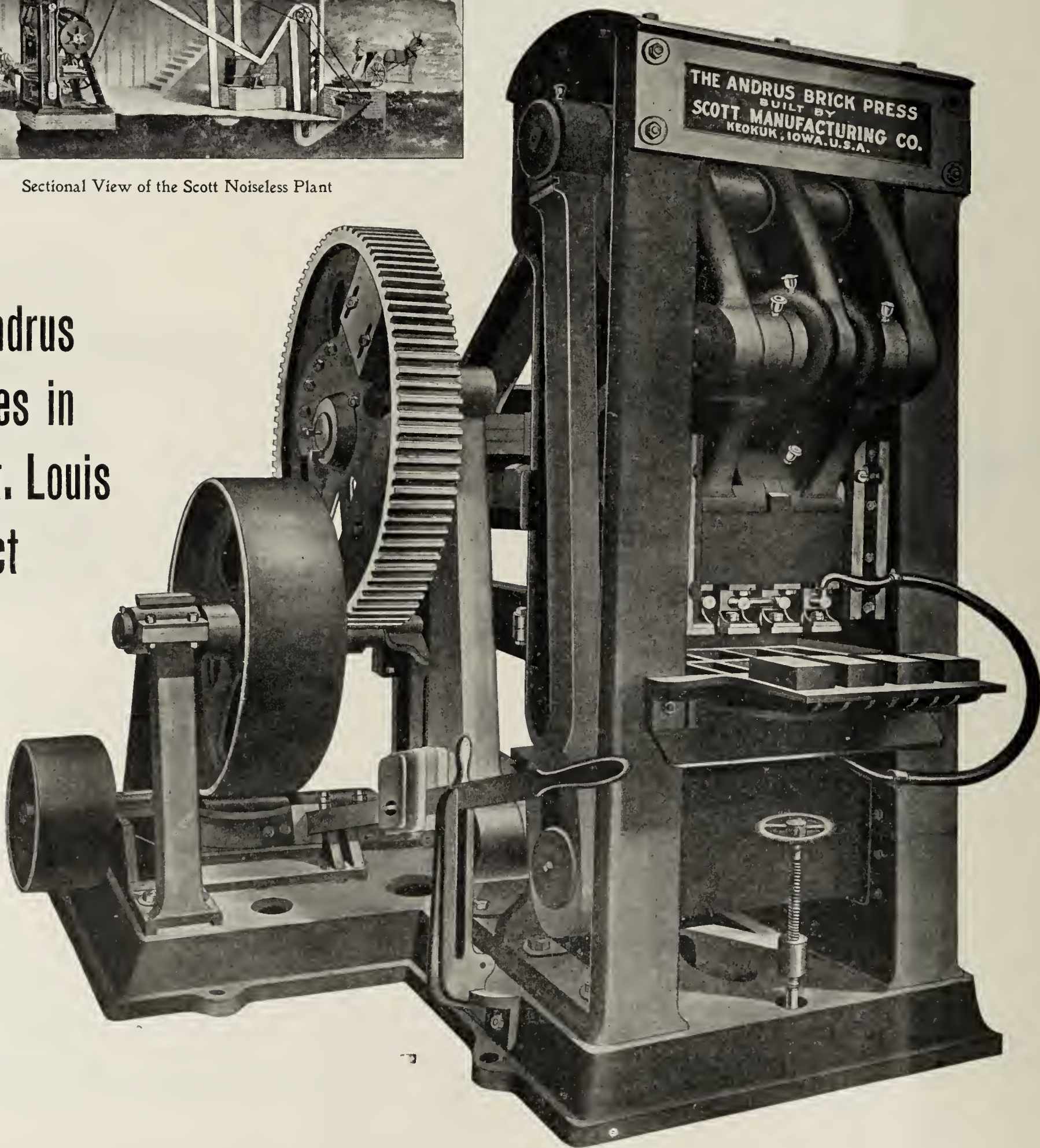
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Sectional View of the Scott Noiseless Plant

EVERYTHING
FURNISHED
BUT THE BUILDINGS
AND THE MULE

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Presses in
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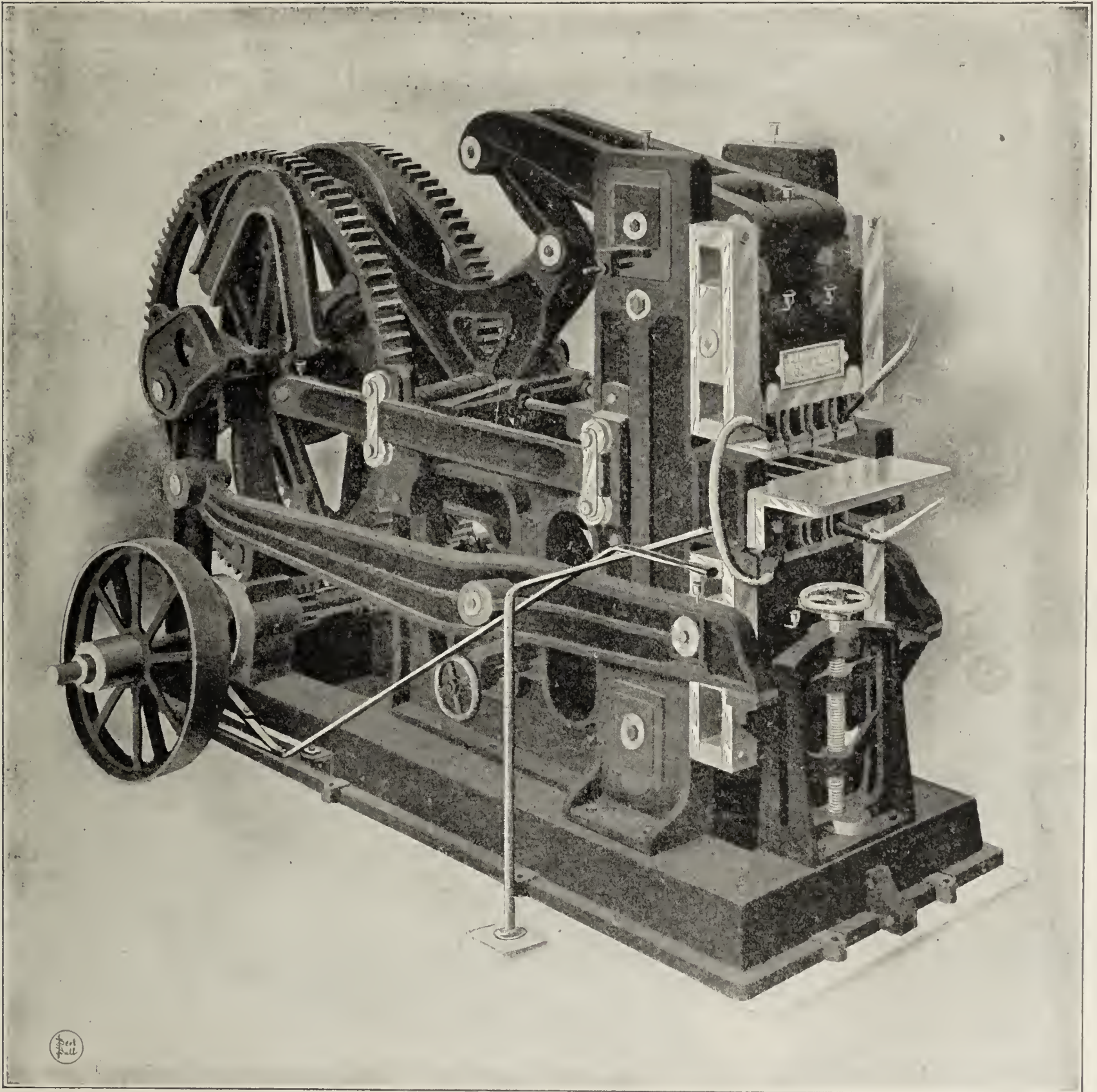
THIS IS THE "PRESS THAT SCOTT BUILDS."

IF YOU ARE FIGURING LET
US KNOW

SCOTT MANUFACTURING COMPANY
421 Olive Street St. Louis

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.



If you want an up-to-date Dry Press, one that will give you
RESULTS—See this machine in action.

The Fernholtz Brick Machinery Co.,

Boyle Avenue and Old Manchester Road, St. Louis, Mo.

“RELIANCE” DRY PRESS

No Toggles,

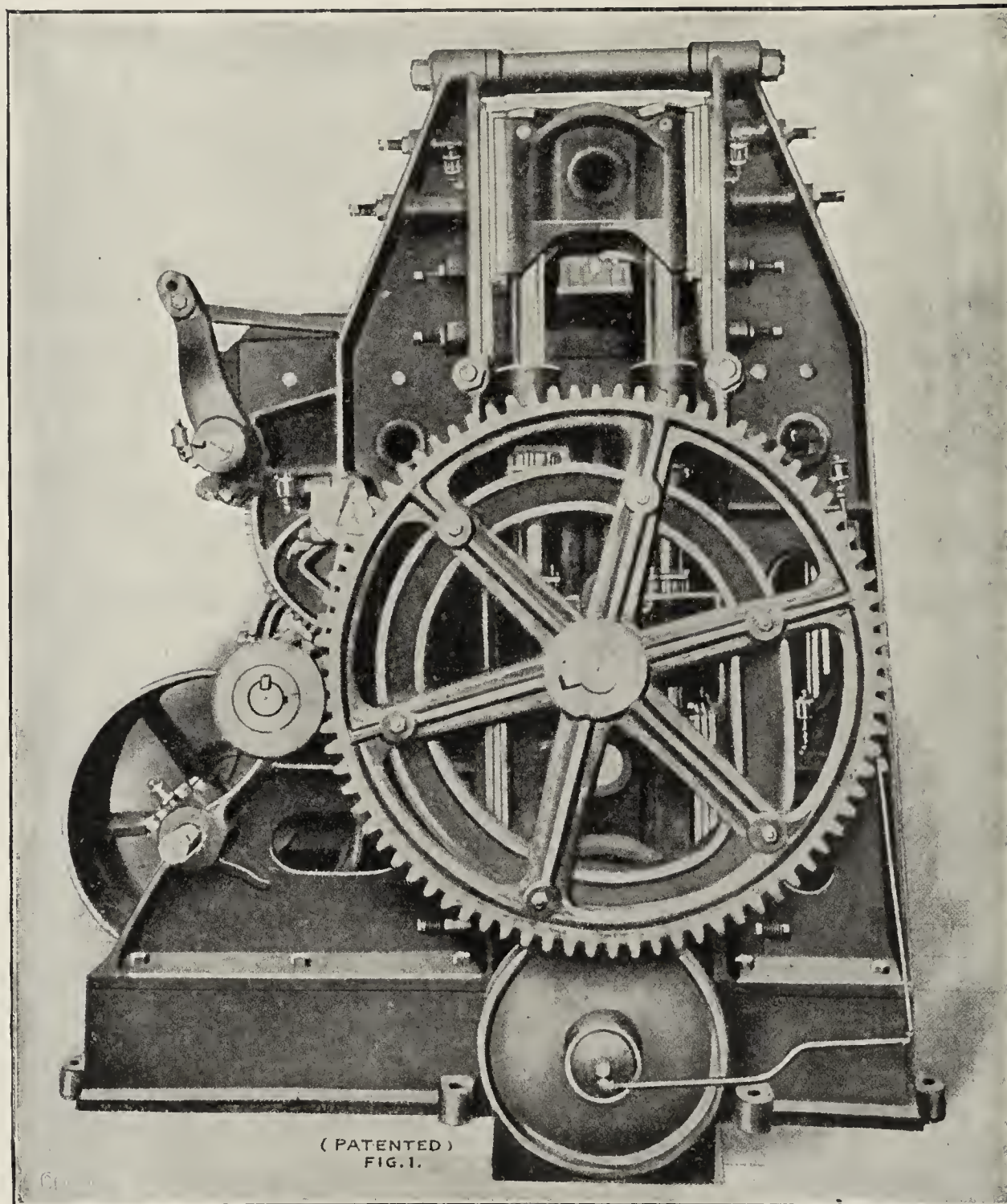
Powerful,

Simple,

Strong,

Durable,

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Only Machine Making Brick Without Granulated Centers.

We Design and Equip Dry Press Brick Plants Complete.

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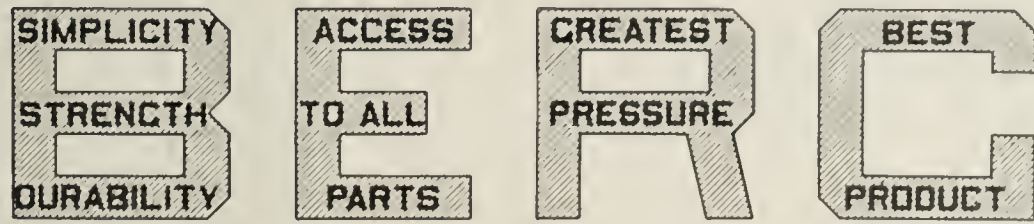
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— ADDRESS —

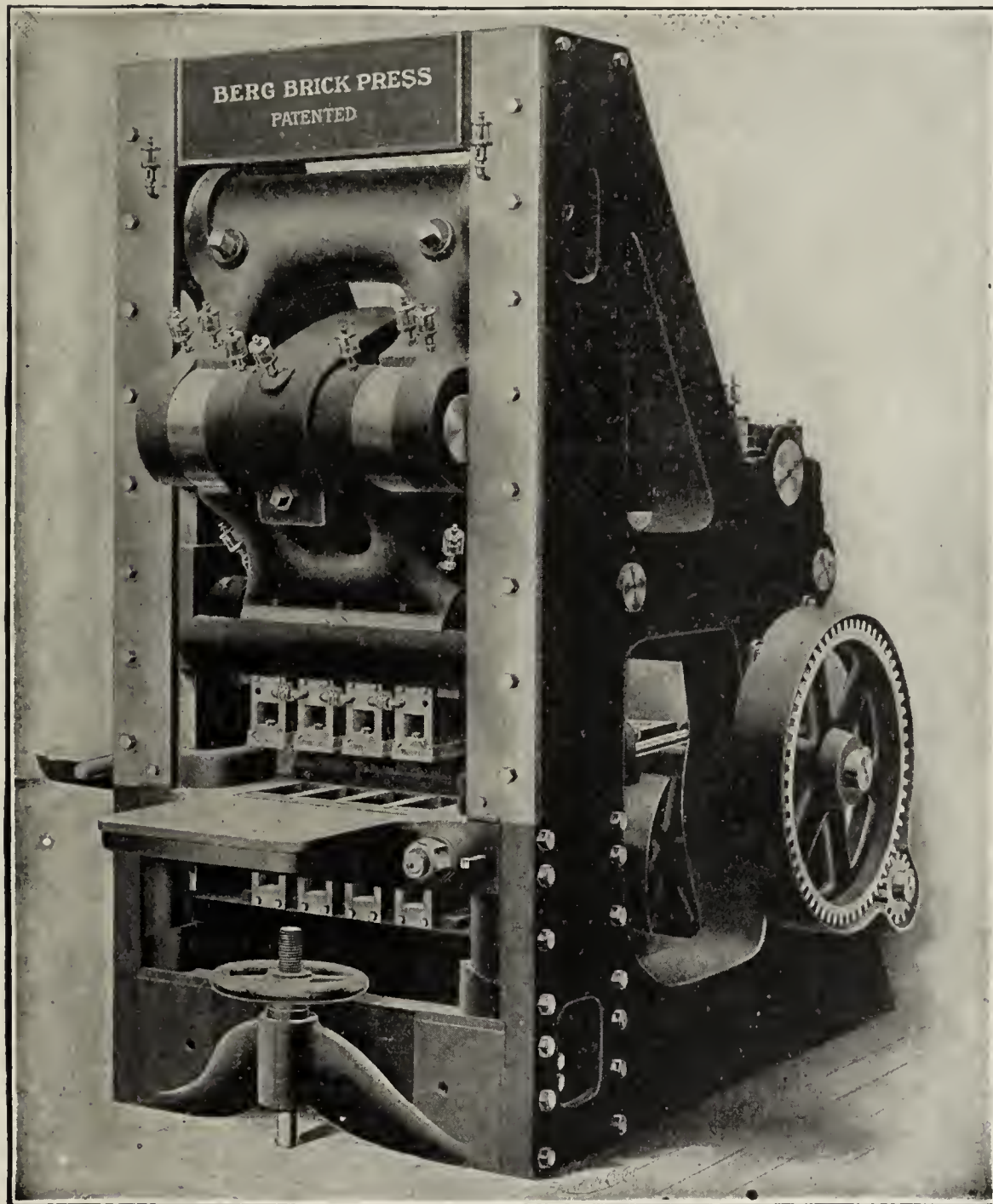
The Reliance Machine and Tool Works,

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WHAT'S IN A NAME?



The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick-
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have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship. Fully Guaranteed* as to its *Success*.

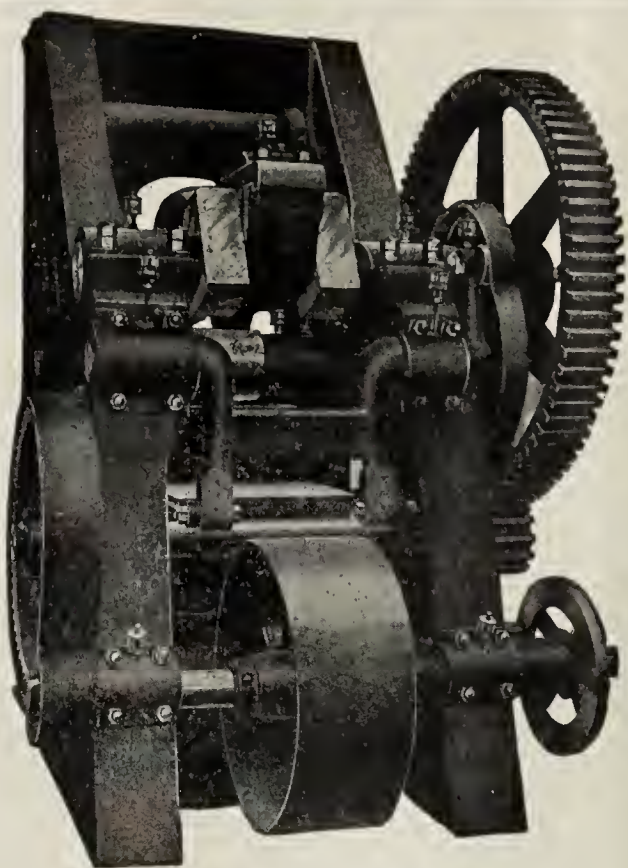
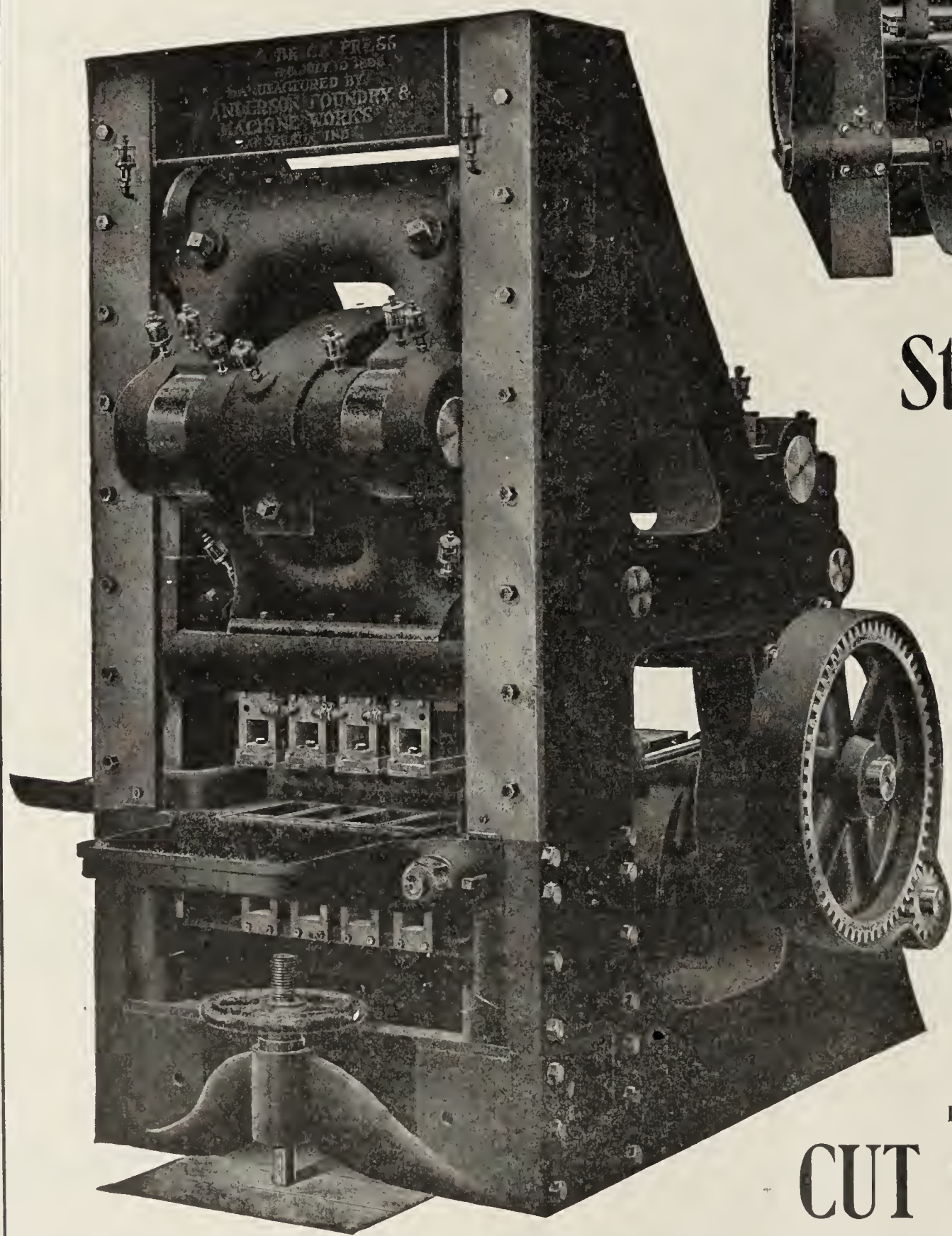
Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make *Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick* and *Fire Brick*. Correspondence solicited.

A. BERG & SONS,

Mention The Clay-Worker.

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New Model Berg Brick Press



Back View.

Still in the
Lead
and
One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

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of either iron or steel, if desired.

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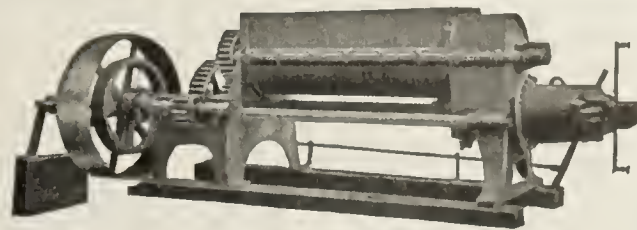
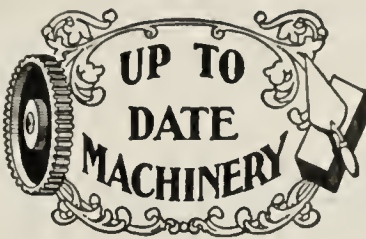
CHICAGO BRICK MACHINERY CO.,
Great Northern Bldg. Chicago.
No. 77 Jackson Blvd.
NEW YORK OFFICE,
No. 39 Cortlandt St.

Manufactured by

Anderson Foundry & Machine Works,
ANDERSON, IND.



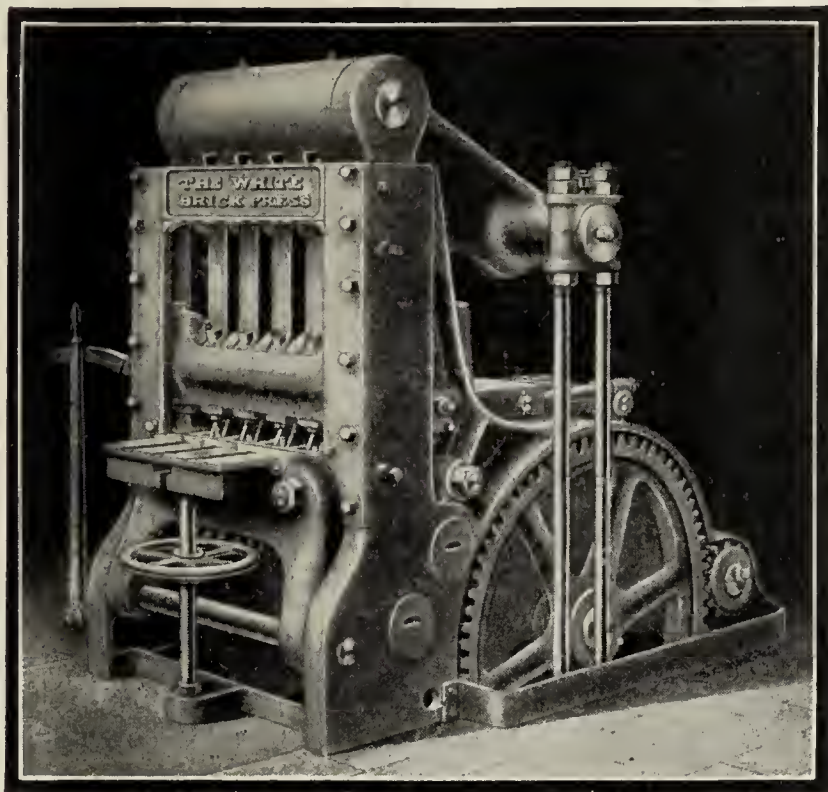
Auger Machine.



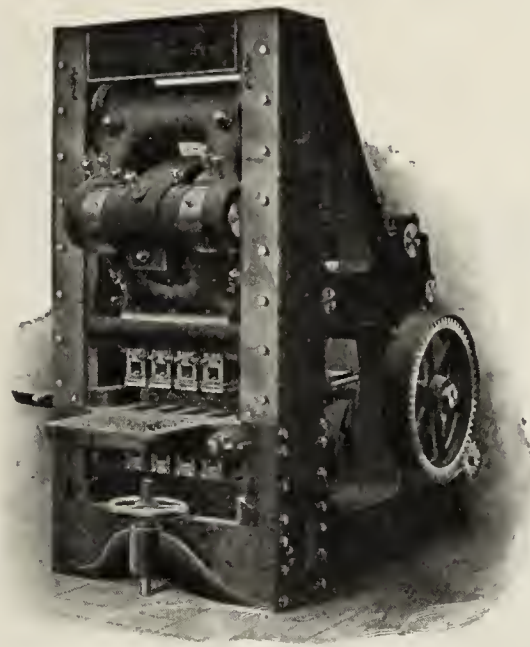
Combination Machine.

UP-TO-DATE MACHINERY

For Making all Kinds of Brick, Dry Pressed, Wire Cut, Sand Molded



New White Press.

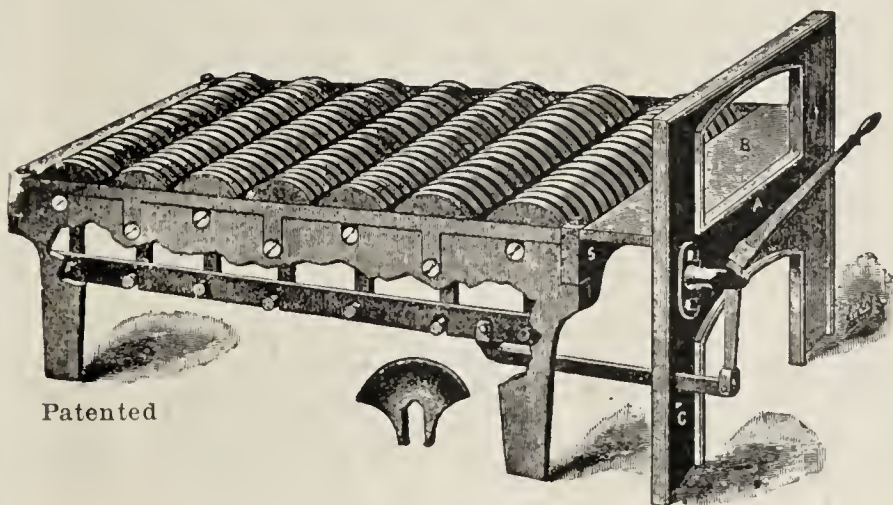


New Model Berg Press.

Full Line
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SPECIALTIES
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SUPPLIES.

In addition to our well known **Berg Press**, we are now bringing out our new **White Press** for Clay Brick Work. It is especially recommended for difficult and refractory clays, and for Fire Brick making. By far the most powerful Press built. Molds changed in **Seven Minutes**.

Special Catalogue sent on application.



Patented

U. S. SELF-CLEANING GRATE

In position ready for use. Part of frame cut away to show connection below.

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Rocking and Dumping Grates for Kilns.

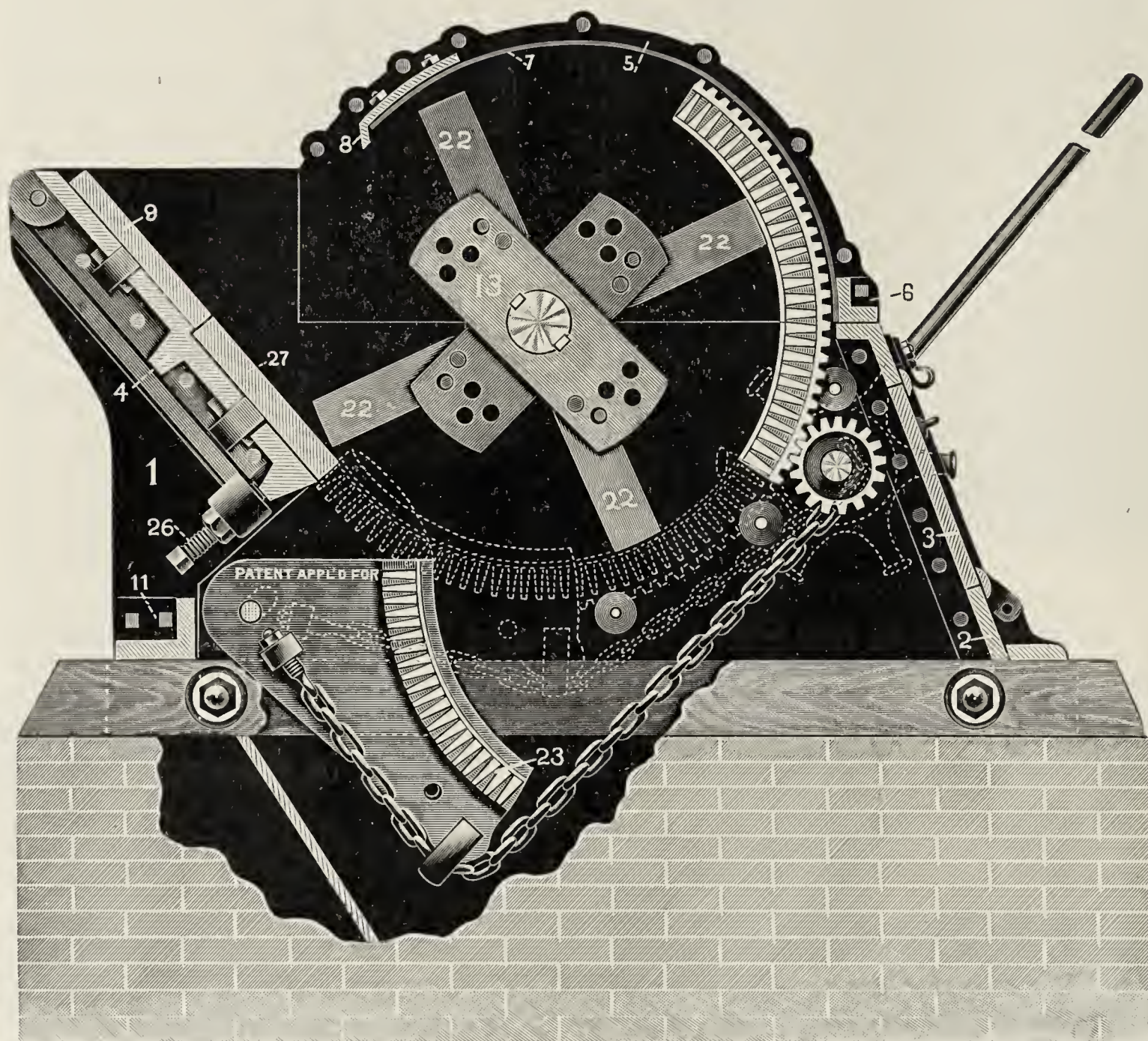
Save Coal, Save Labor, and do away with Checked Brick.

Send for "LECTURE ON COMBUSTION" by HIS SATANIC MAJESTY.

CHICAGO BRICK MACHINERY CO., 77 Jackson Blvd.

The Williams Up to Date Shale Crusher

WITH DROP BOTTOM CAGE.



Williams Patent Crusher and Pulverizer Co.

St. Louis, Mo., U. S. A.

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PRESTON BRICK COMPANY,

Manufacturer of

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SEWER AND HARD BUILDING BRICK.

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Vitrified Shale and Fire Clay Paving Bricks and Blocks.

Burned in Yates' Patent Kiln.

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Factories at Collinwood, Malvern and Carrollton, Ohio.

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McAVOY VITRIFIED BRICK CO., Philadelphia, Pa.

Is the largest and best equipped plant in the East for the manufacture of Paving Brick. All brick sold under a guarantee. Correspondence solicited.

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A Manual of City Pavements: The Methods and Materials of Their Construction. For the Use of Students, Engineers, and City Officials.

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**The Best
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**SIX FACTORIES
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Drop us a postal and we will send you free of charge
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Successors to
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MANUFACTURERS OF ALL SHALE

PAVING BLOCKS and PIONEER BUILDING BRICK.

Our leading brands are CULVER BLOCKS, WABASH STANDARDS, "SPECIALS," for crossings on macadam streets, GUTTER BLOCKS, COLUMBIAN SIDEWALK BRICK and PIONEER BUILDING BRICK. Our material has for nearly fifteen years successfully stood the heaviest traffic of Indianapolis, Terre Haute, East St. Louis and dozens of other large cities of Indiana and Illinois. We ask investigation and comparison by those seeking the best paving material. Samples furnished on application.

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Clinton Paving Brick Company,

Manufacturers of the Highest Quality of

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Which are offered to the municipalities of the Central States under positive guarantee as to wearing quality. None better.

Prices and samples sent on application.
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WE OWN AND OPERATE EXTENSIVE DE-
POSITS OF THE VERY BEST GRADES.

Fire Clays, Terra Cotta Clays, Kao-
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Have been in the business for TWENTY-FOUR
years, and are prepared to meet every reasonable demand.
Unsurpassed shipping facilities. Prices and samples free.

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J. G. BUTLER, JR.,
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CHAS. M. CROOK,
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Youngstown, Ohio,

MANUFACTURERS OF

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An unexcelled repressed shale paver.

Correspondence solicited.

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HAS the largest and best equipped plant in the United States for the manufacture of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation second to none, and this Company points with pride to its record for quality of material and its methods of conducting its business.

Correspondence respectfully solicited.



DRYING BRICK with THE STANDARD Natural Draft Steam Drier promotes peace, profit and happiness, and keeps the parallelopipedons out of the boss's attic.

THE STANDARD is the most up-to-date Brick Drier on the market, in every sense of the word. Its new Heating System saves considerable money for the user in installation and in daily operation.

THE STANDARD is successful in drying every variety of clay, because the drying conditions are completely under control and capable of the closest regulation.

THE STANDARD, by reason of its modern brick-and-steel construction and by the nature of its drying system, is absolutely out of the fire-danger class of Driers.

Write for the booklet, "Money-Saving Drying" and our complete illustrated catalogue.

THE STANDARD DRY KILN CO.,

647 S. Penn. St.,

Indianapolis, Ind.

THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVII.

INDIANAPOLIS, IND., MAY, 1907.

No. 5.

Written for THE CLAY-WORKER.

NEW YORK SCHOOL OF CERAMICS.

NESTLING IN AMONG the foothills of the Allegheny Mountains, three miles from the main line of the Erie railroad, cut off from the rest of the world by beautiful rolling timbered hills, lies the little town of Alfred, the home of the New York State School of Ceramics. Here the old town clock tolls the hour and the quiet is only broken during the day by the rumble of the grocery cart or the stage and the songs, yells and peals of laughter of the college students, who anxiously await the mails and gather in the evenings at the postoffice or on the campus to sing college songs before returning to their books.

It is indeed an ideal college town, as there are no large factories or business enterprises excepting the roofing tile plant of the Ludiwici-Celadon Company, the whole life and business of the place centering upon the young people who come seeking higher education in their chosen courses.

With its congenial people and pleasant surroundings, Alfred is a well selected place for the training of students in the technical as well as the practical branches of clayworking. The young man is given every opportunity to learn his favored line and special work is mapped out for him that he may become an expert ceramist and be well versed in the improved methods of manufacture, so that in after years he may be of great help to his employer in reducing the cost of manufacture and making more certain the betterment of the ware and the uplifting of his special branch of ceramics.

Alfred University was founded seventy odd years ago, but

it was not until 1900 that the State of New York provided for the construction and maintenance of the Ceramic school here, which, for the most part, is independent of the University, but affords its students the opportunity of securing facilities for collateral branches of study in the older institution.

The University offers many advantages to the Ceramic student, the laboratories of chemistry and physics, the libraries, museums of geology and national history, the work shops for manual training and all departments of general culture being available, so that the many and varied requirements of a liberal education are fully met.

The building of the New York State School of Clayworking and Ceramics is a beautiful and very appropriate structure,

built of red brick and terra cotta, with gray trimmings and roofed with brown tile. This building has a floor space of about thirteen thousand square feet and a frontage of seventy-five feet. On the lower floor, which is all cemented, are located the heavy machinery for the manufacture of brick, tile, hollow block and roofing tile, the slip making plant, cylinders for glaze preparations and a workshop fitted with modern appliances for pottery and



Some Interesting State School Pottery Made, Decorated and Fired by the Students.

porcelain manufacture. At one end of the lower floor is a large room in which is located a large seven-foot dry pan, while adjacent to this is a large damp cellar with storage bins and barrels. At the other end adjoining the main room for the preparation of materials, sagger making, potting and the manufacture of the different wares are rooms used for mold making and drying. The motive power for all the machinery in the building is supplied by a 36 h. p. Otto gas engine, and a 6 h. p. Fairbanks gas engine.

On the main floor are located the executive offices, labor-



Students Making Saggers in the Ceramic School at Alfred.

atories, a large class room and an exhibition room, where samples of clay work of every type are on display. The latter is one of the most interesting features of the department to a visiting ceramist, as it contains some finely decorated ware, made by the ceramic students, among which is a number of very beautiful crystalline glazes.

In the lecture room are files of all the current ceramic magazines and a book case containing a choice selection of valuable literature on ceramics, including many volumes on the history of the different branches in clayworking, both ancient and modern.

The technical laboratories are well supplied with up-to-date apparatus and appliances, so that all the necessary facilities are afforded the students. Small blungers for samples, ball mills for grinding, a case crusher, a power blower, four gas furnaces, an air brush, an electric furnace, dynamo, cement testing machine, gas analysis apparatus, elutriation apparatus, draft meter, pyrometer, polarizing microscope, scales and balances are the most important of these.

On the second floor is installed the art department, which is under the careful supervision of Miss Alice L. Upton, who has a fine knowledge of this branch of the work. Here



A Lesson on Brickmaking.



A Class in Clay Modeling.

mechanical drawing, free-hand and applied design is taught, the first being under the instruction of Prof. Kenyon. The modeling room possesses much of interest. Here ornamental work in clay and the production of pure form is studied. In the art teacher's office on this floor is provided wall space for the students' art display.

To the rear of the State School building is the kiln house, which contains two kilns, one for firing common ware at low temperature and the other for high temperature work.

When Prof. Charles F. Binns took up the arduous task of founding and promoting the ceramic school at Alfred seven

years ago, there was one student in attendance, but under his careful supervision and the credit he has brought upon the school, by his years of untiring effort and the prominent position he holds in the ceramic world today, he has enrolled forty-four students, an increased attendance of thirteen over last year.

Prof. Binns began his life in the clayworking field when but a lad of fourteen years. At that time, he worked under his father's watchful eye in the factory of a large pottery in Worcester, England. Here he worked for twenty-five years, and finally came to America in 1897, taking up a position at



The New York State School of Ceramics Building.

Trenton, N. J., as an instructor in the Trenton Technical Art School. He worked there for three years and then became the head of the New York State School of Ceramics.

Prof. Binns is a prominent member of the American Ceramic Society and the National Brick Manufacturers' Association, and has contributed many interesting and valuable articles to those societies and the trade papers. He is the author of a cleverly written little volume on the "Story of the Potter."

As great a lover as Prof. Binns is of ceramic work, he is a greater lover of home life, and possesses a beautiful home near the college campus, where he has given many entertainments for his college students. He is the proud possessor of five children, and takes a great deal of interest in college athletics, his three younger children being athletic girls, who have added much to the strength of the girls' basket-ball teams.

Speaking of the benefits of the school, Prof. Binns says:

Benefits of the School.

"The demand for trained clayworkers has grown to considerable proportions during the last few years. Capital is

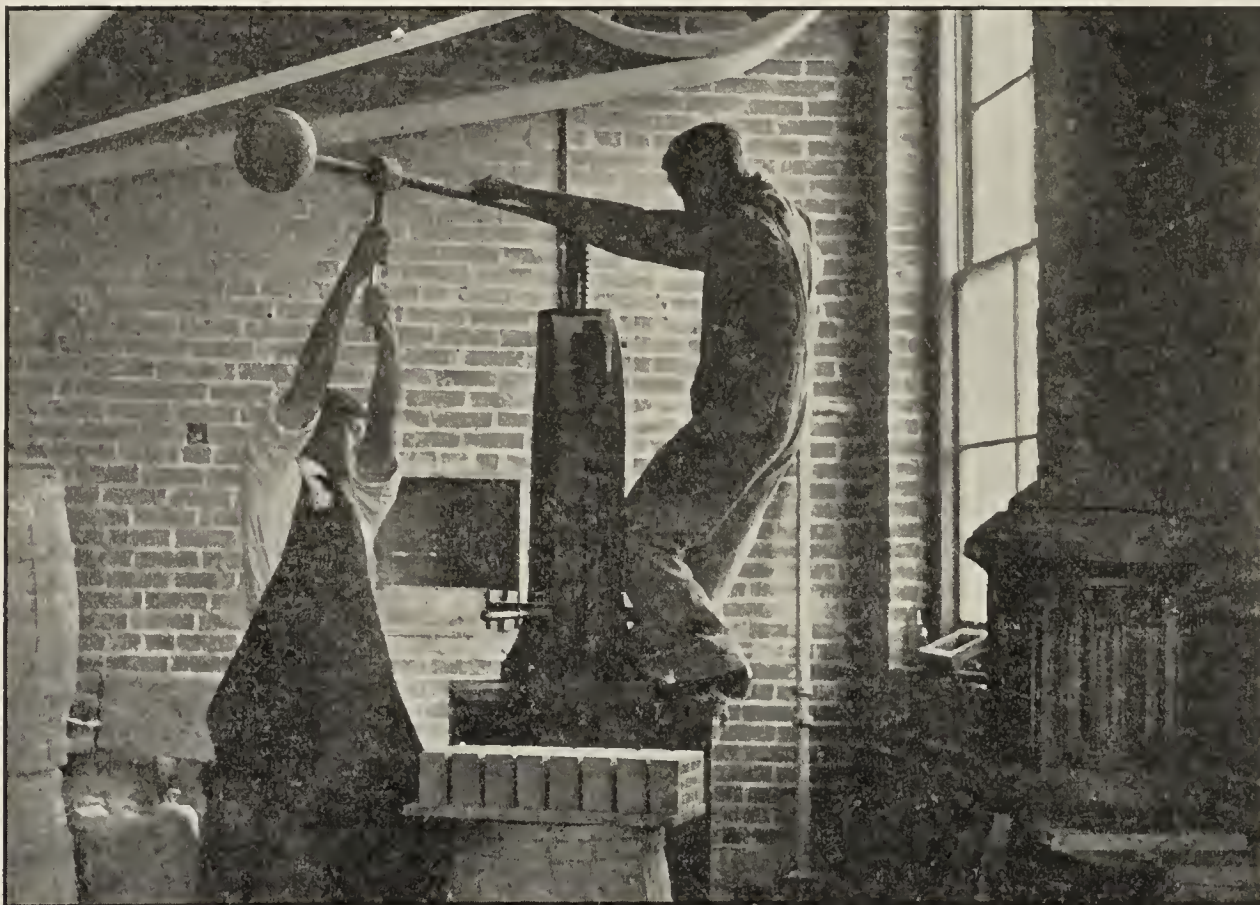
amic art will be able to design and make artistic pottery, preparing their own clays and compounding their own glazes, if necessary. Those who elect normal studies will be thoroughly equipped to teach not only clayworking, but drawing and design in schools."

INDUSTRIAL EDUCATION.

Trade Schools for American Boys.

AT THE recent annual meeting of the Builders' Exchange of Cleveland, the following interesting address on the subject of trade schools was given by the retiring president of the exchange, Mr. W. B. McAllister, who spoke advisedly on the subject, for Cleveland boasts of several trade schools which are turning out first-class mechanics:

"The increasing attention being paid to the subject of technical education, and the seriousness with which the scarcity of skilled mechanics in the building industry is being regarded in all the large cities of the country leads me to take this opportunity of discussing some particular phases of this important subject," said Mr. McAllister.



An Experiment in Dry Press Brick.

becoming more and more interested in the development of clay lands and shale banks; nor is there any likelihood that this interest will decrease.

"On the other hand the number of men who have studied in schools is very small compared with the openings to be filled. Hitherto, no student who has passed through the school successfully has remained unemployed, and the director is continually in receipt of applications for persons qualified to fill responsible positions. Every effort is made by the faculty to place the students in communication with manufacturers desiring to offer them employment.

"The student successfully pursuing the technical course will be able, presuming that his personal capacity be good, to take up the practical work of manufacturing clay wares. He will have had experience with every description of clay, and with the minerals and oxides used in preparing bodies and glazes. He will have acquired a knowledge of machinery and kilns which he will find of the greatest value. In short, he will be a trained man as regards the problems of clayworking.

"Students who conscientiously pursue the course in cer-

"It is a recognized fact that the building trades afford the most attractive employment of any of the large number of trades available to young men in a great city. The wages are high, the hours of employment are short, the work is agreeable and healthful and should be especially inviting to the average American boy. Yet it is a fact that there is a marked deficiency in the supply of first-class mechanics, rendering the situation in at least some of the cities so acute as to interfere with their natural growth. We all know that in the city of Cleveland alone a much larger volume of business could have been done the last season if a sufficient number of skilled workmen in certain of the trades had been available to perform the work. The need of the hour in all the large cities of the country is for more and better mechanics. The shortage is perhaps due in part to the large volume of building operations carried on during the last two years, and still had there been no unnatural influences brought to bear, the attractiveness of the trades should have drawn a sufficient number of mechanics to supply the demand.

"Coincident with the shortage in the number of workers,

there has also been a lessening in the amount of work done by each workman. This is undoubtedly due to rules imposed upon workmen by various organizations with which you are all familiar. That this condition of affairs exists is largely due to the employers themselves, who permit labor organizations to dictate how much work a man may do and under what conditions he may work, as well as with what kind of tools, and at the same time to adopt rules denying the right of young men to learn their trades except in ridiculously small numbers and after almost prohibitive exactions. These rules were at first regarded lightly and were accepted by employers rather than endanger controversy and without proper realization of their far-reaching effect. It was this short-sighted policy that allowed one of the trades to enforce a dictum for five years that not a single young man could become a journeyman in that trade. It is a like policy that allows only the sons of journeymen in another trade to become members of that trade, and then only after a period of service calculated to discourage even these. Such un-American regulations have reached a point where they should be stopped and these faults corrected. It is the duty of employers to effect this result, even though it may be at some temporary sacrifice to themselves.

"At the present time in Cleveland, conditions are not as bad as in many other cities, several of the leading trades operated under the so-called open shop plan, and their workmen being in no way bound by such regulations, and yet I doubt if our employers, as a class, are doing all in their power to make access to the building trades easy and inviting to the young men of the city. By thus neglecting the rightful claims of young men, we are avoiding the duties of good citizenship as well as good employers. Unless there is a change in policy all will agree that conditions will grow constantly worse instead of better. The building trades today are not receiving their just proportion of American youth. In the city of Cleveland, statistics show that there were more than 32,000 boys in the elementary grades last year. When the high school is reached this number drops to about 2,000, and when graduation day comes there are only about 300 boys left. This means that 30,000 boys have gone into the world between the ages of fourteen and eighteen years without a high school training, most of them presumably to earn a living. Statistics also show that in New York City there are more than 150,000 boys, between the ages of sixteen and twenty years, who have never learned a trade. I do not know what the figures would be for Cleveland, but certainly they would be proportionately large. Most of these boys will be found behind the dry goods counter or driving delivery wagons for from four to ten dollars per week, while some are dependent on their fathers for support. Of the high school graduates, some are serving in close and ill-ventilated offices or banks as clerks and bookkeepers for low wages. A young man must indeed be bright and have long experience before he can earn more than fifteen dollars a week at such work. Is it not true that the opportunities for learning a trade are not made sufficiently easy to the young man, and therefore the most genteel employment attracts him even if it is apparent that it will not pay him as well?

"What would be the result if the opportunities for learning one of the skilled trades were presented to each boy as he enters school and he could be taught that attachment to these trades is an honorable ambition; what also would result if employers in these trades, unhindered by apprenticeship rules, would say to these boys, 'Come when you have finished your school, and we will give you a chance to perfect your skill and develop your talents and help you to become a proficient workman; yes, and we will pay you for the time you give us in proportion to what you can earn.' And yet that is only what every American boy has a right to expect and what the true American spirit demands.

"There has been talk for many years of a trade school in Cleveland to educate young men in the building trades and fit them for lives of usefulness. The idea is a good one and it is hoped that some means may be found for its fulfillment. Similar schools are doing good work in a number of other cities. The best of these is perhaps the Auchmuty School in New York City, founded in 1881, with an attendance of from

four to five hundred young men in the various classes each year. The city of Boston has a similar school, and other institutions of like character are to be found here and there throughout the larger cities of the country. The aim in all of these is to give the pupil knowledge in the use of tools and methods of construction, leaving them to practical service as the means of completing their education. In some of the cities, classes are being conducted through the agency of various associations designed for the improvement of conditions among the youth. Notable among these is the school about to be started in New York, under the direction of well-known architects, engineers and builders, who are serving as an advisory committee. The instruction in this school will include all the practical trades connected with the building industry, and will have as a leading feature addresses and lectures by well-known men on the different subjects to be taught.

"In our own city there is much interest in the development of the course in manual training in the public schools. At present a manual training course is open to pupils in each of the six high schools, this course covering two years of the four years' possible instruction. Two of the high schools are equipped for the advanced two years' course. A new technical high school is soon to be erected, adding to the present equipment. In the first year carpentry and joinings are taught; in the second, wood turning; in the third, forge work, and in the fourth, machine and shop work, with free hand and mechanical drawing being made a prominent feature. That this department of instruction is popular is indicated by the fact that about twelve hundred pupils are enrolled in it this year, all but fifty being boys. Each pupil pays a fee of \$3.50 a year for the purchase of supplies, which further indicates the attractiveness of the training. In these schools an aptitude for craftsmanship is quickly shown and here often is manifested the tendency which makes clever workmen when ambition is given a chance. It should be possible for boys to supplement this training by further instruction, fitting them for practical service in a chosen trade. Should this training be given under the patronage of the public schools a greater service would be rendered the young men of this city than can be ever rendered through the medium of books unaccompanied by opportunities for turning to useful and profitable service the talents with which boys may be endowed.

"With the instruction as to the principles of a trade there must also come an opportunity for practice, and with this also granted the boy will have a fair chance of becoming a useful and valuable workman, with the possibility of himself becoming, in later years, a successful employer. I believe that we should therefore encourage to the fullest extent the extending of the course in manual training in the public schools. In addition to this, I believe that we should encourage the largest amount of training possible outside of schools. In at least several of the trades in Cleveland much practical work can be done under present conditions in teaching young men how to make the best use of their talents and to follow their inclination to be good workmen in the building crafts. Would it not be wise to first exhaust the limit of present opportunities and make the best of them before undertaking the operation of a private school of trades? Such schools usually require endowment with strong and constant financial support to be successful and permanent, while the extending of friendly assistance to young men in actual training costs comparatively little, and is far more effective in its results. I am told by one of our members that he has educated an entire new crew of workmen in his trade during the past year, and that they are the best workmen he has ever employed. Others are doing the same thing with good results.

"The various branches of employers are well organized in this city at present, and this subject, I believe, should be taken up by each of these organizations with zeal and earnestness during the present winter. If each employer would agree to secure only a few young men as students of his trade next season, and for each successive season, the stimulus to that trade would be immediate and surprising. These suggestions, I hope, may be of some value in leading to the solution of a perplexing problem. No more helpful service can possibly be given to the building industry and the city at large by any member of this exchange than to assist to the best of his ability in the ultimate solving of it."

Written for THE CLAY-WORKER.

BRICKMAKING IN THE NORTHWEST.

New Paving Brick Plant of the Denny-Renton Clay and Coal Company.



PERHAPS THERE are few of our eastern manufacturers who realize that the northwest has some of the largest and most up-to-date brick plants in the United States, among which is one owned by the Denny-Renton Clay and Coal Company, of Seattle, Wash., which company has over one million dollars invested in its plants.

This company owns and operates four different plants in the vicinity of Seattle, and employs over five hundred men. Their output consists of vitrified paving brick, dry-pressed

finest banks of shale to be found anywhere in the state. There is from five to twenty-five feet of stripping composed principally of sand and gravel, which is removed by sluicing or hydraulic washing; the relative situation of the shale bank to what is known as Cedar river is most desirable for this method of stripping, which can be done very economically.

The shale is blasted down and loaded into side dump steel cars, which convey it to a jaw-crusher, which has a crushing capacity of 400 tons per day; from the crusher it is conveyed on a Jeffrey endless pan conveyer direct into large storage bunkers, with a capacity of 700 tons of clay, which are situated adjacent to four large 9-foot American Clay Machinery Co.'s dry-pans. The arrangement of the pans and storage bunkers are such as to enable one man to attend to two pans, the clay being fed into the pans by gravity. From the pans the ground clay is elevated by four large Jeffrey continuous bucket sprocket elevators, and discharged



Birdseye View of Denny-Renton Plant, Located at Renton, Wash.

brick in various shades and colors, sewer pipe, fire brick, hollow blocks and terra cotta.

The company has just completed one of the most modern and up-to-date paving brick plants in the United States, located at Renton, Wash., and known as their Renton plant. This plant was designed and the erection supervised by Mr. W. C. Mitchell and S. Geysbeek, both of whom are well known among the clayworking fraternity.

The main machinery building covers a ground space of 115x180 feet, and is four stories in height, and is undoubtedly the most complete and systematically designed building of its kind in the country. In designing this building the engineers endeavored to eliminate all complicated and unnecessary features, etc., which invariably add to the cost of production.

There is an abundance of shale which is situated within three hundred feet of the main building, and which rises to a height of 80 feet above the yard level. This is one of the

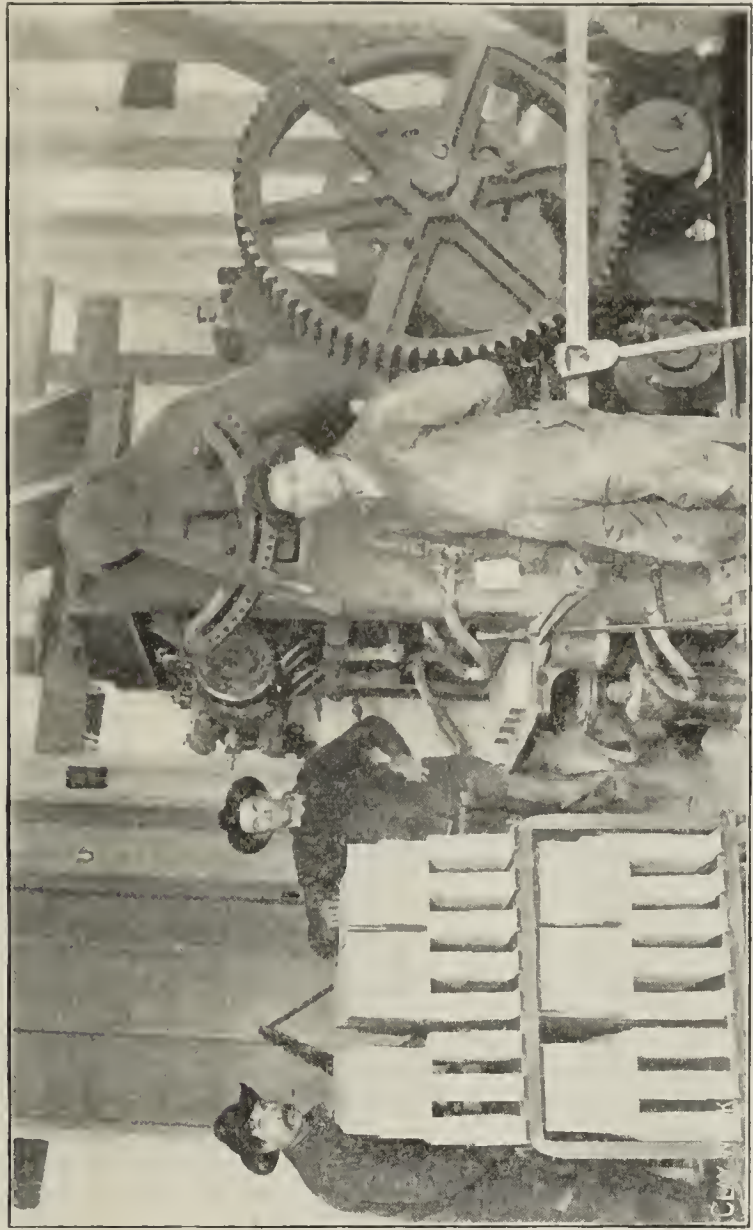
from the elevators on to four piano wire clay screens built by the American Clay Machinery Co. From the screens the clay is discharged into large ground clay storage bins which have a combined capacity of 800 tons, and are situated directly over the pug mills and machines.

The main machinery rooms are located on the first floor and contain two 14-foot pug-mills, one No. 1 Giant machine with a capacity of 75,000 brick per day, and one No. 2 Giant with a capacity of 35,000 per day, and one four mold dry press with a capacity of 20,000 per day, three Eagle represses, one No. 20 automatic rotating side cutting table and one rotary Bensinger cutting table. All the above machinery was supplied by the American Clay Machinery Company, better known as "The Built Right, Run Right, Brick Machinery Company," of Bucyrus, Ohio.

The total capacity of the plant is 130,000 per day, all of which are dried in a 28-track Bucyrus waste heat dryer, the waste heat taken from the cooling kilns being utilized



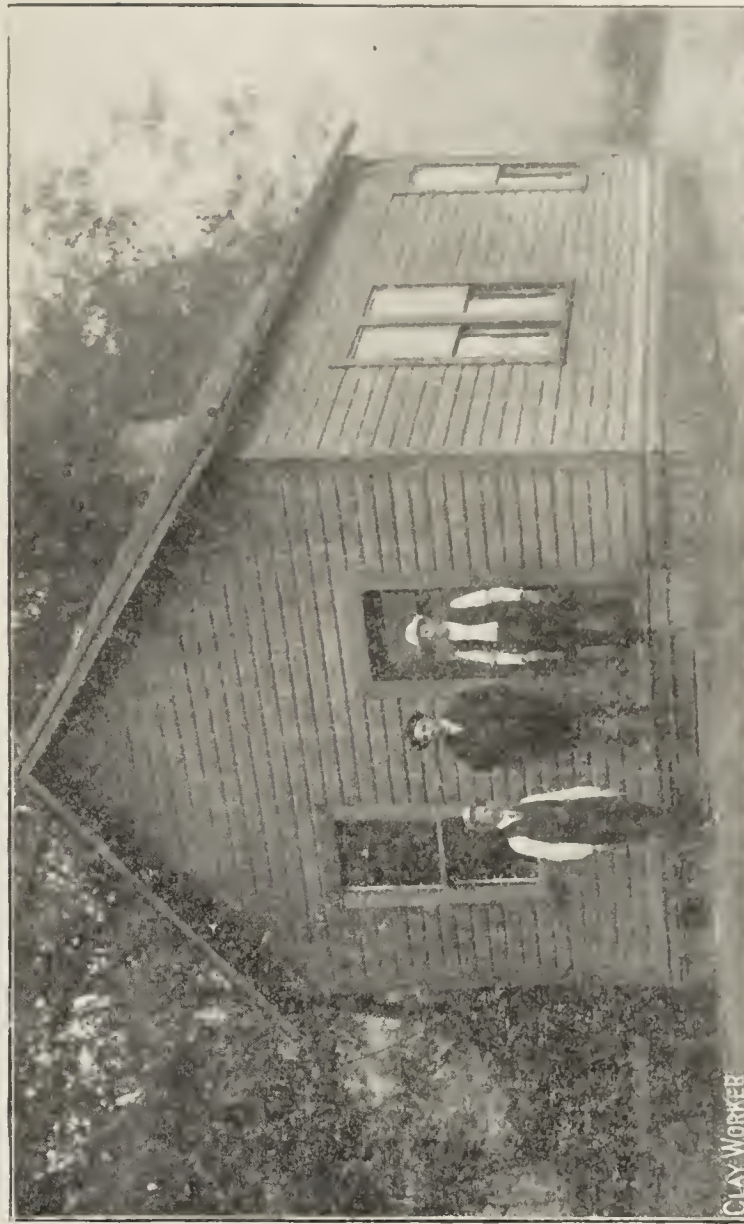
The Jeffrey Conveyor Bringing Shale to Top of Storage Bunkers.



American Clay Machinery Co.'s Dry Press and Its Excellent Product.



In the Screen Room.



At the Factory Office of The Renton Plant

VIEWS OF DENNY-RENTON BRICK PLANT, RENTON, WASH.

exclusively. The entire output of dry-press brick are also dried in this dryer before being set in the kilns, which reduces the time of burning fully 50 per cent., and also eliminates all susceptibility of checking in the kilns. The kilns consist of four large rectangular Mitchell kilns of the down-draft type, with a capacity of 250,000 brick each, and eight round 30-foot down-draft kilns of 105,000 capacity each, four of which are equipped with the Mitchell circular flue bottoms. The time required in burning is about nine days from start to finish, using Washington lignite run of mine coal as fuel. The quality of paving brick manufactured by this company is second to none manufactured in the United States, the abrasion test of these brick excelling any of the eastern pavers. The Renton brick have a world-wide reputation, shipments being made frequently to Cape Town, South Africa.

The entire plant is operated by electricity, using the alternating current system, and the most modern induction motors; each and every machine has separate motors, the current being obtained from the Snoqualmie Light and Power

Written for THE CLAY-WORKER.

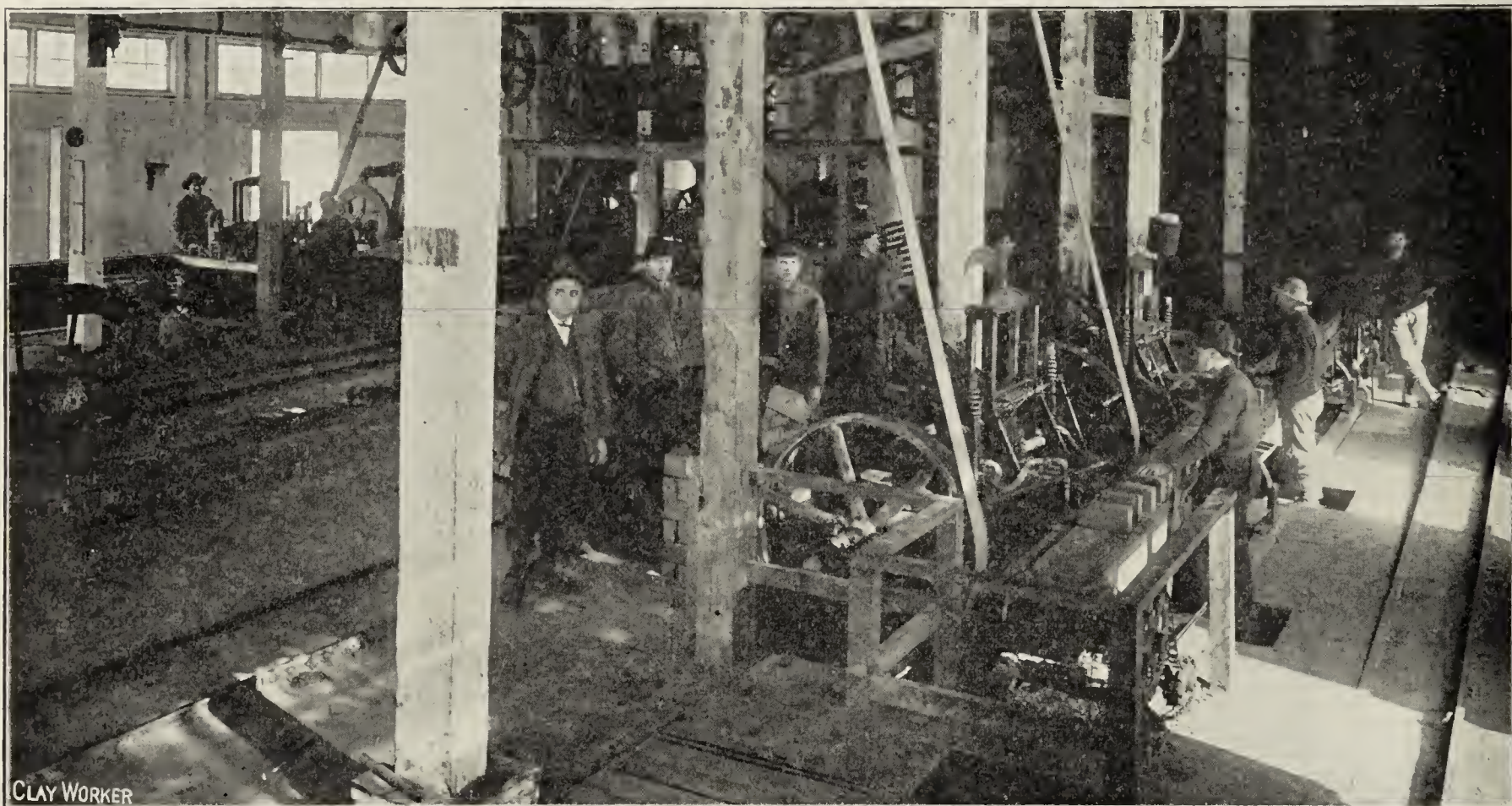
CRIMINAL CONSTRUCTION.

By F. W. FITZPATRICK.



HE COLLAPSE of two reinforced concrete buildings a few weeks ago called forth the following very timely editorial comment from the American Architect:

"It is beyond question that American architects are preparing to indulge a 'veritable orgie' of reinforced concrete building, and to many a man who now has the idea of following this fashion we recommend a quiet consideration of Punch's famous advice. Building with concrete, whether reinforced or not, is an undertaking not to be attempted rashly, but prayerfully, and the petition for salvation should never be so intent as when centers are about to be struck. Two fatal accidents within ten days—one at Elyria, Ohio, the other at Mineola, L. I.—show once more the



Machinery Room at The Denny-Renton Plant, Renton, Wash.

Company, and is generated about thirty miles up in the mountains.

The voltage received at the Denny-Renton Company's transformer house is thirty thousand, and is transformed before being delivered to the motors to 500 volts. Mr. W. C. Mitchell, the genial superintendent, informed the writer that the company was well pleased with their power system, and that they had never lost an hour's time since same was installed.

The officers of the company consist of Messrs. Maurice Thompson, president; E. J. Mathews, treasurer, and J. R. Miller, secretary and manager. A. SCRIBE.

A START FOR GOOD ROADS IN NEW YORK STATE.

The Preston Brick Company of Hornell has been awarded the contract for 1,250,000 paving bricks, to be used in the construction of a brick road between Cohoes and Waterford. This is the first brick road to be constructed under the state good roads act.

celerity with which a concrete building can dissolve. To argue that the automobile must be abolished because, daily, the innocents are being slaughtered here, there and everywhere by speed maniacs, would be as sensible as to urge legislation against the use of concrete. Properly handled, concrete and the automobile are potent factors in legitimate progress. But the architect who allows himself to use reinforced concrete without having given to the material and methods such serious study as will justify his belief that he has actually mastered them, the architect, that is, who is willing to 'take chances' with the lives of mechanics and the capital of his employer, should be held entitled to full membership in the criminal classes."

Since then the "orgie" has been going merrily on, the latest fatal result being in the Bixby Hotel at Long Beach, Cal., where nine poor workmen were killed and probably a score of others seriously injured in a concrete collapse. We have had no details as to the catastrophe so far, but undoubtedly it is the same old trouble, imperfect workmanship and too great haste in removing the centering. I will venture a

wager, however, that the concrete enthusiasts and the cement journals will say that it was a tile floor that collapsed. Such a little thing as a misstatement never stood in their way, particularly when it may befuddle the uninitiated and distract attention from themselves. The floors of that hotel building were commonly known as the "Kahn composite system," essentially a reinforced concrete construction, depending upon the Kahn patented bar, but having tile blocks imbedded between the concrete beams, performing absolutely no structural function, and there solely to take the place of a concrete inert that adds so much dead and unnecessary weight to any concrete floor construction.

It is pitiful that so fatal lessons and such a great number of them are so necessary to make our speculative and experimentally inclined builders realize that the cheap concrete floor systems are not what they have been supposed to be theoretically. In the whole category of building materials none is more treacherous than concrete. Years ago cast-iron was used very generally, but it was proven to be a treacherous material. So many things that could be wrong about it, and without one discovering the fault until the member was broken. The core of a column, for instance, could have set-

There are hopeful signs, however. The very fact of the Kahn people using a tile in their floors, even if it is not a structural part of their construction, but merely a "weightlessening aid," is indicative of the passing of the tendency that obtained awhile ago that compelled our concrete enthusiasts to rear and plunge at the very mention of brick, terra cotta or tile. And again, we now read the revised opinion of one who is looked upon by the concrete people as the high priest of concrete construction, and who used to belabor me regularly for daring to venture the assertion that their heaven-given material was not fireproof. He claimed that it was, and infinitely more so than brick, terra cotta or tile. He has evidently grown a bit, for listen to what he now says, and I quote verbatim: "* * * Structural duty and fire resistance should be differentiated. The same material should not, in an ideal design, be expected to perform both duties. It would not be surprising if the future tendency in the more important buildings should be to treat reinforced concrete as a structural material pure and simple and to protect it much as steel work is now protected. * * *"

A most wise conclusion. We have been pounding that sort of thing into them for years. If they must build of con-



A Group of Employees at The Renton Plant.

tled to one side, and made that side of dangerous thinness; there were "blowholes" and "blisters" and "sand pits," and we blessed the day when we got steel in commercial shapes that could be depended upon and that replaced cast-iron. So with concrete, the cement must be of a certain age, neither too old nor too young; its mixing must be perfectly done, a trifle too much water or not enough makes a vast difference to its strength; and now comes a German authority who proves conclusively by most exhaustive tests that beyond a certain amount of tamping every blow is destroying the strength of the concrete. Verily to be able to place absolute dependence upon it one would have to not only have it watched, but every detail of its production done by a scientist.

And the great element of the cheapness of concrete work is, we are told, that only unskilled, cheap labor need be employed to handle it!

I believe in concrete and have used much of it, but I want it in masses, in piers, in bridges, in underground work, anywhere for "brute" construction, as it used to be termed—places where a large factor of safety is used, where compression is the only strain upon it, and even then I want it mighty carefully done.

crete, if they are sure of themselves and feel that their mixture is all right, that their tamping is perfect; if they feel that their centering is taken out at exactly the right psychological moment; or, if they don't care about these things, but are willing, nevertheless, to just slam ahead and take chances, then all right as far as construction goes, but, for heaven's sake, don't go and leave that material, however well made it may be, exposed to fire, because, after all, and all their engineers to the contrary notwithstanding, concrete is but an artificial stone, and they must certainly know what fire does to stone.

The British Fire-Prevention Committee, the most conservative body on earth, says of one of their recent tests of reinforced concrete floor that "it emphasizes the lessons taught by former experience that however carefully the rods are fixed they get to some extent displaced while the concrete is being filled in. Some of the rods in the bays were found to be just under the soffit of the concrete, whereas they were supposed to be one inch from it. The result was that the bays deflected in addition to the beams in consequence of the weakening of the bars by reason of their becoming heated." And this unsuspected weakness found in a small section of floor

prepared for a test by a very famous body in high authority. How much more likely are more serious faults to occur in work hastily done, helter-skelter, by inefficient labor, under inadequate inspection? It must be apparent to the most violent "concretiac" that all such construction must be protected with brick or tile against fire attack.

It has been suggested by one of their high authorities that the great advantage was that if there was any trouble, collapse was bound to occur during construction and before the building's occupancy, so that only the workmen could possibly be injured. This must be glad tidings to the poor fellows who are employed in or about buildings of concrete construction!

In view of recent happenings, it may not be amiss to quote from something I wrote anent this subject two years ago. It seems to have renewed timeliness and may be re-read by those interested in the question of proper construction of buildings:

"The specialists and writers dig into the past for their precedents and glibly descant on the great concrete work accomplished under Augustus and Titus, in Rome, and proudly point to the Pantheon dome as an example of monolithic concrete construction that has withstood the ravages of time, etc., all set to beautiful phraseology and bound in very edition de luxe verbiage. They forget or do not know that that very dome depends for its stability upon brick ribs, and that the concrete was used simply to fill in the sunken panels between those ribs that carry all the weight. The best class of Roman work—than whom there were no better masonry builders in their time—almost invariably had the concrete in great masses and used for filling in or backing walls that were faced externally and internally with brick, marbles, etc. Concrete in masses, used for foundations, used for filling in, used under compression and in an hundred and one other places, is still the best thing that we have, perfectly legitimate and in receipt of every unbiased engineer's commendation. Once again, I repeat, it is the use of concrete in slabs, in alleged monolithic floor construction, in tension that is objected to, and it is against that form of construction that I humbly raise my voice, and therein am I but respectfully following in the footsteps of Vitruvius, the greatest of Roman constructors, who prayerfully protested to his Emperor, Augustus, against the use of monolithic concrete in floors, in bridges and arches, because, forsooth, the accidents and deaths among the slaves engaged in this work was really appalling. Collapses and failures of concrete work occurred then, as now, yet the lives of slaves were not counted as very much in those days, and it was for that reason, and in fact, only for that reason, that concrete in such forms flourished in that period. They could take chances with a few hundred workmen, and it was only after Vitruvius' protest that humanity was stirred to some compunction and the great works were carried on in brick with the concrete as the secondary medium of construction. My protest against concrete floors is based on the same humanitarian grounds. No man has the right to jeopardize another's life and property to satisfy his own cravings for experimentation in questionable and dangerous construction."

MELTING FIRE CLAY WITH SUN'S RAYS.

There is an apparatus which concentrates the rays of the sun from more than six thousand small mirrors on a spot about seven inches in diameter. The heat generated is about 7,000 degrees Fahrenheit. Iron can be melted in less than a minute and fire clay fused in about three minutes by this machine. Magnesia, one of the hardest things to melt, requiring a heat of about 6,400 degrees Fahrenheit, can be reduced to a molten state in twenty minutes. For the benefit of those who wish to forget the name of this instrument, it has been christened the pyrheliophor.—Birmingham Weekly Post.



Claybeds in Manchuria.—On the western slope of the Great Khingan mountains there has been found great beds of white plastic fire clays of high quality. The clay, according to analysis, shows over 39 per cent. of alumina, with very little fluxes. A clay of the same quality is also found along the Sjaolin mountains close to the Chinese Eastern railroad. Besides these two depositories of fire clay Manchuria has many deposits of good potters clay, and between Imjampo and Uzeima we find great deposits of infusorial earth.

DEUT. TOPF. & Z. Z. No. 11, 1907.

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Result of Prize Competition.—The prize competition which we mentioned in September CLAY-WORKER has been awarded as follows: First prize, Government Architect Alfred Hertzog, of Wongrowitz; second prize, Mr. C. Dreysse, of Zabern; and third prize, Mr. H. Milk, Shoeneberg by Berlin. There were 42 contestants in all, three of them could not be judged since they did not come up to the specifications. This contest, which was held by the German Association of Face Brick and Terra Cotta Manufacturers, draws the architects and designers closer together in regard to the use of face brick and terra cotta for exterior decorations of buildings and residences, and it would not be a bad idea if the National Brick Manufacturers Association would adopt the same plan, and arouse the interest of architects to the ornamental use of brick and terra cotta.—Editor F. S.

* * *

The Specific Gravity of Clays.—We find in the literature quite different accounts of the specific gravity of clays. These statements vary a great deal, and it can be stated that the different clays which have different chemical combination and physical properties, should show also some variance in regard to their specific gravity. Taken for granted, however, that kaolin, which is in chemical and physical properties nearly alike, should have the same specific gravity. When we look this matter up in the different books we find that just for kaolin the statements vary very greatly. Alters gives as the specific gravity of kaolin, 2.2, while Nauman, Hornstein, Fuchs, Leonhard take this same figure. The Biederman Chemical Calendar gives from 2.2 to 2.6. In the works published lately we find the specific gravity is higher than before. Rinne gives 2.44-2.47, Weinschenk 2.5, while Hussack has 2.4-2.6, and von Knobell gives 2.6. On account of the difference published in various books and authorities it was thought to be of special interest to test the specific gravity of kaolin and also of other clays. The experiment for the test of the specific gravity of kaolin was not easily done. It showed that the particles of fine kaolin did hold considerable air. The test on burnt material is therefore very much easier than on raw clays.

After experimenting in different ways and with different methods in order to obtain satisfactory results, it was found that the only way to obtain such results was with the pyknometer. First, the results were also negative, but by some changing in the method the results showed very little variation, and were nearly constant. The specific gravity of zettlitz kaolin showed 2.596-2.601. The only drawback about the use of pyknometer is the fact that only very little material can be used.

According to the obtained results the date furnished by von Knobell was correct. In order to make this process so that it can be used with ease and without much trouble, a few more modifications were made. The article in question de-

scribes the procedure very thoroughly, which, however, would be a little too technical to give here in full. While we can state that the specific gravity of washed pure kaolin is nearly always the same, we can not say the same of plastic clays. While the ingredients of clay, flint and feldspar have nearly always the same specific gravity and clay substance when pure is also constant, there is always some foreign matter in clays, as carbonate of lime, and iron, which will make the results show a difference. The article gives the results of eight different clays, but does not state what they are nor where they come from. The specific gravity in them varies from 2.46 to 2.60. The data and the experiments were made in the chemical laboratory of the Tonindustrie Zeitung.—Ton. Ind. Z., No. 130, 1906.

* * *

Zettlitz Kaolin.—Whenever we mention a pure kaolin we include the German Zettlitz kaolin, and as such it has a world-known reputation. Several months ago we heard that an English syndicate had an agent in the field to absorb all the kaolin washing plants, and make a great kaolin trust. As the matter stands today we find that only two of the large washing plants have accepted the English offer, and that the price to be paid will be about 7½ million kronen. Many porcelain manufacturers have felt alarmed about this trust business, and have bought clay property in the vicinity of Zettlitz in order to protect themselves. If this move was a wise one it is not known, but there will be about six or eight firms outside the trust to supply the material. It has also been stated that the supply of kaolin would only last for thirty years more. The Zettlitz kaolin works have property which will last from one hundred to one hundred and fifty years in production; besides this there is today property which has not been opened up, and it is safe to state that the kaolin supply will last over two hundred years. The marketing of Zettlitz kaolin is not as profitable as many manufacturers think. The washing is very expensive, as it must be taken in account that only 25 per cent. of all washing is pure kaolin, and for every carload shipped out there must be mined about four cars. The drying of the kaolin by steam or other methods is an additional expense, so that taken as a whole, while the production of Zettlitz kaolin is good from a commercial standpoint, it is not a very great money maker.—Sprechsaal No. 8, 1907.

* * *

German Sand Lime Brick Report.—At the last annual convention of the German Brickmakers' Association a report was made by the committee which was appointed the year before for testing the difference between clay brick and sand-lime brick. It was, of course, natural that the data and the meetings of this committee, and also the data gathered by it, should have been secret until such a time as the report was made. The sand-lime brick manufacturers, however, have attacked the committee on this very point and threaten to expose the tests made before the report is published.

This threat, however, did not bother the committee much. The report was very comprehensive, and while not all tests are completed, enough is shown that sand-lime brick should be used carefully in new buildings. The points which the committee examined and which the sand-lime brick manufacturers claim as their advantage were as follows:

1. Fire resisting qualities.
2. Greater strength than clay brick.
3. More uniform size of the brick.
4. Cheaper cost of manufacturing.

The points against sand-lime brick, or rather the points which are in dispute, are:

1. The fire resisting qualities.
2. The killing of the mortar made from lime.
3. The absorption of plastering.
4. The greater strength which is necessary for sand-lime brick.

It appears from the report that the fire resisting qualities

were made one of the main points of issue. The tests were made in a specially built test kiln, in which the best Berlin sand-lime brick and also the best clay brick from the Berlin market were tested side by side.

The results were that the clay brick showed straight cracks, and were partly vitrified, while the sand-lime bricks were crumbled to pieces for a distance of over two inches. The tested piers were laid up in cement mortar. This mortar could be taken off the sand-lime brick without any force whatever, while it adhered tight to the clay brick. The report states further that the opinion abroad that sand-lime brick stand the fire better is not proven. It is further shown that sand-lime brick after these fire tests did not stand up at all on the crushing test, and that all of them showed only 7 kilos per square centimeter, while the Berlin building ordinance requires at the lowest test 14 kilos per square centimeter.

In regard to the third question as to the uniformity of size, it was stated that sand-lime brick people had that advantage, and the report wishes to impress the importance upon the clay brick manufacturers of being more careful in putting uniform brick on the market. In regard to the fourth question, the cost of manufacturing sand-lime bricks has been given as between 12 and 22 marks, and the average is about 17 marks, which is about the same as the cost of manufacturing clay bricks. The report concludes by stating that the clay brick manufacturers have nothing to be afraid of from the sand-lime brick people. Clay brick has stood the tests for ages, and sand-lime brick will always be treated with suspicion. Some tests should be carried still further, and to that end the convention voted additional means to carry on the investigation. With the adoption of the report all secrecy of the investigation was abandoned, and the sand-lime brick people are now invited to disprove the clay manufacturers' arguments.—Deut. Topf. & Z. Z. No. 16, 1907.

TRYING TO SQUEEZE OUT A TEAR.

Most railroad presidents feel in duty bound to look quite gloomy nowadays. But it is a hard job for them.

President Truesdale, of the Delaware, Lackawanna & Western, in his annual report speaks very soberly about "the universal and pronounced hostility to railroads," and points to the "startling" fact that the taxes of his road were increased by \$572,915 last year.

Turning from these grave utterances to the fiscal statement, we find that Lackawanna's net earnings for the year amounted to forty-three per cent. on its capital stock. It paid cash dividends of twenty per cent., devoting the remainder to special improvements and surplus. In view of which, we judge that stockholders will be able to survive the shock of increased taxes.

President Smith, of the Louisville & Nashville, deplors that agitation and legislation are deterring investors from advancing capital to the roads. No doubt he remembers the comparatively recent transaction whereby thirty millions of the stock of his road was converted into fifty millions of collateral trust bonds, etc., and in that inflated form passed on to the investor.

No agitation deters the investor; but he hasn't any loose money—partly because he has of late put so many hundred millions into inflated railroad capitalization, in the form of collateral trust bonds, etc., issued by one road to acquire control of another. When the investor is in funds again the consolidating and inflating may be vigorously resumed, to the vast satisfaction and profit of the gentlemen engaged in it.

President Baer, of the Reading, protests rather calamitously against reduction of passenger fares in Pennsylvania, yet cannot really fear that such reduction will interfere with payment of the regular dividends on Reading common, which is all water, and which now sells at about one hundred and five dollars against thirty-eight dollars only three years ago.

Under such conditions it is hard to be really gloomy. There may be tears in the text, but the figures smile brightly through them.—The Saturday Evening Post.

GREEN BOOK GLOBE TROTTER IN AFRICA.

Geo. E. Holt, of Illinois.

(From the Glass and Pottery World, Chicago.)

POTTERY-MAKING, and pottery-selling in Morocco forms one of the occupations of the women, and there is, perhaps, no other thing which illustrates so plainly the small value put upon woman, her time and work in this



Native Moroccan Woman Manufacturing Pottery. Open Shop. All Employees are Shown in This Picture of Plant.

country. Since the invasion of Moroccan coast towns by the foreigners, the price of male service of all sorts has increased considerable, but the women still work for the small sums which they formerly got, no matter in what line of work they may be employed. In the Grande Socco, or big market place, where most of the buying and selling among the natives is done, one can always find from one to a dozen pottery-sellers (who are also the pottery-makers) offering their wares to whomsoever will buy.

For a week, or perhaps longer, these women, in addition to other work at their homes in the country, make pottery. It is a slow, tedious job, and even with the help of the inevitable children, they cannot make very many pieces in the course of a week. Perhaps in two week, the stock will be sufficient to load a donkey—say a dozen or fifteen dishes of various sizes. They are then taken to the market place in the nearest town; the donkey picketed; the pots laid out upon the ground, and the woman sits down wrapped in her "haik" to wait for customers. Patiently she sits there all the day. Perhaps she sells her wares and perhaps she must take some of them back home with her and keep them until some other market day. My photograph shows one of these pottery sellers in the Socco at Tangiers. She has probably an average stock spread out before her;

if she sells all in two or three days she will think that she has done well.

The most amazing thing about this pottery is the price. I went a buying the other day. Not having much of an idea as to what a collection would cost me, I rather planned upon contributing a couple of dollars to the pottery industry. I took with me a Moor to do the buying (they usually manage to cut the cost to the foreigner about two-thirds) and in about ten minutes I had my eight-piece set as shown in illustration. The total cost of all of these was 8 "reals," or 32 cents in American money—an average of about 4 cents each. The large plate in the center is 18 inches in diameter, and is used to make bread on. The crossed lines, which are made with a sort of black dye, are a "trade mark" of the maker, for even these primitive pottery makers protect their names to a certain extent. The piece at the extreme left of the picture is a firepot. A fire of charcoal is built in it for cooking purposes. There are three holes, like the one visible, and through the most convenient one of these the fire is blown with a pair of bellows. In the making of "kesk'soo," the national dish, the two handled jug filled with water is placed over the firepot, the three raised points of the latter permitting of draught for the fire, and upon the jug is placed the perforated dish at the extreme right of the picture. Into the latter the kesk'soo is placed, and thus steamed. The picture of the Family Outfit shows the apparatus put together. Its total cost was twelve cents. Plain bowls are made in a great variety of sizes, from the little ones shown in the picture, to large ones which hold five gallons or more, and which sell from 15 to 20 cents each. The

covered dishes cost about a "real," or four cents.

The manner in which this pottery is made is interesting. The photograph illustrates a native woman with a finished dish upon the "lathe" before her. The "lathe" is only a round board with a hole in the middle. A peg is driven into the ground wherever the woman



Display Room African General Ware Pottery.



Selling Department African Pottery. Goods Sold on Sliding Scale. No Charge For Package. Buyers in Background.

wishes to work. Then a cacti leaf is split in half, forming two sheets, one side of each being extremely slippery from the pulp. These pulpy sides are put together and the peg pushed through them. Thus, when the board or table is put on, the cacti leaf causes it to turn about as smoothly as though it had ball bearings. With this simple equipment, a dish of water, and another of clay, the pottery maker is ready for work. Kneading the clay with her hands, she crudely fashions the pot, which turns about, slowly at first under her hands, then more rapidly, until, when it is nearly finished, it spins quite merrily, thus securing a uniform shape.

As a rule the pottery is not decorated. Upon the fire pots one finds crude attempts at the making of some design; and the edges of some of the dishes are blackened, but that is about as far as decoration is carried in the ordinary pottery. The decorated ware comes principally from Fez and other inland towns, and some of it is rather pretty.

I had been in Tangiers a week before I could really believe that there are to be found here no stores which deal in buying and selling in the manner of civilized nations. There are no factories for the making of pottery, therefore there are no stores, except the occasional booth in the market place, upon



Combined Dinner and Toilet Set Used in Morocco.

some unusually busy market day. The pottery makers sell their own wares to the people, and the few hotels and lodging houses are supplied either from Germany or England direct. During the time that I have been here I have not seen a piece of American china, and that of English and German make is of the heaviest and coarsest grade. When one realizes that Tangier is the most "civilized" town in Morocco, one cannot help wondering what the conditions farther inland may be like, as regards commerce with the foreign countries.

There is a field in Morocco for the progressive foreigner, but he must not be aggressively progressive. The true Moors are a cultivated race, and the homes of many of them testify to this. Among them a demand for the finer grade of foreign wares could be created, providing one were cautious not to step upon their "religious toes." Religion and commerce do not always go hand in hand, but in Morocco they are so combined that no article is bought or sold or even made without due reference to the Koran.

Tangier, Morocco, Africa, April 2, 1907.

It is said that the value of an advertising medium cannot be estimated at the rate charged for space, but still a man's estimate of himself is a pretty good page to gauge to what he is trying to be.

CONCLUSIONS DRAWN AS TO BEST METHODS OF HANDLING CLAYS UNDER VARIOUS CONDITIONS.

By H. R. Straight, Champaign, Ill.



FOLLOWING CONCLUSIONS have been drawn from the cost data published in the April number of this magazine under the title of "Methods and Estimates of Cost of Handling Clay and Clay Materials." The conditions to be carried in mind are:

Thickness of bank:

1. Banks under 5 feet in thickness.
2. Banks between 5 feet and 22 feet in thickness.
3. Banks over 22 feet in thickness.

Quantity used:

1. 20,000 to 50,000 capacity (50 to 140 tons).
2. 50,000 to 80,000 capacity (140 to 225 tons).
3. 80,000 to 100,000 capacity (225 to 280 tons).
4. 100,000 capacity upward (280 tons upward).

Density in bank:

- a. Glacial, loess or soft shale clay.
- b. Hard shale.

I.

1-4, a. Spading necessary in some cases where deposit is only a foot or two in thickness, and clay must be rather carefully picked over as in several Wisconsin plants (cost 17 cents to 40 cents per ton).

Wheel scrapers or clay gatherers with tram-car most economical under such conditions that they can be used. (Cost 5 cents to 10 cents per ton).

Steam shovels cannot be operated economically in such a bank.

1-4, b. Such deposits of hard shale seldom found, and very rarely worked.

II.

1, a. Spading out of the question in almost every case.

Wheel scrapers and clay gatherers with the tramcar necessary for most economical operation where clay is air-dried upon the pit, or must be mixed in proportions not found as the clay lies in the bank. (Cost 4 cents to 9 cents per ton).

A 25-ton steam shovel may be used most economically in most cases if several days' supply is handled by continually operating the clay mining plant.

1, b. A hard shale is seldom used in so small a plant, but when used is excavated by blasting.

2, a. The same may be said of such a plant as was said in case 1, a.

The 25-ton steam shovel is amply large to excavate the required amount of clay.

2, b. Blasting generally resorted to if a hard shale is used. A 60-ton steam shovel such as would be necessary to stand the heavy strains of excavating such a shale might be used economically in a few cases.

3, a. Wheel scrapers and clay gatherers necessary in cases mentioned in 1, a.

35 ton steam shovel most economical means of excavating in a majority of cases. (Cost 4 cents to 7 cents per ton).

3, b. A 60-ton steam shovel is the most economical means of excavating the shale. (Cost 5 cents to 8 cents per ton).

Blasting and loading by hand cost approximately 12 cents per ton in this case.

4, a. Wheel scrapers no more economical than in case 1, a.

A 45-ton steam shovel most economical for 100,000 capacity plant, and will handle sufficient clay for a 150,000 capacity plant under favorable conditions.

4, b. A 60-ton steam shovel will handle satisfactorily a shale of almost any density in amounts sufficient for a 100,000 capacity plant. Larger plants require correspondingly larger shovels.

III.

1-4, a and b. Where glacial clays and shales are found in bank over 22 feet in depth and the entire depth is to be worked the safest plan and the one generally followed is to

divide the bank into two cuts. The costs are practically the same as in Section II.

Notes.

The brick used as a basis for figuring capacities of plants was the standard common brick, which has an average weight of 5.6 pounds of green clay; size, $8\frac{1}{4}$ inches by 4 inches by $2\frac{1}{2}$ inches.

Where shovel is not run up to its capacity and is "loafing" a part of the time, very little difference in operating expenses per day can be allowed, and the increase of cost per ton must be taken into account as in same cases above.

All interest, depreciation and repairs taken into account when estimating costs per ton.

Cost per ton delivered at shed given in estimates.

Written for THE CLAY-WORKER.

HOW I LOST MANY JOBS AROUND A BRICK PLANT BEFORE I MADE GOOD.

I WAS AN AWKWARD, raw-boned, red-headed boy, ten years of age, when I got my first "job," carrying water at a brick plant. I made it a rule never to carry water

the barbs sank into my flesh, until I resembled a piece of steak, pounded, ready for cooking.

My mother said the doctor bill was more than I could earn all summer, so I played mumble-peg at home the rest of the summer.

When I was fifteen I started in at another factory. I did all sorts of odd jobs, but my chief ability seemed to consist of "doing the wrong thing at the wrong time."

One day the boss told me to take the horse and drive up the track, to the switch, and tell the engineer to come in and pull out the loaded cars. As a parting injunction, and one I thought entirely unnecessary, he said: "Whatever you do, don't use the whip on Fan."

I delivered the message and started to go back. The engine came along slowly and I decided I could beat it to the factory. It kept gaining on me, and before I thought, out I jerked the whip and gave the horse a cut. A young cyclone could not have stirred up more dust and excitement. She kicked the dash-board off and started to run, leaving me, doing contortion acts in mid air. She came in contact with a kiln and left



Central View of Denton Press Brick Plant, Denton, Texas.

until they hollowed for it, and thereby came "my fall from grace."

One hot day, the other water boy and I were sitting on the ground, in the shade, conveniently out of sight of the boss, playing mumble-peg.

I heard the men calling, "Move quick there, you boys." Moving quick was not in my line, except at quitting time, and thinking they wanted water, I moved at my usual gait. Just as I was rising from the ground, I was seized violently, lifted from the ground and dragged along at a lively rate, while all the thorns in the universe seemed to be sticking me all over, especially on my bare feet and legs.

When they rescued me I was a sight to behold, torn, ragged and bleeding.

The boss had picketed his horse out and it had broken loose and came tearing up the hill with a section of barb-wire dangling and frightening him more at every step. The wire wound around me, and the faster the horse ran, the harder

one wheel to mark the spot. What was left of the wreck was picked up at the bottom of the hill and sent to the scrap-iron pile.

After two days in bed, I cautiously approached the boss and asked him what I should do that day.

He said he didn't want any one around him who could not obey orders, but maybe the foreman would give me a show in the factory.

He gave me the job of dumping cars of coal. All I had to do was to turn a lever, dump the car, mark it on a paper, hook on the car and let it go down.

This was so easy I could do it without half trying, but one day, while talking to a boy, I neglected to hook the car on securely. It got away, and ran down the hill like anything; crashed through the mine door; struck the mule coming up with a load, breaking its legs, so it had to be shot. The mule was worth one hundred and fifty dollars, so no excuses went, but I went "all right, all right."

I went to another plant and was set to work, in the shale-

pit, shoveling shale into cars. I got along fine, until one day the boss was down. I naturally worked a little harder while he was there, and was making quite "a showing" when I hurled a chunk, weighing about forty pounds, into the car, not noticing that the boss had his hand on the corner of the car. His hand was mashed and the air was so full of electricity, to say nothing of thunder and lightning, that I went up the hill, with my pail, at a two-forty gait and never stopped until I got home.

The next place I got was driving a cart, dumping ashes, hauling coal to the kilns, etc. One day I was dumping bittens over a high embankment; I backed up too close and when the cart dumped, down went horse, cart and all. I jumped for my life or I would not have been alive to tell the tale. The horse, a heavy Clydesdale, was a wreck, and again I was the cause of a faithful animal being shot.

I decided I was not cut out for a driver, so I got a place in the engine room of a large plant. I began shoveling coal, but became interested, and at odd times would get the engineer to show me how to run the engine, so when he got a better place I was ready to "step into his shoes." One day "us fellows" got to talking about how much money the company was making, and how little of it we got, so we decided to strike for higher wages. I headed the gang and we went to the office. They said I "had the gift of gab" and I must do

Written for THE CLAY-WORKER.

CLAY INDUSTRIES AT DENTON, TEXAS.



TO LEARN ABOUT the clay industries of a given region, it is a good plan, I find, to question the industrial agents of the railroads that traverse the field in question. Each brick plant successfully established on the lines of a railroad means additional tonnage and is apt to bring other brick plants into the vicinity, for the investor who wants to be sure of his results seems to prefer to locate in a region whose clays have been tested, even at the risk of severer competition.

So these industrial agents find it worth their while to keep well posted on the mineral-bearing regions and to collect and tabulate information and statistics about the various clay-working plants in the sections feeding their roads; and I have found them both ready to give such information and eager to learn more.

It was on the advice of such an agent that I visited Denton recently. Here for some years two potteries had made stoneware, but both have now gone out of the business. The local clays were found unsatisfactory, because they contained so much iron that they burned dark, and they had tried bringing

THE CLAYS AND CLAY IN-



The Clay Bank.



The Potter.

DUSTRIES AT DENTON, TEXAS.



The Abandoned Pottery.

the talking. So I stepped up boldly and stated the case to the boss.

He said: "Boys, you are all out of order; every one of you that wants to work for this company wants to hike back, and get to work in short order."

I stood my ground, but when I looked around, the boys had "skiddoed," make a sneak, and left me "hold the bag."

I was dismissed and told never to come on the place again, as they said they did not wish any "labor agitators" around there. I went, "a sadder but a wiser lad."

I went to another town, where my mistakes were not known, and after a time became head engineer in a large plant. I made up my mind not to "monkey" with any more strikes. I still hold the job, and no amount of "hot air" could induce me to go on a strike.

M. B.

"A penny saved is a penny earned." One way for clay-workers to save is to sell discarded machinery and appliances, instead of allowing them to rust and decay in fence corners. Either house and preserve such machinery, or sell it to some one who can make good use of it. There are many such who can be reached through the "For Sale" columns of THE CLAY-WORKER.

in clay from other points to make the whiter ware that had become more popular for crocks and jugs. But the freight rates were prohibitive on shipping the raw material, and labor, too, had grown very dear and scarce, so they shut down, after heavy losses.

But on the other side of Denton, on the Missouri, Kansas & Texas railway, is a flourishing brick plant. It is that of the Denton Press Brick Company, and it is as well equipped for the manufacture of fire and press brick as any plant I have visited. Its general office is in Ft. Worth, and its president is William Bryce; its vice-president, W. S. Wilson, and secretary and treasurer, W. C. Guthrie. They are fortunate in the possession of a bed of fire clay of superior quality. At the Louisiana Purchase Exposition at St. Louis, in 1904, their exhibit of this clay won a bronze medal, and they are shipping it in 100-pound sacks to plants all over the South.

They own nineteen and a half acres of this land. As yet they have only taken the surface off, using mules and scrapers. The top layers furnish clay for the press brick; the lean, light colored stratum below is the fire clay.

The buildings are of wood. Besides the machinery and oil buildings, there are two stock sheds, fifty feet long. The

clay is not weathered, but is stored in a wooden store shed, 160 by 200 feet.

Two Eagle dry pans, nine feet, with a daily capacity of 20,000 brick, are in use. The screens are perforated sheets, four by ten feet, double.

The clay is brought up in cup elevators direct from the screen to the press. An ingenious home-made device—a board placed so as to serve as a damper—diverts the current of powdered clay from one press to the other as it is required.

The clay is molded semi-dry in two Chisholm, Boyd & White presses. Their capacity is 35,000. There are several shapes of dies—plain, Roman, and arch.

Seven large down-draft kilns for the fire brick, and three up-draft, with twelve and forty-two furnaces, respectively, are in use.

The brick are set "5 over 2" in the former, "8 over 3" in the latter kilns.

Wood is used for water smoking, oil for firing. The usual home-made burners (inside mixer) made of pipes and fit-



Storage Shed of the Denton Press Brick Company.

tings are found satisfactory. The three tanks hold 17,000 gallons each. Oil has been used with excellent results from the beginning, but the rising price and increasing scarcity of this fuel makes it doubtful how much longer it will be available.

The products of this plant show several colors—white, salmon, buff and mottled; in fact, almost every color but red, for which there is less demand at present in this region than for the lighter tints.

It is only five years since this plant was started, but already it has established a reputation, for its fire brick especially, which has been shipped as far west as El Paso and as far south as Houston. This means a good deal under the present ruling of the Railroad Commission, which tends to discourage shipping of brick over great distances, and to confine each plant's market to its immediate vicinity.

The transportation facilities of the Denton Press Brick Company are excellent, however, as it has spurs from two railways, and the brick bring good prices, \$20 a thousand for the fire brick and \$17 for the face brick.

About thirty-five men are employed, negroes and whites.

ETHEL HUTSON.

SHIPPING FIRE BRICK TO SOUTH AFRICA.

The product of the Lock Haven (Pa.) Fire Brick Works is in demand in all parts of the world, as is evidenced from the fact that an order for four car loads of brick was filled recently for consignment to far away South Africa. The brick

were sent by freight to New York, where they will be loaded on a vessel and will be transported to Durbin, South Africa, from which place they will be carried by pack mules to Pretoria, 100 miles distant. For this reason it was necessary to put the brick up at the yard in crates of 100 pounds each.

NATIONAL ASSOCIATION OF MANUFACTURERS TO MEET IN NEW YORK.

The National Association of Manufacturers will hold its twelfth annual convention and banquet on May 20, 21 and 22, at the Waldorf-Astoria Hotel, New York City. Parts of three days are to be devoted to the business sessions of the convention, during which addresses are to be made on some of the most important topics now before the business world, by government officials, manufacturers and others prominently identified with these subjects. The annual banquet is to be held on the evening of Wednesday, May 22. It is already evident from the list of speakers obtained for the business sessions and for the banquet, and from the very large number of members who have signified their intention to be present at the convention, that it will be by far the most brilliant and important convention ever held by the association in its prosperous history.

Among the speakers at the business sessions will be: Hon. Charles A. Prouty, of the Interstate Commerce Commission, who has promised an address on "Further Railroad Legislation"; Hon. Francis B. Loomis, formerly Assistant Secretary of State, on "Some Practical Results of the Convention Reform Agitation"; Mr. Charles M. Pepper, special agent of the



Gathering Surface Clay at the Denton Plant.

Department of Commerce and Labor to investigate trade conditions in foreign countries, on "Foreign Trade; How to Get It and Keep It"; Dr. Charles P. Neill, Commissioner of Labor, Department of Commerce and Labor, on "Certain Aspects of the Child Labor Problem"; Mr. Arthur D. Dean, on "Trade Schools; the Manufacturer's or the Pedagogue's Sort"; Captain Henry A. Castle, late Auditor of the Treasury for the Post Office Department, on "Needed Postal Reform".

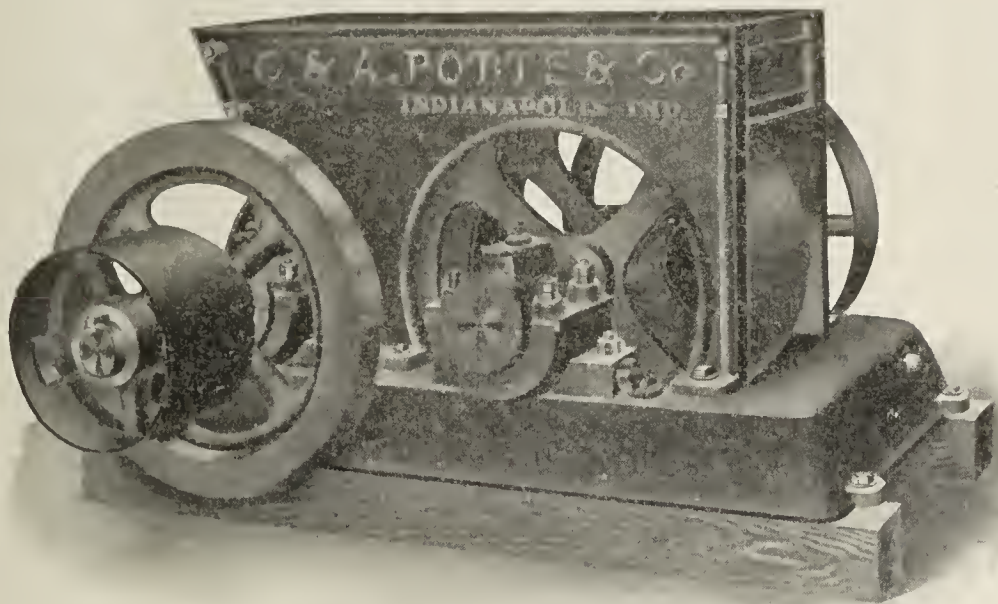
No such programme of practical business talks on important present-day problems has ever been scheduled for any former convention of the association.

The chief speakers at the banquet will be: Hon. Oscar S. Straus, Secretary of Commerce and Labor; Senator J. P. Dooliver, of Iowa, who has promised that his address shall be on "The Revolt of the Unincorporated"; Rear-Admiral Charles D. Sigsbee, the hero of the Maine, for the Navy; Major General J. Franklin Bell, Chief of Staff, for the Army, and Rev. Dr. Joseph Dunn Burrell, whose topic will be "The Era of Work."

MODERN BRICK MACHINES.

WE HEREWITH present to our readers three machines necessary to every brick yard for the successful manufacture of brick.

First. The disintegrator, which enables working the clay direct from the bank. This machine consists of extra heavy frame carrying journal boxes for two rolls, one roll being 12 inches in diameter and having six steel cutting bars adjustably secured to its surface. These bars are set in slots in the roll and held in place by key bolts at each end. They project above the roll $\frac{1}{8}$ to $\frac{3}{8}$ inch. As these bars wear, they can be raised and turned, bringing a new and sharp cutting edge to the working side. When these bars are worn so they can not be safely held, they are easily and cheaply replaced. The other roll is 24 inches in diameter, and is the feed roll, feeding the clay gradually to the cutting roll, the projecting bars, chip or clip off portions of the clay, carrying it between the rolls and delivering it thoroughly disintegrated underneath the machine; because of the projecting bars, hard, dry or wet, sticky lumps will not choke or clog it. If the clay contains stone, the steel bars break the small ones, the greater part being crushed to dust; the large stones are thrown out of the machine.

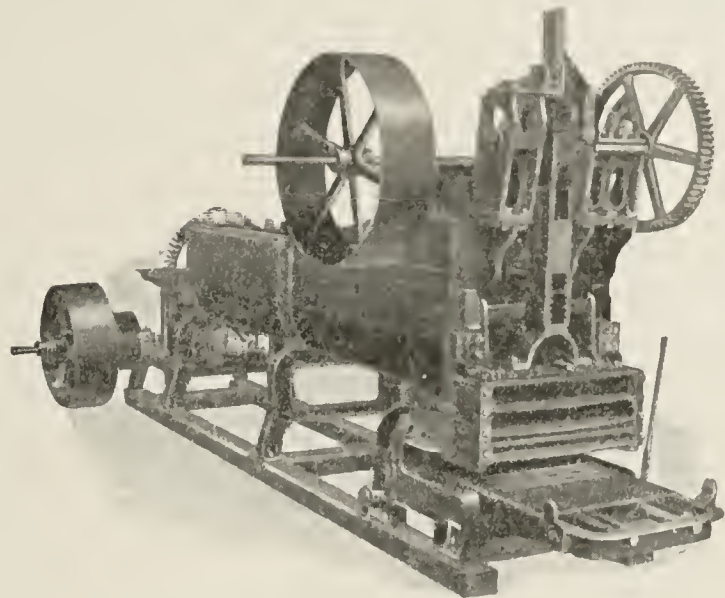


The Potts Clay Disintegrator.

The rolls are made from special grades of iron, thoroughly chilled. The shafts are large in diameter, made from the best grades of steel. The journal boxes are of the latest pattern of ring-oiling journals. These boxes are lined with the best grade of metal. The disintegrator has done more to improve the quality of brick and reduce the cost than any other improvement in clayworking machinery ever invented. Before its introduction, the clay had to be put into soak pits, and with extra labor delivered to the brick machine. Today, with this machine and ample tempering capacity, the clay is worked direct from the bank through the brick machine.

Second. The horizontal brick machine. This is a combination of the old style vertical machine and extra pug mill. By making one complete machine of this combination, many gears and extra parts are not used. The pug mill in the machine here shown is 12 feet long. The tempering shaft is independent from the press, so it can be run any number of turns to each mold, and which may be necessary to thoroughly temper the clay. To one end of this long pug mill is attached a heavy cast iron front, to which the various parts necessary for filling the molds and delivering them are attached. All surfaces are planed true and square, thus

insuring rigid bearings and a machine which will stand continuous and heavy running. At the opposite end is the heavy cast iron frame carrying the gear for driving the tempering shaft. The shafts to which these gears are attached are made of steel, and run in long journal boxes, thoroughly protected from dust and water. The gears are made from cast steel, thus making them unbreakable. By this construction all

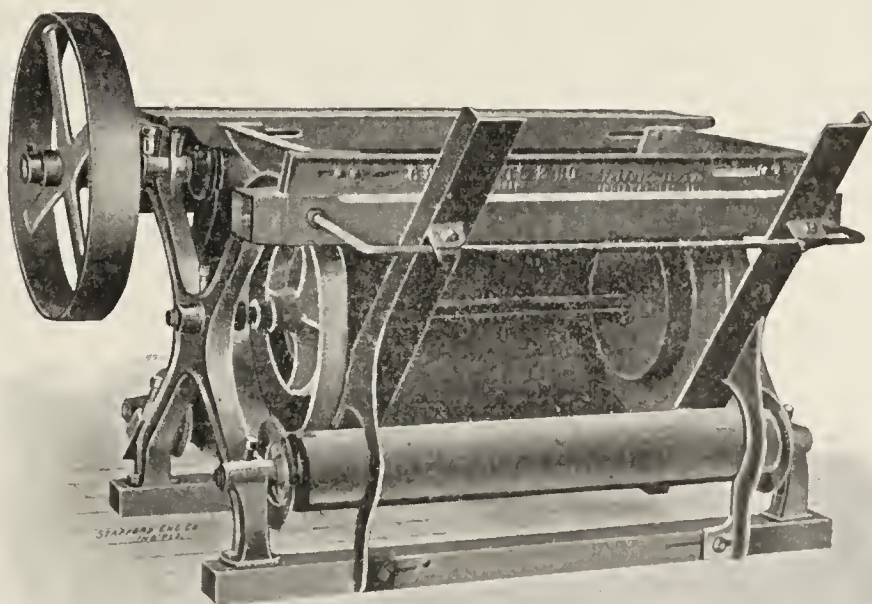


The Potts Horizontal Brick Machine.

working parts are close to the floor, and resting directly upon the foundation. All danger of springing or getting out of line is overcome. Each machine is fitted with friction clutch pulley. By having the press box on the outside of machine, all trouble of getting the air from it is overcome, insuring brick that will have clean, sharp corners and smooth surfaces, at the same time overcoming all danger of the brick sticking in the molds. All working parts are of easy access, so they can be given the care that all machinery should have.

By this plan of construction no high buildings or platforms are required.

Third. The mold sander is one of the labor saving appliances, the machine shown is simple in construction. It has no gear or chains to wear



The Potts Brick Mold Sander.

or break. The molds are carried through the sand by a wide belt, thus there is no sliding over the sand, which will wear the molds rapidly. The molds are thoroughly and evenly sanded. A boy can be taught in a few minutes to operate it.

C. & A. Potts & Co., Indianapolis, Ind., are the manufac-

turers of the above described machines. This firm has manufactured clayworking machinery for the past twenty-five years. They are well known to the trade by the machinery they have manufactured. Their machines are in use in every part of the United States, from Maine to California, Canada to Mexico, England, France, Germany, Holland, New Zealand and Australia. They not only manufacture the three machines above described, but a complete line of supplies, and brick dryers. They will be pleased to give any further information desired.

WHAT CONSTITUTES A FIRST-CLASS PAVING BRICK.*

By W. P. Blair, Terre Haute, Ind.

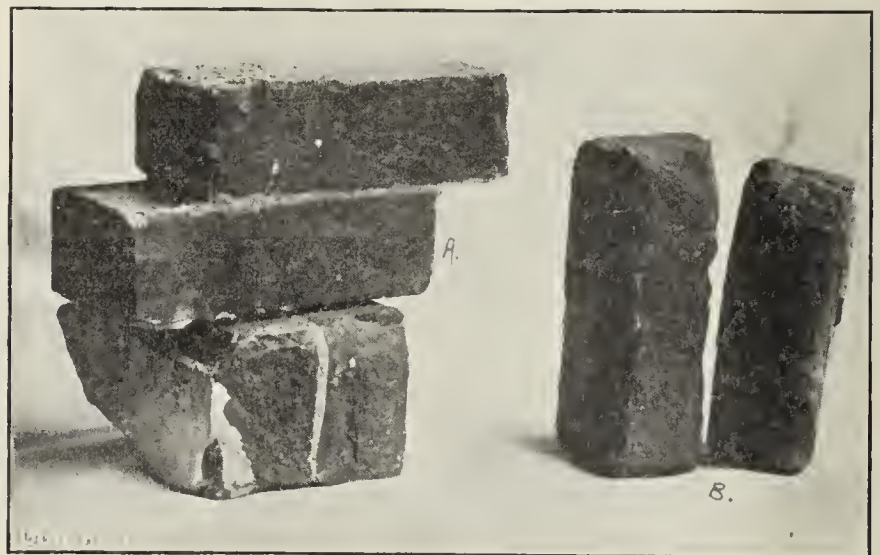


THE FIRST PAVEMENT made with brick that I had the pleasure of seeing in process of construction in a roadway was witnessed by me a good many years ago. The brick were dumped from a wagon as you would dump a load of gravel. That does not seem so long ago, but rather yesterday—since upon yesterday, as it were, whole streets have been paved without a pretense of an engineer's services, and are practically dumped into a street, and even now it is not an unusual thing for brick streets to be built without the superintendency of an engineer. The services of an engineer were not thought necessary, and so not thought of at all in building the first brick streets in Illinois. For the same reason, and no better reason, the services of the engineer have been dispensed with time and time again, because it was not thought worth while. His skill and wages for the time seem to be thought of as being out of proportion for the importance of the job. A dollar and one-half to two dollars a day so-called inspector is often deemed sufficient pay, and such a person regarded as being fit for an inspector on streets for the same reasons that the boy could so highly recommend his dog, not being fit for anything else, he knew he was a good coon dog. Just why the public endures being trifled with in this respect is difficult of solution. It is a method that has grown into a practice for the reason that sufficient protest has not been lodged to remedy the evil.

A mile of brick street 36 feet wide costs, with the curbing, \$40,000. It not infrequently happens that cities and towns of from twelve to twenty-five thousand inhabitants build two miles of streets in a single season, and \$80,000 is expended under the supervision of the two-dollar-a-day man. I ask what would be thought of your citizen neighbor who, having determined to build a \$40,000 residence, would do so without the aid and services of a most competent architect constantly superintending the job. No one knows better than gentlemen of the engineering profession that more money is wasted upon streets and roadways through incompetent superintendency than that of any public utility for which money is expended, and no one else than you feels more keenly upon the subject than the material man whose product is thus abused. So far as the brick manufacturers are concerned, I think I may say without the least degree of hesitancy that they not only stand willing but determined, so far as lies within their power, that the engineer shall supervise the construction of the work for which he draws the plans, and receive the pay for such supervision for which his ability entitles him.

An architect's fees for superintending a \$40,000 building would certainly be as much as three and oftentimes is as much as five per cent. of its cost. In this day and age of the world, even a modest home is without its complement and necessary appurtenance when it is without a street at least in keeping with that home. The beauty, the utility, the com-

fort and durability from every point of consideration, is as important in one case as in the other, and deserves equal care and attention. The interest of the vitrified brick manufacturers in the use of their product is co-equal with that of the engineer or property owner. We earnestly desire the co-operation and help of both, and we are willing at all times in recognition of that fact to help the cause of the engineer with all of the influence at our command. If professional ethics would bid them be modest, our material welfare is ready to supply the necessary obtrusiveness to set aside the practice that contributes to bad work, and put them where they belong. We only need to be taken into their confidence and quietly directed in the things which we may do, and I plainly confess that we do not wish the relationship to stop there. We desire to take them into our confidence. With the incompetent inspector we have our troubles. We do not know whether he really thinks us dishonest, or whether he does not consider it as a part of his duty to consider us honest, or which, but do you think that we can take such a man on to our yard, explain our methods of burning, demonstrate where the good and the bad brick come from in the kiln, where our own troubles lie, and of all the efforts that we put forth, and as we put them forth to give to the cities the quality of the brick we have promised to furnish. We are not satisfied, however, with eliminating the incompetent inspector. Boards of trustees and city councils often so circum-



Good and Bad Construction Contrasted and Compared. Brick of like quality and same make, and conditions of street traffic the same. (A) From perfectly constructed pavement shows no wear. (B) From poorly constructed pavement, shows worn and chipped condition. The fine condition (A) is the possibility of every street. The poor condition (B) shows the result of bad construction.

scribe the engineer in a way that he is not the responsible factor he should be; the final judgment and authority of the engineer is not supreme, but reserved by a body that possesses no element of technical learning. A doctor is called and prescribes, but some wiser council (?) determines whether or not the patient shall take the medicine. The authority of the engineer should be made supreme to make him forceful and independent. After an engineer's plans are accepted and approved, then he should be clothed with absolute power and authority to carry them out in detail. Where the engineer is given full control of the plans, specifications and details of construction, the material with which it is to be done, we do believe that it would be to the interest to all concerned that the engineer visit the yard and factory from which the brick are supplied; see the brick as they are made, as they are burned, assorted and shipped; where the overburned and the underburned come from, and note the characteristics; likewise the underburned, the air-checked, the faulty made at the machine, the spoiled at rapid firing, and all the little details that separate the good from the bad.

As they gather some little information from us along these lines at such conferences, we necessarily would learn a great deal from them.

What constitutes a first-class paving brick is a question that can not well be answered in a few words. You are all

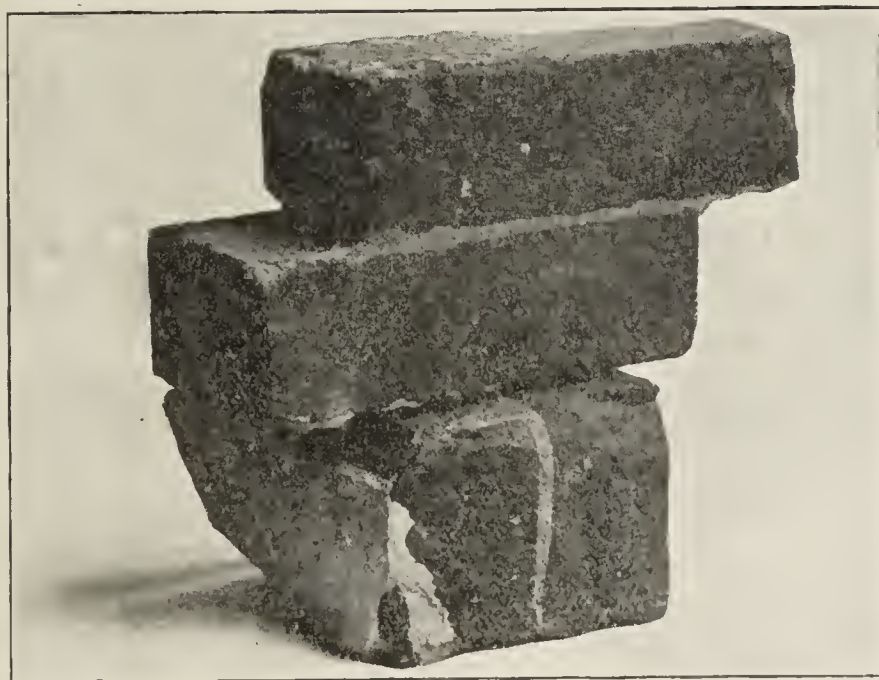
* Read before the Twenty-ninth Annual Convention of the Illinois Clay-workers' Association, held at Champaign, Ill.

well aware that we are wont to say and do say that a paving brick that will withstand the action of the rattler and not sustain a loss of exceeding 25 per cent., and one that will absorb but from 2 to 5 per cent. of its own weight, is a good paving brick; but when you ascertain the quality of a brick by that process of testing, the brick itself is no longer fit for use. Then the test itself is only practical so far as it may serve by way of comparison to enable intelligent judgment to be passed upon similar brick that are expected to be used. I have before me some half dozen or more samples of first-



An extra good brick in quality, abused by being improperly placed in the street.

class brick of the various makes that seek a market in your State. I would say that all of these brick are first class, and meet the general requirements, and after being placed in the streets of the cities and towns of the State of Illinois, under what we call good construction, it would be a rare exception where they will not withstand the wear and tear of an entire generation. I have before me here, also, an over-



Specimen brick fifteen years wear in properly constructed pavement; note the cement filled joint,

burned brick, an underburned brick, a brick that is burned too fast, a brick that is spoiled in the mill, and brick that are otherwise defective, each having been manufactured by the same process, burned in the same kilns, of the same material, and apparently received the same treatment as the brick that are good. The comparisons that I have here are each somewhat in the extreme. I believe it was your own immortal Lincoln who said that the way to learn most effectively by illustrations and comparisons is by instancing extreme cases,

and that is why I have brought these extremes to you. It does not require much stretch of the imagination for you to realize that there is a point where these two extremes meet, and it is the case with every manufacturer that between the good and bad there is a doubtful line. I think that you will find that it is the method of every first-class manufacturer, in giving instruction to his men, upon whom he must depend to fill his orders, that the doubtful line must be eliminated in favor of a good grade. If there is a doubtful line where these two qualities meet with the manufacturer, with all his familiarity with the details, conditions and circumstances surrounding the making of the product, what can be expected in the exercise of the judgment of a man such as I have stated while acting as an inspector? This is the aspect that presents itself for your and our intelligent consideration, and this is the condition that led me to say, and is the father of the wish, that the engineers might be taken into our confidence and we into their confidence, and that is why I say to you that a visit to the factory of the manufacturer who supplies the brick that the engineer is expected to use upon any important street, will be to the decided advantage of both. In some cases it is largely the place in the kiln where the different grades come from. Again, the quality may be determined somewhat by the color, and, as is sometimes the case, by the weight alone, mill insufficiently fed, quantity of clay lacking inside of the brick, the outside appearance perfect in form and perfect in burning. In the latter case the fault of the brick is only detected after it is placed in the street and subjected to the weight of the roller. But no two brick of the entire lot before me are of the same color, nor do any two present the same appearance so far as fracture, density, burning, or anything else as it appears to the eye make the two alike. Each is totally different, and made from slightly different clays. A visit to one yard will not equip one thoroughly in judging the quality of the brick from another yard, so I would say, if it is possible, as each factory supplies a street from time to time, visit each factory, inspect the yard from which the particular supply of brick are to come.

I have with me, also, two or three specimens of first-class brick that have been in use. One specimen, taken from under the wheel track, having been in use a little more than fifteen years. This specimen of brick is similar in quality to the No. 1's that I have before me, but it was placed in the street under proper construction. I have a corresponding sample precisely alike in quality; but placed in the street carelessly and not in accordance with the plans and specifications we recommend. The wear on the two specimens were as nearly alike as it is possible for conditions to be in two different places on the same street; both were from under the wheel track, but you readily see one is a total wreck, while the other is not perceptibly worn. I have another specimen taken from another street that was in use twelve years, sustaining the traffic under heavy loads daily, and in that entire time many loads that passed over it weighed more than twelve tons. I was unable to procure a mate for this sample—construction under bad conditions—for the reason that on the entire block from which this was taken no more apparent wear was found anywhere. These brick we furnish in proof of the statement often made, that the older the brick street, in case of proper construction, the better it is for all purposes for which it is built. Bridges collapse, buildings fall, streets fail. There are failures in all engineering problems, but almost without a single exception the failure is due to misconstruction or a misapplication, carelessly or otherwise, of the plans and specifications made by the engineer. You ask me, why this special plea for competent supervision? I think I have already given you the answer. What constitutes a good paving brick is one that is properly laid in the streets.

In so short a paper I can only indicate these two or three

thoughts which lie at the bottom of hindering the complete vindication of brick streets. But they only hinder and delay. Our faith that brick manufacturers, with the aid of the conscientious engineer, will see brick streets preferred to all others has never been shaken for a moment.

VITRIFIED FENCE POSTS.

There is a refreshing bit of news comes from Coffeyville, Kans., contained in the "Record" of that place, which says that Mr. R. L. Dennison, who is the patentee of a vitrified fence post, will erect a plant at that place to manufacture them, and has already an order from the Missouri Pacific for a million to use along their right of way. This is refreshing, for one thing, because it is a change from some of the items we used to see of enterprises in building concrete posts, and it is welcome in another way, because it tells of research with a view to enlargement in the clayworking industry. We are not at present familiar with the details of this new fence post idea, but we wish it well and hope to see other new ideas develop and thrive, for there is plenty of room to expand the scope of clay products, and every new effort in this line is a step in the right direction.

THE NEED FOR CLEAN MEN.

If one were to go to the President of the United States and ask him to name the country's greatest need, he would reply in his quick, conclusive way, "Clean men." He knows. Smart men there are by thousands; rich men abound more than in any other age of the world; able men are found in every State and township, but even from a population of eighty millions the chief executive has difficulty in finding the man of exceptional character for a post which requires a square and flawless morality. It is to his credit that he misses no opportunity to preach clean manhood. But neither Presidents nor preachers nor teachers can do the work of fathers except in their own families. We do not mean to underestimate the marvellous influence of the mother. In most lands men who reach success give their mothers the credit. "All that I am I owe to my mother," said Lincoln. "It was you who taught me to write so. You really did, dear mother," said the crabbed Carlyle. We get our moral qualities from our mothers, our mental from our fathers, say the physiologists, and as we look back we find this maternal affection the loveliest thing on earth. But isn't there a conviction down deep in our souls that we should have done much better if our fathers had taken time and trouble to share our confidences in the years that counted most?—The Delineator.

NEW JERSEY CLAY NOTES.

AMONG the developments in New Jersey this season will be a plant at Morristown under the Scott dryer system and another at Bound Brook under the same system. The American Blower Company is going to equip these plants. New York experts are much interested in this introduction and will be glad to see what new plants can do when operated scientifically under this system. It is recognized as an excellent system and one that is coming to be an important factor in the brick market and these two plants will be watched with great interest by the makers in this vicinity.

The North Jersey Brick Company, at Carlstadt, N. J., is developing increased clay beds and is preparing to do a larger business than ever the coming season. The first burning is about ready to start the fire though there have been serious set backs and delays because of the long rains. The pits have been pumped out and everything is in readiness for action.

The trunk sewer to drain the Passaic Valley in New Jersey is assured. The law has been signed by the governor and the preliminary notices to cities and municipalities have been sent out. It is still uncertain what the material used will be, though it is understood that the engineers are in favor of brick. It will be one of the preatest pieces of engineering yet undertaken in the vicinity of New York. If built of brick it will require an unnumbered quantity and the sale will be largely increased everywhere within reach of it.

Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.



DISAGREEABLE WEATHER during the past few weeks has given a setback to building operations to some extent, but during the past few days the weather has greatly improved and building has been resumed. The brick and terra cotta manufacturers, however, are quite busy, and have been preparing for the pleasant weather by fire a few weeks ago, en-busness.

The report of the building commissioner for the month of April shows a considerable increase in the number of permits, but a decrease in the cost of buildings authorized. The number of permits for new brick and new frame buildings was 622, compared to 552 for the same month last year, with a total estimated value of \$2,560,447, compared with \$4,459,715. The permits for alterations and additions to both brick and frame buildings showed opposite results. Brick additions numbered 171, valued at \$178,900, compared to 187, valued at \$140,420 for April of last year. Frame additions numbered eighty-eight, compared to ninety, costing \$15,657, compared to \$11,746 for last April.

One of the plants of the Anthony Ittner Brick Company, at Belleville, Ill., was destroyed by fire a few weeks ago, entailing a loss of some \$38,000. Almost before the ashes were cold, arrangements were made for rebuilding. In the rebuilding of the plant, Mr. Ittner says that four mold machines will be installed instead of the three mold machines that were formerly in use. This will increase the capacity of the plant materially. Operations will be resumed in about five or six weeks, or in about two months from the date of the fire.

The Evans & Howard Fire Brick Company, which has a large plant under construction south of Clayton, St. Louis county, has secured a permit to tunnel under the Hanley road, 60 feet below the surface of the ground. The tunnel will be used for conveying fire clay to the factory from the mines.

The Scott Manufacturing Company report a splendid business this spring on their Andrus Press. William F. Scott, president of the company, in speaking of their presses, says he is particularly pleased with the record made by them on the plant of the Anthony Ittner Brick Company, at Belleville, Ill., where they have seven Andrus presses in operation.

Mr. W. W. Ittner, superintendent, and Mr. Robert Kutzner, the foreman of Yard B, report that Yard B is equipped with one four-mold Andrus press for making standard sizes, and two Andrus presses for making shaped and ornamental brick. They operated during the season of 1906, the four-mold and three-mold a total of 5,113 hours, making 11,385,000 stock brick of various colors and common and face brick. During the entire season these two presses lost but 15 hours and most of the time lost was due to belt troubles. There were no breaks of any consequence. The youngest of the above mentioned presses is seventeen years old, and the other is over twenty years old, and considering that the rated capacity of the two is 35,000 brick per day and the actual production was 45,000, a difference of about 30 per cent., it is certainly a record to be proud of.

Mr Kutzner, the foreman of Yard B, is an experienced and practical brickmaker, and has been with the Ittner Company for about fifteen years. The record above certainly speaks well for the management of Mr. W. W. Ittner and Mr. Kutzner, as well as for the merits of the Andrus press.

Mr. Walter Grath, of the Illinois Supply and Construction Company, reports business as being excellent. The numerous brick presses of the company are meeting with much favor by brickmakers everywhere, and he reports a material increase in business.

The Fernholtz Brick Machinery Company reports a nice business being done in brick machinery. Inquiries are numerous and orders are coming in in good numbers.

Mr. Camp, of the Ross-Keller Triple Pressure Brick Machine Company, says they are well pleased with the business being done. The present season has been unusually good and conditions are quite good for a continuance.

The Williams Patent Crusher and Pulverizer Company report that the demand for the Williams up-to-date shale crusher, manufactured by that company, is meeting with a big sale. Orders are plentiful and inquiries are numerous.

A SAINT.



ORDERING DRAIN TILE.

IN ordering drain tile it is important that one should know something of the effects of drainage on the soil; how deep to drain, how far on each side of the drain the soil will be affected, or readily freed from an excess of water. Sufficient should be known to plan a system for draining, if it is only a few acres, so as to determine the size of tile to be used for the main and lateral tiles. New beginners are so apt to conclude that they know enough to go ahead and do the work all right, and put in a single line of tile drain, the size of the tile being far too small to drain the land intended, and find afterward to their sorrow that they should have provided for sufficient capacity in the first drain laid to receive several lateral drains in the future of the work, and the only alternative, if they make further progress with the work, is to take up the first drain and put in another with tile of sufficient capacity to drain the area intended.

LAND THAT NEEDS DRAINING.

"You are familiar with the subject of underdrainage. Does any of my land need underdraining?"

"In answer to your question, I will give you some of the indications of the need of underdrainage, and you may be the judge as to the needs of your land in this particular. Have you pools of standing water on the surface of your land for a day or two after a heavy rainfall?"

"Yes; and some pools that stand for a month or more."

"The latter are likely fed by seep water. All land not readily freed from standing water in a few hours after a heavy rainfall needs underdraining."

"Have you small or large areas in your cultivated land which remain damp and cold some time after the rainfalls in the spring of the year?"

"Yes, I have several spots, some of them pretty large, in my fields, which are too wet to plow when other portions of the field are dry enough."

"Such places have water in the soil near the surface and need underdraining. Have you soil which cracks badly in dry weather?"

"Yes; I have much of such soil. I can prevent it, however, when I am cultivating my crops, by frequent cultivation, but I have in it grass or oats or some such crop which I can not cultivate; it cracks badly."

"Such land needs to be underdrained. Have you land that when cropped with corn, or to some extent other crops, the leaves of the corn get yellow in wet weather, or curl in dry weather?"

"Yes; some of my corn gets yellow in wet weather and the leaves curl in dry weather."

"Such soil needs underdraining. Have you land which, when in grass, is likely to have wire grass and water grasses mixed with the tame grass?"

"Indeed I have. I have one meadow field that almost half of the grass is such as you speak of, and a woodland pasture which grows as much wire grass as blue grass, and in some places the wire grass has taken all the space."

"You may be sure that such soils need underdraining."

There are other conditions that indicate a need of draining, such as sticky when wet, and cloddy when dry, or soils hard to cultivate, need tile draining. From your putting of the case, I am ready to conclude that most of my land needs draining; some of it needs it badly."

"You have answered your own question."

"Yes, I see; with your help."

A NEED OF SMALL TILE FACTORIES.

In the past decade or more of years, the trend of the tile-making business has been toward large factories in the states where the tiling of the land is quite generally practiced. Fifteen or twenty years ago it was not uncommon to have ten, fifteen or twenty tile factories, and even more in a county. They were small but they served a good purpose—they supplied at first the local demand for tile. They served to educate the people as to the benefits of underdrainage. They were built and operated at a time when the country roads were in bad condition and the means of transportation limited, money scarce and the price of farm products low and difficult to market—but the little factory served a good purpose in making it possible to reclaim the wet lands and grow better crops. They also served to greatly improve the general sanitary condition of the country. Tile drains dried up the ponds and marshes and removed the stagnant water that was in the soil but near the surface, and thereby improving the general health and bettering the soil conditions at the same time. Some of the factories were very small, the writer remembers a few that were constructed so cheaply that they did not represent an investment of more than two or three hundred dollars in money, but quite an amount of labor, but they served the purpose intended in their construction. Many larger factories did not represent an outlay of \$500 or \$600 and the requisite labor to build them, but they made drain tile and they supplied the demand for drain tile in the neighborhood. There were hundreds of these factories that never loaded a drain tile on a railroad car. Their trade was limited to the locality where they were operated and the men who operated them are entitled to much credit for their enterprise in making it possible for their neighbors to better their conditions.

As the years have gone by our transportation facilities have been multiplied and the markets have been brought to our doors, and the many small factories have been crowded out by large ones, factories that represent the investment of many thousands of dollars, factories that ship thousands of cars of tile in a year, and we are pleased that men of broad ideas and business tact have made such advancement. Yet, there is a place for small factories. There are many sections of country where a small factory, well equipped, would be a great convenience to the community by making it possible for every land owner to drain his land needing this important improvement of soil conditions. There is a limit to the length of transportation, that makes the cost of tile too much for many to use it. The freight charges on long hauls and loss from breakage of tile are too considerable to encourage the work of land drainage. If a small tile factory could be located so near as to make it possible to economize the cost of drainage to the extent of the cost of transportation, it would greatly encourage a more general use of drain tile. Looking forward to the encouragement of the establishment of many small factories, we suggest that some of the manufacturers of tile machinery might take the matter in hand of making some machines especially adapted to those who have limited means and a limited demand for tile, possibly for years.

It is unwise on the part of any one to advise parties, who are interested in trying to do what they can to encourage the use of drain tile, to invest a large sum of money in a tile

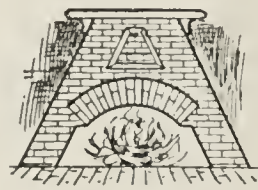
plant, when possibly half the amount, if wisely invested in a small factory, would serve every purpose for years. We have known men to be misled in their undertaking by agents, who cared only to make a sale of large machinery, to the extent that they went in debt and carried it to their graves; when, if they had invested half the money in a small factory, well equipped, they would have made a success of the undertaking. We are persuaded by the many inquiries that come to us as to the cost of small factories, that there is a field for work along this line. "Can a man take \$2,000 and put up a small tile factory in good shape, to make tile for a demand that will most likely be limited for years, but sufficient to justify an undertaking of the work?" Another writes: "What is the least amount of money that will be required to construct a small tile factory to supply a local demand?" What machine manufacturer, will, or can, furnish the drawings and specifications giving the approximate cost of a small, model factory, suited to either of the above or other inquiries.

Architects publish drawings and specifications for large, elegant mansions, that cost \$10,000 or \$20,000, and at the same time furnish plans and specifications for a house costing \$1,000 or less—the latter is small, but neat and up-to-date in point of conveniences. The small house serves the owner quite as well as his needs may require as does the costlier residence serve its owner.

The large tile works shipping a thousand car loads of tile

Written for THE CLAY-WORKER.

GEORGIA CLAY NOTES.



KAOLIN MINE is being opened up at Perry, Georgia, by Mr. J. R. Wimberley, of Rome, Georgia. The clay lies within the sedimentary kaolin belt of central Georgia, and is suitable for potters' use, as a paper filler and for fire clay products.

The deposit is favorably located near a railway line. Machinery for operating has been installed.

A movement has been on foot for some time to establish a pottery at Macon, Georgia. It is now reported that the project is assured, and that machinery is being purchased. It is the intention of the promoters to utilize the white burning clays of the Dry Branch region in the manufacture of white ware and sanitary ware. The value of the sedimentary kaolins of central Georgia is becoming recognized, and it is predicted that within a few years large industries, with the clays as a basis, will be established.

The plant of the South River Brick Company, located at Bolton, seven miles north of Atlanta, Georgia, was recently destroyed by fire. Preparations have already been made for the rebuilding of the plant. The plant was formerly operated by the Scott Brick Company.

The Crucial Fire Brick Company has been organized at



General View of the Plant of the Boyne City (Mich.) Clay Products Company.

a year, serves for a large demand extending over states, while a small factory will serve a local demand quite as well and prove a profitable undertaking for a man of fair business ability. Our plea is for more small factories.

CEMENT COMPETITION.

Apparently brick men have little to fear from the competition of cement. Experiments with it do not demonstrate its efficiency for any but the cheapest building. For low, cheap buildings, which make no pretense of beauty, or anything beyond bare utility, cement may do. It never will do where beauty as well as utility is required, and there never was a time when beauty was more generally a part of almost every architectural scheme than it is now. Cement lends itself to some of the plainer forms of decoration. It is not possible to do anything further with it. Most architects want more or less ornament on the buildings they construct, and no material lends itself to such artistic forms at such small expense as brick and terra cotta. This point alone is sufficient to indicate the superiority of brick over cement if nothing else did; but that is only one point. There are many others equally as important.

Rome, Georgia. The company purposes to manufacture a high grade fire brick from the bauxite clays which occur in almost inexhaustible quantities in the vicinity of Rome.

The Atlanta Mining and Clay Company is erecting a washing plant and making other improvements at their clay mines at Dry Branch. The company will produce a uniform clay for potters and paper manufacturers. Mr. Y. A. Gresham is the manager, and will have an office at Macon, Georgia, in addition to the office at Atlanta.

The demand for common building brick throughout the state has been unprecedented. Many plants already established are increasing their capacity, and there is active interest being taken in locating sites for new plants, especially in the southern part of the state. Many brickmakers, however, are handicapped by lack of efficient labor, lack of fuel and the congested condition of the railroads. On account of the demand for building material, a number of small concrete block factories have sprung up, and where suitable sand occurs sand-lime brick plants are being considered.

A CORN CRACKER.

Genius is the key, but good horse sense is the backbone of success, and it really takes both to make a winner in the brick business.

Written for THE CLAY-WORKER.

PROGRESS AND PROSPERITY IN MICHIGAN.

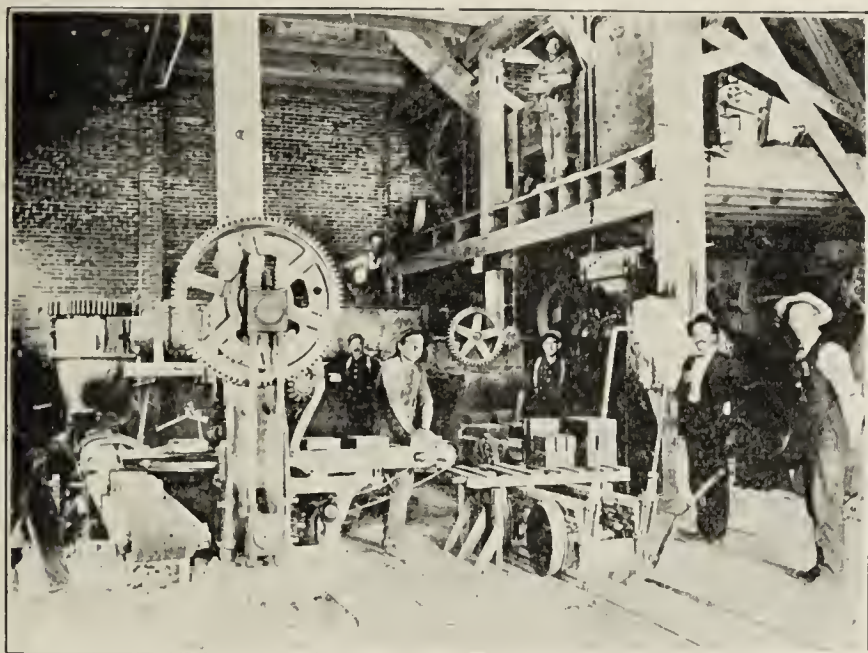
The Model Brick Plant of the Boyne City Clay Products Co.

SIXTEEN MILES east of Charlevoix, one of Michigan's famous summer resorts, with which it is connected both by water and by rail, is Boyne City, one of the thriftiest towns in northern Michigan. Four years ago it had a population of 1,000 people, now it has 5,000, having gained a thousand a year since 1903, and the growth is of a substantial sort due to a number of important manufacturing industries, among the best of which is reckoned the Boyne City Clay Products Company, which now has an up-to-date

posit of shale suitable for the manufacture of vitrified brick and sewer tile. When the latter fact was demonstrated a local rhymster recorded the fact thusly:

When we were boys, they used to say,
The finest brick were made of clay.
But some old boy, unruly cuss,
Got hold of shale and mixed up a muss.
And since that time the cry has been,
"Vitrified brick for your Uncle Steen."

At the end of the season of 1905, the gentlemen mentioned, having become convinced that the time was opportune for the marketing of high grade brick, went on a tour of inspection, visiting twenty of the best face brick plants in Ohio, Indiana, Pennsylvania, Illinois and Missouri, and then pro-



Making and Repressing Stiff Clay Brick.



The Boyne City Clay Products Co.'s Clay Bank.



Some of the Workmen of the B. C. C. P. Company.



A "Clamp" of Green Brick.

plant, of which the superintendent and general manager, G. H. Atherton, and his associates, Mr. W. S. Shaw and W. H. Matthews, are justly very proud. The Boyne Citizen, in an illustrated story of the industry, declares that it is in many respects a model brick plant, the products of which are shipped all over the State. The demand for the face and pressed brick, owing to the excellence of same, is such that the plant is sixty days behind in its orders.

This up-to-date plant is the direct outgrowth of a small hand yard started some twenty years ago, which was succeeded by a horse power yard, which in turn gave way to a steam plant. The company has an immense deposit of exceptionally fine buff burning clay, and also an immense de-

ceeded to build an up-to-date face brick plant, installing a complete dry press equipment, including two four-mold Berg presses, with a daily capacity of 40,000 press brick. A battery of down draft kilns were built, each having a capacity of 100,000 brick. Besides the dry press machinery they have also installed a line of stiff clay machinery made by H. Brewer & Co., Tecumseh, Mich., including pug mill, brick machine and automatic cut-off, in connection with which they operate a Bonnot repress and the Scott transfer system. They operate dry press machinery the year round and the stiff mud machinery from May to October. They enter the present year with but little brick in stock and with orders on hand that will keep them going to full capacity for sometime to

come. Present prices are fair, ranging from \$6 for wire-cut common brick to \$12 for dry press face brick, f. o. b. cars at the plant. The power and machine house are substantial structures built of brick and the company has also installed its own electric lighting plant.

THE FINAL REPORT ON THE SAN FRANCISCO FIRE.

THE DISASTER at San Francisco of a year ago has been exploited so exhaustively in the technical journals, that it seems hardly worth while to take up space with new statements regarding the fire, earthquake, or the results of either or both combined, but the final report published in the proceedings of the American Society of Civil Engineers is in some respects of so extraordinary a nature that we cannot refrain from certain comments thereon. The statement is made that all the evidence from the recent shock favors reinforced concrete; but this is directly offset by the added statement that "the steel frame offers the best solution of the problem." If a steel frame is better than one of reinforced concrete for the building as a whole, the question of floor construction resolves itself simply into a matter of fireproofing and later on the emphatic statement is made that "concrete floors generally had hung ceilings and where thus protected were uninjured. Where exposed, the concrete was in most cases destroyed, as in the Sloan, Rialto and Aronson buildings and the Croker warehouse. The concrete in these cases was dry and while in many cases hard it was virtually destroyed." We fail to see why, under such circumstances, the report is not virtually a condemnation of concrete as a fireproof material, after a general condemnation of it for reinforced work; and though the report cites instances where the terra cotta failed to maintain itself intact, the explanation always follows that it was or a hard, dense type, quite brittle when exposed to heat, but that even then the terra cotta answered its purpose as "the steel frames were the least injured of any part of the various structures."

With one part of the report we are thoroughly in accord. "A logical deduction from the statement that all materials were destroyed, is the conclusion that all structural parts of a building, of whatever material constructed, must be protected by another material which will be a more or less complete loss in a fire. This applies to a steel frame, to floors of any type and to roofs. It is impossible to protect some, such as fronts, partitions and other parts directly exposed. The floors and frame constitute the structural parts, failure of which means destruction of the building. All such should be fireproofed. This remark applies with equal force to buildings with reinforced concrete columns, girders, beams and floors. As integral structural parts they should be fireproofed as well as similar members of a steel-frame structure, for concrete is destroyed by fire nearly as quickly as steel."

Accepting this statement, we can hardly agree with the deduction made by the society that terra cotta is the least valuable of all the materials that are used for fireproofing. In a conflagration where everything goes to pieces, even when built with care, which was certainly not always the case in San Francisco, where the terra cotta used was not of the grade which is considered the best for fire protection, and where every form of column and beam protection is first rudely shattered by earthquake shocks, and then in its loosened condition exposed to the most destructive influence of a conflagration, the wonder is not that concrete and terra cotta both suffered, but that anything was left to tell the tale.

We cannot read a description of the results of the fire, even as presented by this report of the Society of Civil Engineers, without a conviction which seems to be supported by the fact that concrete in most cases was shattered beyond repair and almost totally destroyed by fire, leaving, in many cases, the columns entirely bare; while terra cotta, because of its very elasticity, suffered less initial damage and was finally able to resist the fire more completely. It would be manifestly abortive to establish any comparison between the poorest terra cotta and the best concrete, and yet that seems to be the attitude which is taken by many of the investigators who have studied San Francisco. In no other one city has concrete been used so extensively and with so free a hand,

and in the light of Mr. Stewart's figures, which we print elsewhere, we can feel drawn to only one conclusion: Any material would be wrecked by combined earthquake and fire; and when dependence is placed entirely upon an unprotected constructive material, the building is sure to fail throughout, so that the proper construction would seem to be a well designed and thoroughly braced steel frame protected by and filled in between with the material which suffers least by the direct action of fire, and that material is unquestionably burnt clay in some of its various forms. The report emphasizes this when it states further that "for columns, the fireproofing that will stand up best is red brick set in Portland cement mortar." Terra cotta when properly constructed and applied, will resist more heat than red brick.—The Brickbuilder, April, 1907.

FIFTY PER CENT. OF A WIFE.

When You Are Out of College Five Years, That is What You Will Have.

Note—The Lantern is indebted to Prof. Orton for the following interesting statistical report of a recent alumni meeting:

At the meetings of clay manufacturers and representatives of allied and independent industries held in St. Louis, Mo., February 4 to 9, there were a considerable number of Ohio State University men present, and a meeting was arranged to get them together. The St. Louis Ohio State University Alumni and Ex-Student Club formed the nucleus of the meeting. This club has a membership of twenty-five, though but a very small proportion of their local members could get together on such short notice.

W. W. Ittner, '00, was the toastmaster and succeeded in eliciting a story or a tale of some old college prank from every one present.

Among the other devices for passing the time pleasantly the idea of vital statistics was started and in this instance developed some very interesting figures. The men were put on their honor to tell the truth, the whole truth and nothing but the truth, and it is believed they did so.

Questions were propounded in regular order and the answers were written privately by each man on a separate paper; these papers were then folded and dropped unsigned into a hat, in which they were mixed up thoroughly and finally handed over to two tellers who catalogued the answers. These tellers could not identify the written answers with the various writers, except probably in a few of the most prominent cases. The following are the questions and answers:

Question 1—How long did you attend the Ohio State University? Answer—Average, 2.95 years; maximum, 7 years; minimum, less than 1 year.

Question 2—How long since you left school? Answer—Average, 5 years; maximum, 23 years; minimum, less than 1 year.

Question 3—What is your present age? Answer—Average, 28.2 years; maximum, 43 years; minimum, 22 years.

Question 4—In what course did you study? Answer—Ceramics, 18; electrical engineering, 1; mine engineering, 1; arts, 1. Total, 21.

Question 5—What is your present position or rank? Answer—General managers, assistant general managers and superintendents, 11; assistant superintendents and chemists, 3; college professors, 3; laborers, 3; gentleman, 1. Total, 21.

Question 6—What is your present income derived from earnings (i. e., non-hereditary)? Answer—Average, \$2,257; Maximum, \$7,500; minimum, \$600.

Question 7—Married or single? Answer—Ten married; eleven single.

Question 8—How many "kids?" Answer—Total, 8.

From these answers it appears that the average man of this group could be thus described:

He entered college in 1899, at the age of 20; he left in 1902, and now, at the age of 28 years, has attained a reputable professional and business standing (in 17 out of 21 cases); is earning \$2,257 a year and has 50 per cent. of a wife (ten out of twenty-one), and .38 per cent of a "kid" (8 out of 21). Who says a college education does not pay?—Ohio State Lantern (O. S. U. college weekly).

Written for THE CLAY-WORKER.

BRICK RATES DISCUSSED AT CLEVELAND.



CHARGING DISCRIMINATION against brickmakers by railroads, the officers of the Stowe-Fuller Brick Company gave their evidence during the past month before representatives of the Interstate Commerce Commission at Cleveland and made out a good case.

It was shown by the evidence that brick dealers in Pennsylvania are allowed to ship all grades of brick west at a uniform rate with those given Ohio manufacturers. In shipping eastward, however, Ohio and Kentucky concerns must pay three rates, and the highest on the poorest materials.

Charles B. Stowe, vice-president of the concern making the complaint, declared that his firm believes that it has as good a right to go into Pennsylvania with its brick or even eastward and compete with other concerns. He contested the rights of the railroads to specify rates on different kinds of brick when these may be used for entirely different purposes when received at their destinations.

E. S. Hitchens, of Olive Hill, Ky., said that his brick company could not get a brick rate into eastern territory at all. He claimed that the Pennsylvania railroad refused to make them a rate or permit the C. & O. to do so.

Railroad officials, when examined, claimed that they could not afford to make a uniform rate into eastern territory. They pointed out that the great building centers are in the east and that consequently the competition was there also. They claimed that it would not be fair to allow fire brick to enter at the same rate as building brick because those centers must be protected. Reasons for this belief, however, were not given.

Mr. Stowe, during his examination, pointed out that on many materials a flat rate was charged. For instance, on iron ore \$2 a ton is charged, whether the ore be worth \$2 a ton or \$80.

The witness pointed out that on paving brick, valued at from \$7.50 to \$15 a ton, and shipped from Empire, Ohio, to New York, the rate is 12 cents per hundred. On building brick, worth from \$10 to \$33, the rate is 13½ cents. On fire brick, worth from \$6 to \$9, the rate is 15 cents per hundred. This was where the discrimination came in according to Mr. Stowe.

Mr. Stowe declared that after the pressed brick men formed an organization and appeared before the railroad men of New York they got a lower and a uniform rate on pressed brick to eastern points. Stowe claims that they can ship much lower than he can from the same points, though they handle the same kind of brick. Stowe says the rates to Chicago and westward are so low that his company is losing business while the rates eastward are so high that his concern can hardly get into the eastern field.

The general trend of the evidence was to the effect that the eastern manufacturers could ship westward, but the makers in the west and middle west could not profitably send their brick eastward.

The evidence will be reviewed at a formal meeting of the commission to be held in Washington late in May, when it is expected that some decision will be arrived at which will equalize the rates in the central states so that brickmakers can afford to enter actively into the eastern trade.

During the month of May 1,070 building permits were issued for structures aggregating \$1,435,212 in cost. A year ago 884 permits for buildings valued at \$1,322,000. Of the permits issued 776 were for steel and brick structures. The building season is well under way and a great deal of work is under way.

Cleveland brickmakers and dealers have been notified dur-

ing the past month that on August 1 freight rates on brick and clay are to be advanced ten per cent. Every important railroad in the country is said to be a party to this general agreement.

This boost is in harmony with the recent action of the railroads in advancing its rates on all commodities. The increase was general and went into effect April 1. As a reason for this advance the railroads plead that operating expenses have increased at such a rate that it was absolutely necessary. The postponing of the date is to the advantage of brickmakers generally, as the summer is the lively season and the advance will mean quite a bit when once put into effect.

No serious strikes have marred the building season in Cleveland. May day came and passed without any ruptures. The bricklayers did make a demand for a weekly pay day, but agreed to withdraw it. All matters were so adjusted that perfect harmony now seems to prevail in the trade. At a recent meeting of the executive board of the Builders' Exchange the situation was carefully canvassed and the general opinion expressed that the present season was to be devoid of any sensational labor wars in this locality.

The brick department of the Cleveland Builders' Supply Company reports an active season. The company has under way a new supply house on Berea road, which will increase its facilities to some extent.

The common brick business is quite brisk, the large volume of building calling for great quantities of brick. Despite the fact that considerable concrete work is being planned in Cleveland, the common brick companies say that they do not feel the effect to any extent.

It is likely that this season will see an advance in the price of common brick, which is now selling at \$6.50 and \$6.75 on the job. There is an inclination all around to boost brick to at least \$7 a thousand in view of the recent increases in the price of labor and material.

Owing to a complication in which the city administration finds itself, the amount of brick paving to be done this year will not be as great as expected, owing to the fact that the city finds itself unable to issue bonds, having reached the legal limit. Some means is being sought to overcome this difficulty, but as yet no definite relief is in sight.

The plants of the Collinwood Shale Brick Company and the Carrollton Brick Company, which are owned by Messrs. Deckman and Duty, have been merged under the name of the Collinwood Deckman & Duty Company for purposes of more economical administration. Both plants are working to capacity this year.

The Metropolitan Brick Company, of Canton, has purchased the plant of the Cleveland Brick Company, having a capacity of 40,000 brick per day for \$75,000, and will add it to its regular equipment. The purchased plant was formerly operated by W. L. Davis, a Canton banker, who got into financial difficulties and was forced to sell out. The Metropolitan now has five or six plants which it operates.

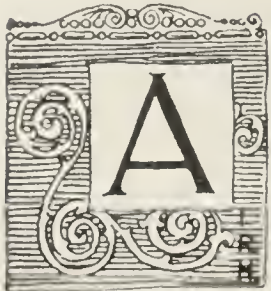
A BUCKEYE.

ENGLAND TAKES TO THE IDEA.

The Wall Street Daily News says that a Citizens Industrial Association has been organized in Great Britain along the same lines of the American Association to promote indorsement of the same ideas over there. The American Association has done good work and has done it vigorously on the platform of no closed shops, no restrictions to the use of labor saving machinery, no boycott, etc. Just how the same methods will apply in England we are not prepared to say. But, judging from reports of conditions over there, there is room for some good work to be done along this line, and good can be accomplished if the movement is given the same hearty support over there which it has been given here.

Written for THE CLAY-WORKER.

TOLEDO BRICK MEN UNDER INDICTMENT.



AND IT CAME to pass, that finally upon the 20th day of April, in the year of our Lord 1907, after due and careful deliberation of some two weeks, the trust-busting grand jury of Lucas County, aided and abetted by the famous (?) trust buster prosecuting attorney, Lyman W. Wachenheimer, did find sufficient evidence upon which to return indictments against ninety odd of Toledo's most prominent business men, comprising most of those persons actively engaged in the manufacture of brick and the handling of lumber and plumbers' supplies. Nine of the largest and most prominent brick manufacturers were captured in one fell swoop of this grand jury and branded as common criminals; were forced to appear and give bond as a guarantee for their appearance at a trial to be held in the Common Pleas Court, on a charge of conspiracy in restraint of trade and violation of the Valentine anti-trust law.

The brick dealers so indicted are as follows:

Frank Gorman, president Toledo Tile Company.

Lawrence Burkhart, brick yards on Western avenue, near Swan Creek.

R. E. Kelly, out-of-town brick salesman.

Richard Clark, of Spear & Clark, brick manufacturers.

Frank E. Tracy, brick factory, corner Owen and Foutz streets.

William A. Howell, president Toledo Brick Supply Company.

Adam R. Kuhlman, vice president Toledo Builders' Supply Company and vice president of the Toledo Brick Supply Company.

Albert E. Macomber, proprietor Auburndale Brick Works.

William J. Spear, of Spear & Clark.

Ever since the successful indicting and prosecuting of the ice dealers last summer there has been a deliberate and determined effort on the part of Prosecuting Attorney Wachenheimer to make a record as a trust-buster. The only surprise occasioned by the report of the grand jury on April 20th was that it had been so long delayed. There was no surprise at the inconsistency of it for the reason that ample warning had been given for some time that no building trade existed in Toledo, the members of which were not amenable to the wide scope of the Valentine anti-trust law.

Along in the early part of April, the grand jury returned a partial report of its criminal investigation of transcript cases and other matters regularly brought before it by county officials. At that time there had been no intimation that this grand jury would be the one to investigate the trust question, and for a day or two after it had re-convened subsequent to the filing of its partial report, there was considerable speculation as to what it was really working upon. But a steady stream of plumbers and plumbing supply men going in and out of the grand jury room soon revealed the fact that the jury was on a trust-busting rampage. A few days later several of the members of the brick industry were summoned, and still later, representatives of the lumber industry. Then it was known just who were doomed to go under the ban of the jury.

The general statement which came out for publication subsequent to the indicting of the brick men was that there existed in Toledo not only a brick trust, a lumber trust, and a plumbers' trust, one vast, mighty organization of capitalistic persons, the sole object of which was to milk the public to the limit and amass untold wealth at the expense of every person in the city. It is such an organization as this that Prosecutor Wachenheimer hopes to expose and regardless of any external influence which may have been brought to bear upon the local dealers, he argues that by exposing the local trusts there is a possibility of reducing the price of building material to an enormous extent.

From various sources, it has been learned just about what the evidence was upon which the men were indicted. The specific charge is that the persons composing the brick trust

have held down competition and held up prices. The argument was made to the grand jury that the brick manufacturers contracted with themselves in the name of the Toledo Brick Supply Company and sold themselves their own product and that after buying from themselves they sold to the consumer and that the entire output of every brickyard in the combine was pledged to the Toledo Brick Supply Company and that no yard sold any brick on the side. It held that inasmuch as the Toledo Brick Supply Company made the price to the consumer, in that way competition between the contracting yards was absolutely unknown. The argument was made that while the existence of this brick company was a benefit to the contractor, that it got back to the wage earner in this way: the price of the brick did not materially affect the contractor for the reason that he got his price from the men who employed him; that the investor who owned the building got his price from the tenants, and that thus the operation of the trust so-called, worked directly upon the daily wage earner.

The real facts in regard to the Toledo Brick Supply Company from an unbiased and unprejudiced standpoint, are these:

This company was incorporated under the laws of the State of Ohio in 1896, with an authorized capital stock of \$10,000, for the purpose of dealing in builders' supplies, and



Adam R. Kuhlman, Toledo, Ohio.

has since maintained its location in the Spitzer building. The companies which went to make up the organization were the Toledo Tile Company, Lawrence Burkhart, Spear & Clarke, Frank E. Tracy, the Auburndale Brick Works, and some other smaller plants. The company was in no way obligated by contract to use the entire output of the yards which composed it, but it held an option on their products which served to prevent a shortage of building brick for local consumption. A portion of the brick manufactured at these various yards has been shipped out of the city and over the portion thus moved the company has had absolutely no control. As a matter of fact, had it not been for the option held by this company to purchase, if necessary, the entire product of the yards which composed its plant, the temptation to yield to the inducements offered in the way of higher prices by outside buyers would frequently have resulted in a shortage of brick for local consumption. One of the advantages of the system has been, that inasmuch as the company could secure brick from any one of the nine plants, it has been possible to avoid long hauls for contractors. Yards are scattered about the various parts of town so that there are few jobs in any part of the city which are not reasonably close to a brick yard. This feature, together with the uniform price of building brick, has been a blessing to the contractor, who knew exactly what he could count upon.

So far as can be learned, the price of brick in Toledo has been on a par with the prices in every section of the country, where conditions affecting the manufacture have been equal. There is absolutely no evidence to show that the so-called brick trust has pursued aggressive or merciless tactics toward competitors, such as would warrant criminal prosecution. They have simply held together as a matter of protection for their own interests without in any way attempting to work any hardship upon any person in need of the material they handled. In fact, the Toledo Brick Supply Company has never been operated for a profit to any great degree and was not a dividend paying proposition.

It was charged that the cost of the raw material was affected by the fact that the Toledo Brick Supply Company maintained a suite of offices, kept a set of books and had an office force, and that this in turn operated upon the purchaser, but it was not taken into consideration by any one that the maintenance of such an office cut down the cost of hauling and handling to a remarkable degree. It is also a known fact, that the price of brick has not increased more than 10 per cent. within the last few years, with the exception of a few sales at times when there was an unusual demand and a temporary shortage, which had the effect of making a higher market price just the same as it would in grain, coal, or any other commodity.

It is interesting to note, while discussing the question of price, a statement made by John Doelker, who is manager of the city brickmaking plant at the Toledo Work House. Mr. Doelker stated:

"I figure that everything is about equal between our plant and the outside brickmakers and I cannot see where the men indicted have been making much money. Certainly they are not getting rich. In years gone by the price of brick has been much higher than it is now and I do not believe that the public is paying any more than the material is worth. There has been no advance of late years, in spite of the fact that the cost of labor is greatly increased."

The city brick plant is not in the trust, but it gets the same price per thousand as do the members of the alleged trust. This is most significant when it is known that the city work house makes no profit on its brick, and really conducts the manufacture of brick in order to give the prisoners employment. The work house gets its clay for nothing, while the brick men are compelled to buy theirs. The "trust manufacturers" run less men on their machines, but they pay fair wages, while at the workhouse only the maintenance of the man is considered. It seems unreasonable and a positive persecution to think that in spite of these facts the members of the Toledo Brick Supply Company should be subjected to the humiliation they have undergone by the action of a grand jury, most of the members of which have as little knowledge of the actual workings of the industries they seek to condemn as a babe unborn.

The work house paying its men practically 60 to 70 cents per day, with its raw material costing it nothing, and the brick manufacturers paying a good day's wages, and also paying for their material, each get the same price for their product. The work house makes no profit on its transactions, and the brick manufacturers are indicted for controlling prices on the theory that they are holding up the people.

Attorneys Holbrook and Monserrat have been retained by the defense and it is anticipated that a stubborn legal fight will ensue. It is likely that the trial will proceed upon one of the indictments which will be used as a test case, as all of the cases will involve substantially the same facts, and the other indicted men will abide by the decision in the test case.

Since the return of the indictments the Toledo Brick Supply Company has announced that it is closing out its business, winding up its contracts and in the course of a few weeks will surrender its charter and cease to exist. The last contract between the company and the nine yards which went to make it up, will expire this month. The company has never been a paying proposition and now, while the members feel that they have committed no moral offense, yet if it is deemed a technical breach of the law for them to operate as they have, they are willing to discontinue these operations.

There has also been a shortage of clay at some of the

yards, and others have been compelled to move their factories for the same reason, and are no longer in position to carry out their contracts. These facts, together with other changed conditions, make it undesirable to attempt to carry on future operations. Several weeks will be consumed in the carrying out of agreements with contractors who already have work under way, but as there are no large contracts on hand it is thought that the business can be wound up and the charter surrendered by June.

T. O. D.

Written for THE CLAY-WORKER.

DETROIT BRICK AND BUILDING NEWS.



EVERY INDICATION at present points to a prosperous spring building season in Detroit this year, although it is apparent that more small buildings will be erected than last year. The month of April, 1907, had a little the better of the same month in 1906, in respect to the total value of building permits issued at the fire marshal's office. The total for April, 1906, was \$1,238,100. Last month's amount was \$1,271,400. The total of the first four months this year also beats that of the same period in 1906, this year's total being \$4,072,955, and last year's \$3,898,200.

Last year was the banner building year for Detroit, as the total amount of permits issued was larger than ever before. It would appear that the present year will be larger than last year, showing Detroit's wonderful building progress. However, last year's permits were augmented by the erection of a great many large and expensive buildings, which has not been the case this year. Smaller buildings are the rule and consequently there is a greater demand for common clay brick. Clay brick manufacturers declare that this year is far in advance of last, and that there is no lack of orders. The price for common clay brick is now \$6.50.

There is also a good demand for paving and glazed brick. Dealers in this line, however, declare that single orders are not as heavy as last year, due, of course, to the class of buildings now being erected. More paving will be done in Detroit this year than last and consequently the demand for paving brick will be larger. In speaking of this phase of the question, Mr. John A. Gillard, of Frederic B. Stevens, said:

"Pressed and glazed brick dealers seem to be a little disappointed this season because orders are not so heavy as last year. Business in 1906 was so much better than in 1905 that brick dealers are looking for another such a big gain in 1907, and while business is this year ahead of last, they nevertheless think it should come faster. Our firm, however, is doing a good business and we are perfectly satisfied."

The late spring has also hindered building work in Detroit this year. This may be better appreciated when it is known that over an inch of snow fell on May 10 here in Detroit.

Probably the most interesting tile work in Detroit will be that for the Theodore Buhl residence on Jefferson avenue, which will probably be completed this summer. Handsome tile walks will be laid all around the house and walks, terraces, fountains and steps will be laid from the house to the Detroit river.

The Edison Illuminating Company is to build a tunnel sixty feet under the railway tracks at Twelfth and Howard streets, Detroit, which will run beneath the great international subway which the Michigan Central railway is now building. The work will cost \$20,000, will be built of brick and cement and is of great interest to engineers and contractors.

A new firm dealing in clay products is C. W. Filer & Co., Peninsula Bank Building, Detroit. Mr. Filer was formerly local agent for the Logan Brick Company. His partner is Louis Schultz, formerly a traveling agent.

Detroit's new pottery, erected on Jefferson avenue by Miss Mary C. Perry, is now about completed and the building is attracting considerable attention. The well known Pewabic pottery, perhaps better known outside of Detroit than in the city, will be made here.

Miss Perry's history is interesting. She began modeling

clay figures as a child on the shores of Lake Superior. As soon as she was old enough she studied clay modeling under Rebisso, in Cleveland and New York for six years, intending to become a sculptress. But she became interested in the mechanical treatment of clay in a kiln that has since been widely introduced among the potteries of the world. That was ten years ago. One experiment in clay composition and firing led to another, and for the last four years she has been making the Pewabic ware. Miss Perry has now taken up the making of tile. For a number of years Miss Perry has occupied quarters at 278 John R. street, Detroit.

WOLVERINE.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



IS FREELY predicted in real estate circles that Kansas City is just beginning a building era which will surpass anything ever heard of in this country. This opinion is based upon the general good times we are having, making plenty of money to invest, as well as the way the city is filling up with people, which assures a large demand for new buildings of all kinds. The development period seems to be at hand and the stimulus is the establishment of water transportation from this point and the building of the Union depot.

The boat line, which has been hanging fire for so long, is now an established fact. The company has been incorporated, and will soon have several leased steamers in service, pending the construction of a new fleet. This is only the beginning. Just as soon as this boat line proves itself to be a success, and it will carry freight at about half the charge made by the railroads, there will be other companies formed, and the river will soon be full of boats, as rivers are used in Europe. The effect of this will also make the railroads reduce their freight charges, for they are now too high, owing to the fact that all railroad rates are figured from the East to the Mississippi river, and then another rate from the river west. The bringing of water transportation up the Missouri will cause the change of the basic point from the Mississippi to the Missouri river, and this will mean a great advantage for Missouri river points.

The Union depot has not yet been built, in fact, to the casual observer it has never been started, but the Terminal Company has invested many thousands of dollars in real estate along the line of the Belt railway, and an agreement has already been made with the city officials as to the terms of the ordinance that is to be passed. The ordinance is now being carefully framed, to cover all points, and will be voted upon. Then it is expected the dirt will begin to fly, and the beginning of work on these improvements will start a great deal of work along other lines.

According to the report of the Board of Public Works for the year ending with April, they spent \$354,603.79. This shows that something has been moving all the time in the way of city work, as other departments have been just as busy.

During the month of April there was 411 building permits issued, and the aggregate value of the buildings was reported at \$1,129,995, or \$294,745 less than for the same month of last year, when some permits were taken out for large buildings.

May has started out in a very promising manner, as a building month, and it is expected to make a better showing, in comparison with last year than the month of April made.

The Board of Public Works has decided not to ask paving companies hereafter to bid upon contracts with a ten-year maintenance clause. An order has been issued to make the maintenance clause seven years in the residence district and five years in the business district.

The demand for Kansas gas burned brick seems to be

growing every day. The dealers are now unable to supply it, they claim. It seems to be vitrified brick that is wanted for almost all of the buildings, and they no longer like the mottled vitrified brick, but are asking for the solid colors, reds, browns, etc., such as can be turned out to perfection where gas is used as a fuel. This demand is not confined to Kansas City, by any means, but comes from Quincy, Ills.; Hannibal, Mo., and other cities of that size, and that distance from the Kansas gas fields.

This demand for vitrified face brick has become so large that it is having careful attention by a number of plants which are up-to-date. They intend to change their plans, and instead of turning out so many common brick, they will go to making face brick, for which they can get twice the price of common, and with a very little more expense in manufacturing. This movement should be a good thing for Kansas brick, as it will widen the field, giving that much more room for the common brick of other plants, and invading the fields where there is the most money will make plants more profitable.

T. B. Price, auditor of the Pittsburg Brick Company, has been ill for a number of weeks, of sciatic rheumatism, and for some time now has been down at Excelsior Springs, Mo., for the benefit of his health.

The Eadie Building Supply Company reports that up to May 1 their deliveries of brick had amounted to 1½ million more brick than for the same period of the previous year. This probably shows about the average increase of the business, all the way around.

The Master Builders have moved their headquarters into the Scarritt building, but as it is not finished yet, none of the other tenants have taken possession of their offices.

Robert Nesch, president of the Pittsburg Brick Company, has been ill for about a week.

The plant of the W. S. Dickey Clay Manufacturing Company, in Deepwater, Mo., is again in full operation, after laying idle for a month, owing to a strike. The men went back at their old wages.

The Western Terra Cotta Company, which has a good site in Kansas City, Kas., of 1½ acres, on the Missouri Pacific road, is capitalized at \$24,000, and has the following officers: Wm. Timmerman, president; Paul C. Baltz, vice-president; Alfred Wieggers, secretary.

The Kansas City Gray Brick Company, which has its general offices in the Keith & Perry building, and has a plant in Bonner Springs, Kas., with a capacity of 80,000 brick per day, has just begun to put its product on the market. The president of the company is Ed. D. Steger, of Bonham, Texas, and R. N. Soper, who was formerly engaged in the shoe business in this city, is the secretary. They are turning out a brick which is standing good tests, and is attracting a good deal of attention among the builders. The sand is secured from the Kaw river, with their own dredge boats, and as they get a surplus of sand, they are also in the sand business in a moderate way.

W. S. Dickey, president of the W. S. Dickey Clay Manufacturing Company, and wife, but recently returned from Mexico, and were guests at the Hotel Sanz, in Mexico City, April 14, when the city was shaken by an earthquake.

"Mrs. Dickey and I were asleep when the shock came," Mr. Dickey said. "It was about 11:35 o'clock. We awoke to find the bed rattling and swaying, the chandelier going like a pendulum. Every clock in the city was stopped. It was necessary to get the time from Washington to start the chronometers for the railroads."

Nearly all buildings in the City of Mexico, as in all cities of the republic, were constructed with especial reference to earthquake possibilities. Few are more than two stories high. "There was little damage," Mr. Dickey said. "The City of Mexico is built on a lava formation and is said to have a floating foundation. Had it been of solid rock, such as San Francisco, the damage would have been inestimable. As it was the damage was slight."

K. A. W.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

JAMESTOWN MIDYEAR MEETING A GOOD IDEA.

T. A. RANDALL, Secretary:

Dear Sir—Enclosed please find check for \$3.00, amount of membership dues in the N. B. M. A. In reference to your suggestion of a midyear meeting of the N. B. M. A. at Jamestown during the exposition, it strikes me as a very good idea. Some of the members who have been so unfortunate as not to have been present at the western meetings may be able to meet there.

Very truly,

FRANK C. CLARKE,

Augusta, Ga.

Georgia Vitrified Brick and Clay Co.

Favors Midsummer Meeting at Jamestown.

DEAR SECRETARY RANDALL:

Your very kind letter of 30th of March last at hand, and was pleased to hear from you. It is needless to say that I think the suggestion of the meeting at Jamestown an excellent one. Herewith find enclosed check for \$3.00, being membership fee for 1907. This should have been attended to earlier, and though partly an oversight, was really neglected, and I am obliged to you for calling my attention to it. My intention at present is to attend the exhibition, and I trust, to meet you and the rest of the brick men of the Association there and enjoy the occasion both socially and in sight-seeing.

Have just finished equipping my new plant. Brick machine from the J. D. Fate Company, of Plymouth, Ohio, and dryer and new kiln from the King Engineering Company, and I now have an up-to-date plant in all respects, and am well pleased with it.

Now, whenever you or any others of the Association should be in the city, if you will acquaint me with the fact, I will take pleasure in showing you around.

Richmond, Va.

W. BENJ. DAVIS.

Dan Cupid Busy at Galesburg.

Editor THE CLAY-WORKER:

The Galesburg office of the Purington Paving Brick Company is minus a pretty and efficient stenographer and Everett Swett, the plant superintendent, is laughing at the expense of the management. He and Miss Cora Burmode, the afore-said pretty stenographer, were secretly and unexpectedly married last week and then started on the sly for Chicago. Will Purington agreed to let Everett have the leave of absence he asked for, on the understanding that the couple would report to D. V. Purington at the Chicago office, as soon as possible after their arrival in Chicago. It is alleged that they didn't go near the Chicago office. There is a conflicting report abroad, however, that they got as far as LaSalle street and were so entranced by the expanse of Purington paving blocks stretching southward in LaSalle street from Washington street, that they just stood, hand in hand, gazing at it, and forgot to step into the Chamber of Commerce building and take the elevator for the ninth floor. There is another report to the effect that they passed the greater part of their honeymoon in hunting up all the thoroughfares in Chicago paved with the Purington blocks and in promenading a few squares over each one, just to show their loyalty and

gratitude and boom the business. Neither of these reports has been verified, however.

The management, it is said, is not inclined to be angry with their young superintendent for "putting one over on them." As for Galesburg, it is said to be exceedingly proud of its new and charming household. Mr. Swett, though a young man, has made a great success as a practical brick-maker, and has earned the respect and confidence of the management. He is exceedingly modest and retiring and exacted an oath-bound pledge of secrecy from Mr. Will Purington before he would tell why he wanted a leave of absence. The station agent, however, told on him. His friends say that when he reads this he will live up to his name, and go out scalp hunting.

S. D.

Among Philadelphia Brick Yards.

Editor THE CLAY-WORKER:

The temporary condition of the brick manufacture is rather poor, and if things do not adjust themselves shortly, many brick manufacturers will suffer.

The bricklayers' strike is a rather senseless one, and it apparently is an exception that proves the rule of an effect always resulting from cause.

Many large building operations are at a standstill, and those on contract may go through if the strike is not soon ended. One firm has a building operation calling for two million, which keeps the manufacturers at a tension.

Webster and Keyser, also, are anxiously awaiting the result, and are doing nothing meanwhile.

The Lenten Brick Company are rebuilding and remodeling their plant, putting in new boilers and tearing it out from one end to the other.

Carroll Brothers have moved their plant to Southwest Philadelphia. They have it about one-half completed, and started on Friday, the 4th of May, running one gang. They have four (4) kilns partly finished, and will run the one gang for about two weeks. The old plant at Girard avenue and Fiftieth street is completely dismantled and would not be recognizable as a brick yard. Even brick yards lose their identity.

M. E. L.

Mississippi Tile Plant Changes Hands.

Editor CLAY-WORKER:

It may be of interest to the readers of the CLAY-WORKER to know that the plant formerly belonging to the Minter City Tile and Brick Works has been purchased by a new corporation, the Minter City Tile Co. The new company is made up of Mississippi planters who realize the benefits of tile drainage.

The plant is modern in every particular, being equipped with the latest and best machinery; has its own electric plant, supplied with water by an artesian well, and prepared for burning with the Youngren continuous kiln, patented and constructed by P. L. Youngren, of Milwaukee, Wis.

Tile drainage in the Mississippi Delta is yet in its infancy, but the planters are taking a great deal of interest in it and the future is very bright. The need for tile is unlimited and as soon as the local land owners become acquainted with the advantages derived from well drained farms, the demand for tile will be great indeed.

The conditions for the manufacture of tile may not be so favorable here as in the north, but the prices which can be secured for the product here just about make up for the unfavorable conditions. We need a few good white men for foremen, but otherwise the negro labor does reasonably well.

The clay is tender and must be handled carefully in drying and burning, but when the tile come from the kiln they are of good color and quality, standing shipping as well as any surface clay tile.

Coal is high priced but our boilers are equipped with the

Jones underfeed stokers, making it possible for us to use the cheapest grade of slack coal with even better success than can be secured by using good lump coal.

The Youngren gas fired kiln is a great coal saver, burning tile with less than one-third the coal required in the common kilns. In addition to being a coal saver this kiln gives us a more even and better burn than the average kiln.

When the plant shut down last November there was a very large stock of tile on the yard and the poor cotton crop made the outlook unfavorable, but at present the stock of tile is low and the plant will be put in operation again within a few weeks.

Good ditchers are in demand and excellent prices are being paid for laying tile.

We look forward to the monthly visits of the CLAY-WORKER with great pleasure and enjoy the section devoted to Land Drainage. We wish more space might be given to the subject of the use and manufacturing of drain tile.

Very truly yours,

MINTER CITY TILE CO.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



THE DRY WEATHER which has prevailed since April 1, has greatly facilitated building operations. Much progress has been made on the buildings that had been delayed by the many weeks of rain earlier in the year. Many new buildings have been commenced, and a number of to others are in plan. Over \$60,000,000 has been invested in new buildings com-

menced since May 1, 1906. Quite a number of these have been completed and a great many others are still in course of construction.

The situation in building materials has improved, and instead of prices advancing considerably, as some expected, with the increased amount of work going on, fair supplies are available at moderate prices compared with last summer. Lumber prices have dropped considerably. The retailers reduced the price \$3 a thousand in April, and there has been a further decline. This was attributed partly to the inability of the sawmills in Oregon and Washington to secure cars for the transportation of their big outputs of fir lumber to the Eastern markets. They have accordingly been dumping their surplus product on the California market at the rate of 80,000,000 to 120,000,000 feet per month. For a time great quantities of the "random" lumber that was sent in by the ship loads was utilized for the erection of temporary buildings and forms for reinforced concrete construction work. Now, however, the erection of cheap wooden buildings has practically come to an end, and "random" stuff is a drug on the market. Large steel frame and reinforced concrete buildings are going up on every hand.

Great quantities of brick were carried over from last season, estimated at about 30,000,000. It has been very difficult to secure rail transportation from the brick yards. Such rail deliveries as are made are so spasmodic that they are unsatisfactory to both the manufacturer and the builder. The railroads will supply too few cars one day and the next day more than can be conveniently loaded and discharged by the manufacturer. If proper transportation can be provided there will be no scarcity of brick for the heavy building operations.

Prices of common brick are still nominally \$15, and from \$12.50 to that amount is being paid according to the varying circumstances. Second-hand brick from the ruins of burned buildings are still in good demand at \$10 and upwards when properly cleaned. It is difficult to secure enough men to clean bricks.

All of the brick plants are now in operation and are bringing their output up towards their full capacity as rapidly as possible. The soft mud brick yards, which had been shut down for the winter, all started up between April 1 and 15, and are doing well.

There will be great accumulations of brick at some of

these yards where there was a large carry over unless the freight situation improves radically before long.

The Remillard Brick Company is said to have 9,000,000 burned brick, molded last year, on hand at its Pleasanton plant, owing to the failure of the railroad to furnish cars for their transportation to San Francisco.

The great congestion of brick in the district between San Jose and San Francisco where a number of brick plants are located, which lasted for six weeks, has been relieved to a great extent, although it is still impossible to get all the cars that are needed within this 50-mile radius.

The Standard Brick Association is trying to handle the output of the plants under its general supervision in a wise manner in view of their carrying over of 30,000,000 brick, but there are also about thirty outside plants within easy shipping distance of San Francisco, that may hurt the market in time if they run at full capacity and do not display good judgment in selling methods.

Oil fuel, which was very scarce on account of lack of tank cars for some time, is in better supply, but some of the brick manufacturers who depend upon crude oil are still uneasy as to the situation.

The Patent Brick Company's new plant operated by electric power at Brick Station, on the Northwestern Pacific railroad, north of San Rafael, Cal., which has been out of commission for some time, is now running regularly.

The Hyfire Brick Company's plant at Vallejo is turning out pressed brick of high quality, and there is a good demand for its product.

The Pacific Clay Company, of Oakland, Cal., will at once begin the erection of a brick and tile plant at Vallejo, Cal., on a 24-acre tract recently purchased, adjoining the Hyfire Brick Company's plant. About seventy-five men will be employed. This is the fourth clay-manufacturing plant of the kind that has located along the north bay shore of Napa Creek, in the suburbs of Vallejo within a year.

The Sacramento Brick Company, through great exertions, has had several large lots of its brick, which were burned at Sacramento and delayed considerably en route, delivered in San Francisco by rail. A good deal of this Company's product is brought in by water, but the wharves have to be cleared within 24 hours after the freight is unloaded, and this is not always practicable under present conditions. The plant will undoubtedly turn out an immense number of brick this season.

M. A. Murphy, general manager of the Carnegie Brick and Pottery Company, is now getting very good results from the factory at Tesla, Cal., which has been practically doubled in capacity during the past year. The freight situation, both on supplies for the plant and on rail shipments of clay products to San Francisco and other points, has been very trying during the past year, but Mr. Murphy has solved the car shortage problem. He now takes a solid train of forty-five cars every third day, while if he depended upon the railroad company to furnish a specified number of cars each day in the ordinary way, he might seldom get what he needed. Architectural terra cotta, semi-dry pressed brick, terra cotta patented chimney pipe and flue linings and all kinds of vitrified salt glazed sewer pipe are being turned out on a large scale to meet the heavy demands from San Francisco, Los Angeles and other coast cities. Face brick, enamel glaze brick and fire brick are also manufactured on a large scale. The fire brick plant has been doubly equipped with the American Clayworking Machinery Company's latest type presses, making the present capacity 1,000,000 per month. The pressed plant's capacity is now 1,000,000.

The sewer pipe plant, with a capacity of 1500 tons a month, is rushed with business. The output of terra cotta is 700 tons a month, and there are plenty of orders ahead. The semi-dry pressed brick plant has been doubled and is equipped with three Berg presses.

The San Francisco building permits issued during the month of April exceeded \$6,000,000 in total valuation, and a large proportion of this is to be expended for large structures constructed principally of brick and terra cotta. While much of the brick work that was done in San Francisco during the first six months after the fire was of a very ordinary type and strictly utilitarian, a number of very handsome brick structures have been erected since, and others are under con-

struction. One of the finest buildings of the later type is the eight-story Sherman & Clay building on the corner of Sutler and Kearney streets. It has a steel cage, reinforced concrete floors, and is faced with white enamel brick.

A fine example of bricklaying in handsome designs is the buff brick front of the six-story Buck building on the west line of First street near Market, which was erected by the Aronson Real Estate Company.

A notable case of substitution of brick for stone in the reconstruction of large buildings that were badly damaged by the fire is that of the Wells-Fargo & Company building, on the corner of Second and Mission streets. It is a six-story steel frame building, of very large dimensions, and had heavy outer walls of sandstone. All of the stone was stripped from the four upper stories, and it is being replaced with buff brick. The brick are set in an elaborate design so as to give a very massive effect as of immense pillars. The building will look much handsomer than before.

Welch Bros. are installing a brick plant with a daily capacity of 60,000 at Point Richmond, Cal., which is to be in operation within two months.

SUNSET.

San Francisco, Cal., May 4, 1907.

OLD BRICK OVENS.

PROBABLY ALL the older men among the readers of THE CLAY-WORKER recall the brick ovens which were formerly a part of the necessities of every household. They were common in New England in the early portion of the last century. The house in which the writer was born, long since burned, had a very large one, and he and his brother frequently used it as a hiding place when at play. It would hold twenty pies at once and as many loaves of bread. Almost an entire Thanksgiving dinner could be cooked in it at one time.

This oven was in a colonial house, probably much more than 100 years old, which stood almost on top of the Green Mountains in Vermont. But the fire attacked the house and the oven went the way of all other old things. Not a trace of it remains today. It has been swept away by the ravages of time.

The same kind of ovens were built in New York State. All through the Mohawk valley, for example, they were considered necessary for the proper cooking of the family food supply.

The Dutch who settled the northern part of New Jersey and those who settled in Somerset county, all built brick ovens as a part of their cuisine arrangements. In New Jersey they were built outside of the house. In New England they were inside the house next to the big fire places. In New York they were built both ways.

It is interesting to note, that in Canada the French settlers continue to use the big brick ovens built out of doors, such as were built in France 250 years ago. The perfecting of house stoves and ranges has forced a considerable proportion of these ovens out of commission, but there are still many who think that no decent cooking can be done outside of a brick oven. And there are those whose memories go back to the toothsome dishes of New England housewives baked in such ovens, who will be disposed to agree with the French of Canada.

The method of using the brick oven was probably the same in all the different localities where it has been utilized. A fire was made inside the oven of good, dry hard wood. When it became heated to the proper temperature, which is determined by holding the hand inside and counting, the oven was cleaned and the bread or whatever else was to be baked was placed in the oven and the door was shut fast. This method made a thick, but exceedingly toothsome crust, and the closed oven holds all the flavor of the food, whatever it may be. Frequently the baking was left in over night. In the morning it came out a rich golden brown and most delicious in flavor.

But the brick oven is too slow for modern life and it will shortly be relegated to that past which is rich only in the history and must of ages. As a memory, it is poetical. In

practice, it would be too slow for the age of the telephone and the electric car.

It belongs to the times when headless horsemen chased unwary school masters, and when the common mode of travel in some sections of the country was the ox cart. For the present it is unsuited, and yet, there are those who would be glad today to find something that has the savor of the food which used to come from the cavernous depths of the brick oven in the old fashioned kitchen.

BURTON.

RECENT COURT DECISIONS.

In a decision recently handed down by the United States Circuit Court for the Eastern District of Pennsylvania, the United States General Appraisers are reversed in regard to the classification of magnesite brick, which the appraisers held to be fire brick. The court finds that fire brick is a well known commercial designation of a certain variety of brick made from fire clay and that magnesite brick, as commercially understood, do not come within the scope of fire brick at all. They were assessed by the collector at 25 per cent. ad valorem as brick other than fire brick. The importers' protest was sustained by the appraisers, who imposed a duty of \$1.25 per ton, under the first clause of paragraph 87. It has at least been clearly established that magnesite brick are not fire brick. That much the decision has done. It remains to see what the future will bring forth.

In a recent decision in a case at New Brunswick, N. J., of condemnation proceedings, in which a railroad company took land belonging to another, the jury awarded damages at the rate of \$30,000 per acre for clay lands. The suit is interesting only in the fact that it establishes a price for clay lands in that vicinity which other owners are glad to know. If clay lands are actually worth \$30,000 per acre, the fact is worth while in New Jersey where there are so many acres of such lands.

PROPOSED MERGER OF ST. LOUIS FIRE BRICK INTERESTS.

It is reported, but cannot be confirmed, that a deal has been consummated to consolidate all of the firebrick manufacturing companies in St. Louis, the holding or operating corporation to be capitalized for \$5,000,000.

Options have been obtained, it is said, upon the plants of the Laclede Fire Brick Manufacturing Company, the Blackmer and Post Pipe Company, the Christy Fire Clay Company, the Mississippi Glass Company, the Mitchell Clay Manufacturing Company, the Parker Russell Mining and Manufacturing Company and the St. Louis Vitriified and Fire Brick Company.

The merger is being promoted by Walter J. Holbrook, president of the Holbrook-Blackwelder Real Estate Trust Company. Mr. Holbrook, it is said, has been working on the plan for several years, but it was only recently that he was able to obtain options on the plants which he desired to bring under one management.

It is understood that the financial end of the deal has been arranged. The consolidation will eliminate competition among the fire brick manufacturing companies of this city. St. Louis is one of the most important firebrick manufacturing centers in the city.

John L. Green, vice president of the Laclede Firebrick Company, is reported as saying that Mr. Holbrook has obtained options on all the firebrick companies in St. Louis and St. Louis county. He does not know, however, whether he has perfected his plan of consolidation or not. He is reported as saying that there has been made a proposition to most of the firebrick makers and that a great many of them have accepted.

George W. Jones, secretary and treasurer of the Evans & Howard Firebrick Company, says he has not heard of any plan to merge the plants.

Written for THE CLAY-WORKER.

NEW YORK AND THE EAST.



PRING IS HERE, even if the weather has been a shade shy and has refused to show increased temperature to correspond with the calendar's assertion regarding the time of year. It has been a heartbreaking winter for every one and brick men have suffered proportionately. Building operations could not be continued as liberally as usual and there were difficulties of transportation and other features of brick men's lives which were more or less troublesome. Now, however, it is passed and business has opened with a degree of activity which is encouraging and promises well for the future, while there is much ahead which indicates that the best is yet to come. With the balmy air of spring blowing about him the brickmaker has begun his operations, reasonably certain that he will have as successful a year as he had last year and the one before.

All the brick plants along the Hudson river were supposed to have started May 15. This was by agreement among the manufacturers and was a part of the movement heretofore mentioned, to restrict output. This date is five weeks later than usual and will delay the arrival of new brick in New York until sometime in June. Consequently the market will be nearly bare by that time. Restriction has been easily accomplished in this way and the fact that the weather has been bad has kept manufacturers contented. If it had been fair all the time, perhaps it would not have been so easy to keep them in line. The New York market is in good shape and brick are gradually increasing in strength. Spot prices are: Front buffs No. 1, \$32; grays shaded and specked, \$32; white No. 1, \$32; Hudson river common, \$5.75 and \$6.25; light hard, \$4.75 and \$5.75; pale, \$3.75 and \$4.25; No. 1 fire, American, \$25; No. 2, \$20; Scotch, \$35.

All the yards are well under way. They were late in starting this season owing to the lateness of the spring, but now all the works are in operation to a greater or less extent. Manufacturers are not urging business since they hope to have the old stock all cleared out before the new is ready for delivery and a little waiting now will be profitable for the future. But the pits are being pumped out, the machinery is being put in thorough order and everything is in readiness for the activity which is coming in the near future. Meanwhile schooners and barges are busy getting the old stock down to market and sales are being made as rapidly as possible. The situation is satisfactory, considering the heavy output during the past two years.

Not much has been said about development this season. It isn't likely that the Hudson yards will undertake much expansion. On the contrary, there is some indication that they may contract their output with the expectation of running prices up. It is figured that it would be much better to have the market active and strong with high prices on a reduced output than it would be to sell a large quantity at a comparatively low price. Manufacturers have discussed the situation thoroughly, but they haven't yet given out their determination regarding probable action. That they will limit output seems probable, but to what extent, it is impossible at this writing to say.

The Hackensack yards are getting under way again. Gillies & Gardner, at Little Ferry, have opened up a larger bed of clay just west of their present holdings. M. & M. B. Gardner have removed one of their burning sheds and are smoothing off the site apparently for other purposes. The rest of the yards will run as usual, though there is likely to be some reduction in output as compared with last year. The season is a bit late and constant rains have retarded the drying of the green brick. During May the number of fair days has been much less than the number of rainy ones and this has naturally decreased the opportunity makers have had to do business. The situation is promising, however. The old stock is nearly all shipped. Schooners have been busy every day since the ice left the river and the quantity left at this writing is comparatively light. But there is still ample for

the demand, though it is said that inquiries indicate an even larger demand this year than ever before.

New England Situation.

Massachusetts yards will start with a promising outlook for the season. Business will be done in as large volume as last season. New York demands will attract some sales, according to indications, but the bulk of the Massachusetts output will be consumed within the state. Every important city in the Commonwealth is growing fast. Great numbers of factories are projected, some large and some small and others are to be enlarged or repaired, processes which will use a good many hundreds of thousands of brick of various sorts and grades. It is likely that business will be quite as good as it has been for the past two years, though conservative interests anticipate little expansion. The sheds are virtually bare of stock and prices are well maintained under present conditions.

From Boston come promising reports of the market, though no single contract of sufficient magnitude has been let recently to show what the price and demand may be. Fair sized and small orders have been numerous enough to warrant describing the market as active. No fear is expressed of a surplus or a shortage during the time between now and the placing of new brick on the market. Prices are firm, but no higher. The outlook indicates continued steadiness throughout the season, the chance of unreasonable cutting having been eliminated by the combination which now controls the situation and there is every prospect of a steady market all summer. Commission men no longer offer Connecticut brick at cut prices. That nightmare is apparently forever done away with. Prices are quoted as follows: Up and down s. s. brick, f. o. b. yards in Massachusetts or New Hampshire, \$7.50 to \$8; Up and Down w. s., \$9 to \$9.50; New Hampshire selected w. s., f. o. b. cars, New Hampshire, \$12; Massachusetts face brick, \$19 to \$20; fire brick, \$28 to \$35.

Connecticut plants are being furnished up with reference to the coming season, though as yet no actual work of making has been done. The New Britain interests are expecting an even better business than they had last year and are preparing accordingly. Until the season shall actually begin it will be impossible to tell with accuracy just what will be done, but the hopeful prospect is certain to encourage every dealer and the market promises to be strong at high prices. Massachusetts manufacturers and dealers have had some complaint to make of Connecticut manufacturers running their brick into Boston and selling at cut prices, but a combination among selling interests has put a stop to that. It will be better for the Connecticut manufacturer too. He will get better prices for his product and in the end all interests will benefit alike. Some had determined last year that the scheme of price cutting had not resulted in any good to any one and had decided to abandon it altogether, but there is always a temptation to go in and get the business somehow. The effect is usually disastrous. It will be well if it has been stopped.

New Hampshire has scarcely shaken off the stupor of winter. The late spring, accompanied by heavy rains, have combined to make the starting up of the yards an extremely difficult and in numerous instances, costly undertaking. Now, however, there is activity and business prospects are attracting a good deal of attention. It is understood that there will be a good business all through the year. New Hampshire building development and semi-public works will consume substantially everything offered and prices are expected to be at about the usual level.

Vermont is doing little as yet, but the outlook is good and the business will probably be as good as it has been. Development in building has not been as active in Vermont as it has in other New England states, but there is an increase each year and the tendency is toward increase all along the line.

Little has been heard from Maine. It is still somewhat cold and forbidding there, though here and there plants are being put in shape for work. The indications are quite as promising as they are at any point through the six states. Development in Maine has been less active than in the more southerly states, but it has been better than for several years previously and there is promise that it will continue unabated.

BURTON.



Old-Time Methods of Burning.

"TIMES HAVE CHANGED," said the head burner, "since I was a boy like Johnnie here; times have changed in everything, and men change and boys change just as times do. When I was a boy they had some queer ideas about brick burning; some ideas which today would be laughed at; yet in my time the person who would attempt to criticise might as well leave town."

"Just think of it! I can remember when you could not get a brick burner to put edgings into a kiln, and as for using round wood, they would think you crazy. All the wood had to be spruce, split, and at least a year old, and carefully dried. And I can remember the old style of burning when they used to settle one head at a time and use a long pole. The order of burning in those days was something like this:

"First, when setting up a kiln we used to fill the arch to the jets with cast-off wood. When we set fire we used to get a moderate heat up until the charging in the arches was gone. It used to mull along while the water smoke would clear. Sometimes there would be a place where the fire would not work up through as it should; that is what we called a cold spot. I remember the various number of cures they had in those days for cold spots, as ridiculous as they all seem, I have seen then tried, not always successfully, but sometimes enough so to strengthen the faith of the burner.

"One cure was to pour oil down into it—quite a number of gallons; sometimes it would soak into the clay and create a steam and a smell that would be almost unbearable. The gases would seem, sometimes, to make the cold spot even worse, then again I remember of old burners pouring water in on a cold spot, so much of it that you could look into the arch and see it, black as your hat, and afterwards that place would warm up and sometimes would catch up with the rest of the kiln.

"The best cure for a cold spot that I ever knew, one which I tried today, is what we call the slab poultice. It is done by placing boards close together on the top of the kiln, where the cold spot is situated, then laying another layer over those boards, breaking joints so that very little air can get in; in this way, you shut the down draft off, and as the heat rises it seems to close in from the outer edges, setting fire to the boards, which gradually burn till there are none left. When they are gone there is no cold spot. The kiln assumes a uniform heat. Most always, though, when the kiln opens after burning, where the cold spot was there is generally a pale spot near the top.

"Yes, there has been a great change. Why, I remember when I was a boy they used to cut alder wood, sometimes go miles to get it, so as to use it at the last dressing, closing the last head. This was supposed to be the coloring process, and when the bricks came out a beautiful pigeon-blue or cherry-red, the credit was invariably given to that wonderful fore and aft alder dressing.

"We used to work a little different then than now, and I think we got closer burns than they do now. I can remember when a man who could not manage a kiln so as to get a perfect one-course head on the first heading, and a perfect two-course head on the second, would not be considered a burner at all. Today you do not see any one-course heads at all, and you generally see long corners and pale outside arches. I suppose the reason for it is the change in the method of burning.

Under the old system, when the kiln was clear so you could walk over the top and see the fire down over just

breaking its way up, you would then add to the heat a little and then watch until it sprung, as we termed it, or settled a gradual settle from head to head. Springing down to about four inches in the center of the kiln, then we closed up one head; then the order of dressing was this way: At the closed head was the largest sticks. The next four feet would be no stick at all, the next four feet would be a small stick as a marker about the size of my arm. This was called the third cliff. From that, the next two cliffs to that one going towards the open head, would be the largest split spruce that could be gotten, then the dressing wood came to the open head; the burner would then throw in as much split wood as he could possibly throw in (this was called darting), sometimes clear over the big cliffs. The arch would then be filled, and when the fire was burning would be shifted so as to get the fire on the outside of the arch quickly as possible. In this manner the heat would be raised to a welding heat; then let the fires drop till the heat struck over towards the closed head and until the bricks on the opposite end of the kiln brightened. If an arch failed to brighten in the first drop, it was an indication that the dressing was improperly balanced, or that there had been a leak somewhere. We proceeded to work in this manner until the head marked out. If she should settle level, then we knew that things were working right, but sometimes it would begin to cut in what we called a second cliff (that is, in the place where they would put no wood); then that arch would have to be watched and the second and third cliff would be left out, and the heft of the wood to be towards the open head, so that as the fire went towards the open head it had its effect, to follow the place where there was no wood so to settle level. We worked in this way till that head was settled very nearly as much as we wanted it, and then we ran one grate dressing and shifted the fires to the other side. On the shift we had the belief that the work must be accomplished in the shortest possible time, or the kiln would be ruined. I have seen many men, in their endeavor to save the kiln by a rush, faint away and reel over the wood pile.

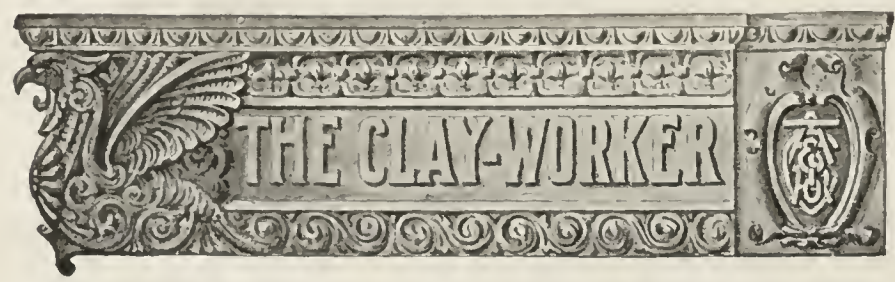
"The second head is harder to get than the first one by this method, for the reason that from thirty-six to forty-eight hours it would be exposed to the air, and when the shifting takes place the heat was all in the top of the kiln and none at the bottom, so it took some time to get the heat back; that was the old method.

"Since the invention of the iron mouth we have inaugurated a new plan of shifting fires for dressing; it is a much easier process for the burners, and we do not have to worry about the kind of wood if it is dry, and we do not have to weigh every cliff, like they used to; but what appears to be necessary is to get the kiln in a full heat from peak to peak and keep it level to the close.

"I am seventy-one years old, and since the year I was sixteen there has not been one season that I have not burned as many as ten brick kilns. I have burned in Maine Massachusetts, Michigan and in Colorado. I have seen a great many methods tried and have helped try them, and if I were going to burn a kiln today for a snug, all-round burn and even color, and wanted to compete for the prize in getting the greatest number of thoroughly burned bricks out of the kiln, I would still favor the method that my grandfather taught me when he sat on the reach pole and gave orders to me how to stand up the dressing. Regardless of all the changes that have taken place in all this time, I would still go back to the old method."

THE OCTOGENARIAN.

The Newberg (Ore.) Pressed Brick Co., has been reorganized and will hereafter operate under the name of the Pacific Face Brick Company, which is capitalized at \$150,000. The officers of the new concern are Jesse Edwards, president; Andrew Kerswam, vice-president; C. E. Fuller, secretary, and O. K. Edwards, treasurer. The main office of the company will be at Portland. The Pacific Face Brick Company will operate largely along lines heretofore followed by the older company, but on a considerably larger scale. It is the intention to maintain the Newberg plant as it is, with possibly some increase in capacity, only those clays being worked up in the local plant which are found here.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVII. MAY, 1907. No. 5.

CURRENT COMMENT.

A touch of spring fever makes us all have a longing to read about summer excursions.

* * *

The late spring has delayed building operations some, but it looks like there will be lots doing all summer.

* * *

If we would but take the subject of fire prevention more to heart we would have to do less worrying about insurance rates.

* * *

No man ever overworked his conscience by following it, but some have lead it into crooked paths and broken its back that way.

* * *

The alarming record in railroad wrecks during the past year is a mighty strong warning against high speed—or something else that should be given heed.

* * *

When the bulls and bears can't get enough excitement out of the stock market they toss grain awhile. Verily, at times the "pit" seems something of a "pity."

* * *

Ignorance is recognized as the general source of crime, yet there is lots of wrong doing that seems to be inspired by the old "Nick" himself without the aid of ignorance.

* * *

The United States Geological Survey has a new director, Dr. George Otis Smith, who was appointed by the president to succeed Mr. Charles D. Walcott, who retires from the survey to take the position of secretary of the Smithsonian Institution. Dr. Smith, the new director, though belonging to the younger set of geologists in point of age, being only 36 years old, has seen 14 years of active service with the department in geologic work. He is therefore fortunately equipped for

the work, for with the energy of youth he has added experience of time and scope enough to give him all the qualifications in this line of a much older man. We wish him well.

* * *

If somebody would invent a device for using the hot air of politics for drying brick or something of the kind we would have some chance to get more real good out of it than we usually do.

* * *

Almost every man has some high ideals at sometime or other, but the trouble is to stick to and follow them when the way is beset with temptations. That's where San Francisco's Rnef fell down.

* * *

Many a man who makes a failure in his undertakings does more noble acts than some who make what we call a success, and the pity of it is that the men who fail seldom get proper credit for their good traits.

* * *

The importations of champagne are said to be falling off materially. Don't get excited about that though and conclude the country is all turning temperance, for the reason assigned as the cause is the increased home production, which is now over two million bottles annually.

* * *

It is estimated that the sugar consumption of the country for the fiscal year ending with the month of June will be the largest on record. The sweet tooth of the American mouth seems to have a mighty cavity. The average yearly consumption is figured at 76 pounds for each individual.

* * *

It is with regret that we learn Mrs. Harriet Connor Brown has given up the work of preparing the press bulletins of the Geological Survey, for she has done her work well and assisted scores of editors in digesting the voluminous work of the survey. We have not yet received the name of her successor.

TAKES EXCEPTION.

It is a perfectly natural thing for a man, or a body of men or such an institution as a trade paper to take exception to things which are not in accord with their own ideas. The Architect and Engineer of California reprints in its April issue some matter from THE CLAY-WORKER on cement block construction anent which it has the following to say:

"Naturally our esteemed contemporary is inclined to be prejudiced against any and all forms of building material that threatens to supplant brick and terra cotta. The Architect and Engineer is just as strong an advocate of brick as it is of concrete, but it thinks there are times when concrete is preferable to brick or terra cotta, and vice versa. There have been just as many brick failures as concrete, but not so much attention has been given them. The position of this magazine relative to re-inforced concrete is too well known to call for an expression here. The purpose of reprinting the article from CLAY-WORKER is to emphasize a point which the Architect and Engineer has endeavored to impress upon its readers for two years—that poorly mixed concrete, whether it is to be in the shape of building blocks, or straight construction, is to be shunned. There have been some deplorable examples of concrete failures because of poor workmanship, incompetent supervision and consequent bad construction. There have been some fearfully ugly attempts at cement block building for the same reason. Artistic cement blocks are as scarce in California as flies on a frosty morning. The Osborn residence in Fresno, built by the Worswick Street Paving Company, comes nearer to the artistic than anything thusfar called to our attention. Some of the things which the writer in CLAY-WORKER says are unfortunately only too true. There are some other things said to which exception is

taken. If the concrete block industry is on the wane, the promoters themselves are in a large measure to blame."

Now that exceptions are in order, we desire to take exception to the statement of our contemporary that there have been just as many brick failures as concrete, and challenge the editor of *Architect and Engineer* to name a single instance where a brick structure has ever failed or collapsed, as the result of inherent weakness in the brick wall itself. We doubt if he can name a solitary case of the kind, even though he may have been connected intimately with building enterprises for a generation or more. He may even go back to the days when the children of Israel made brick in Egypt, either with or without straw, if he sees fit, in making his comparisons, and even should he chose to include the adobe brick, still quite common in the older buildings on the Pacific coast, he will still find it difficult to make good his claim in this connection. Some of the sentences quoted bear out our claim that concrete is an unreliable building material. As our contemporary states: "Poorly mixed concrete, whether in the shape of building block or straight construction, is to be shunned." But how, may we ask, can these "poor mixtures" be avoided. In all concrete work the opportunity for making poor mixtures is so numerous that it is difficult to avoid them, even where an honest effort is made to do so.

THE FOREST SERVICE AIDS US.

The Forest Service, in giving out statistics and other information on the timber supply of the United States, is incidentally and probably unconsciously lending a lot of aid to brick manufacturers in the work of extending the use of brick in building. This is a subject, the growing scarcity of timber, that has been touched on several times before in these columns, as offering opportunities for more rapidly enlarging the use of brick in the building of homes. But, it is given strength and the stamp of authority by these recent government bulletins on the subject. "Every person in the United States," says the press notice of Circular No. 97, "is using over six times as much wood as he would use if he were in Europe," also it is stated that the country as a whole, consumes every year between three and four times more wood than the forests of the United States grow meantime. The average acre of forest lays up a store of ten cubic feet annually, and would have to lay up at least three times as much or we would have to have three times the acreage that we now have to supply the present consumption. Moreover, as an additional warning, the members of the Forest Service have stated in recent speeches that in thirty, forty or fifty years we will be up against it hard in our timber supply, if we continue at the present rate.

WHY BRICK SHOULD BE THE UNIVERSAL BUILDING MATERIAL.

The stiffer prices on lumber and the added value to timber is putting the cost of wooden dwellings to the point where it is really no economy to build with wood instead of brick. The logical thing to do, not only for the sake of perpetuating our forest resources, but also for the sake of better homes at no greater cost is to build them of brick. This means better homes from every standpoint. More durable, less danger from fire, something to be proud of that doesn't look like a temporary makeshift, and it is a matter that not only should be urged by every brick manufacturer, but it can be urged more effectively on the strength of these late government bulletins on the scarcity of timber. The concrete men are using this theme industriously, but they can not use it as effectively as brick men even if the material would compare favorably, because the use of concrete in building construction of itself calls for lots of lumber and is very wasteful of it. With brick it is different. One can get along without lumber almost entirely, as is being done where the desire is to fire-proof the more pretentious structures. If lumber is used at all it need only be used for sash, doors

and mill work, interior finish, for cabinet work of one kind and another. And with the lumber reduced to these uses as it should be, the forests will produce enough to fairly supply the needs of the country. We will have to come to it some time, and the sooner the better, both for the forest supply and for the people themselves. There is no building material that can be compared to brick and other clay products, and it looks like with the influences at work now, there is nothing else can happen but a great enlargement of the brick industry. In fact, it looks like it is safe to predict that a few years hence we will wonder why a man would want to build a wooden house and why we continued to build them so long when there was brick to be had out of which they could have been erected for the same money. It takes persistent work to educate the people and change them from one practice to another, but when they do learn and start to "come across," they sometimes come with a rush. As it stands now, it looks like the rush is about due, and that the brick industry has a great era before it in the United States.

CO-OPERATE WITH BUILDING INSPECTORS.

The International Society of State and Municipal Building Commissioners and Inspectors is as busy as ever working for fire prevention, and has of late been sending out a strong letter to the building commissioners of various cities. In this letter it is pointed out that we have gotten to the point where our normal fire loss is nearly a million dollars a day, and with all the phenomenal building activity we scarcely replace the destroyed property. This letter, while pointing out that the society has adopted a uniform and model building ordinance, they don't intend to insist on the adoption of this where it will interfere with or block progress in any way. What they want above everything else is to see better building restrictions, and if they can not have their own ideas adopted they are willing to work hand in hand with building commissioners to help them get other ideas adopted which give promise of the same good results. The society is also urging leading papers in the different cities to give this subject attention in their issue near the middle of May so that popular attention may be more fixedly centered upon this date and serve to make of it a sort of fire prevention day. There is no class of people more deeply interested in this question of fire prevention than the brick people, and we want to urge upon all in the trade that they co-operate heartily with the building inspectors and not only encourage them in extending the fire line and advising better restrictions, but also lend them aid in getting such laws passed by the city councils as will insure better building. Sometimes a building inspector or commissioner may have ideas along this line that he does not urge persistently because of the lethargy of the general public. There is nothing stimulates ideas of this kind and leads to action more than a little encouragement, and getting together among those interested and discussing the subject. Out of these discussions not only grow active desires for better restrictions, but they also develop new ideas and help in many ways. Let every brick manufacturer keep this subject in mind and don't let it be said that any man interested in clay products failed to do his part toward the promotion of better building protection against fire.

TRADE LITERATURE.

CELLAR EXCAVATION is a matter that interests all builders. The Thew Steam Shovel Company, Lorain, Ohio, has issued a leaflet, Circular No. 12, setting forth the fact that such work can be done cheaper and in much less time by the use of the Thew steam shovel than by the old hand process. Any builder or contractor who doubts this statement will do well to suspend judgment until he can get a copy of this leaflet, and also a copy of the recent catalogue issued by the Thew Company, which tells why the Thew

shovel intended for that purpose can be used for excavating purposes with decided economy owing to its portability, etc.

SAND-LIME PRODUCTS is the title of an interesting document being sent out by the National Association of Manufacturers of Sand-Lime Products. It gives a succinct history of sand-lime brick in America, and sets forth the merits claimed for this product and presents a series of tests of sand-lime brick as compared with clay brick which are quite favorable to the former. Each alternate page of the book is embellished with views of buildings constructed of sand-lime brick, and its distribution among architects and builders will certainly result beneficially to manufacturers of sand-lime brick, a complete list of American plants being given. The price of the book in paper covers is 25 cents. For a copy address the secretary, H. de Joannis, 45 Plymouth Court Building, Chicago, Ill.

FROM EARTH TO BRICKS. Under the above caption, the Arnold-Creager Company, New London, Ohio, state in their 27th Annual Budget—a new name for a trade catalogue: "Yes, bricks are made out of earth, from the very dirt under your feet, and not such a 'dirty proposition' either, when you come to think of it. Once you have the earth, there are several processes by which you can make it into brick. The old-fashioned way is to mix it into soft mud and mold it into forms or molds. This is what is now called the 'soft mud' system, and is very much in fashion at the present time." * * * Other interesting statements are made and followed by illustrations of soft mud machinery for horse and steam power. Also pug mills, of various sorts, clay disintegrators, and a line of stiff clay machinery, cutting tables, etc., are illustrated, as is the Arnold line of clay elevators, represses, brick trucks, barrows and all manner of brickyard supplies, including brick molds, both for hand and machine use. A post card, written in pencil even, addressed to the Arnold-Creager Company, will bring one of these catalogues to any one desiring it.

LOOKING FOR TROUBLE.

If what "they say" is really true, that all the woes that vex
The men-folks are occasioned by the fairer, weaker sex,
The former ought to sail away across the wide, wide sea
To some far land where they could dwell in peace and harmony.
But should this ever come to pass, 'tis pretty safe to say,
From all we've seen and heard, that ere a month had passed away,
Even though there were no ships to cleave the ocean's wildest swell,
The waters would be thick with men all swimming back, pell-mell!
—Nixon Waterman.

THE BACHELOR'S SOLILOQUY.

To wed, or not to wed;
That is the question,
Whether 'tis better
To remain single
And disappoint a few women—
For a time;
Or marry
And disappoint one woman—
For life.
—Judge.

WIDE OPEN THERE.

(The labor unions of Chicago have purchased a cemetery, where only members of the union may be buried.)—News Item.

All his life in a union shop
He'd daily earned his bread;
They buried him in a union grave
When the union man was dead.
He had a union doctor
And he had a union nurse;
He had a union coffin
And he had a union hearse.
They put him in a union grave
When he was good and dead;
They put a union monument
Just above his head.
And then he went to heaven,
But to stay he didn't care;
He kicked because he said that some
Non-union men were there.
He went down to the Other Place,
And there produced his card.
But Satan threw an earnest face
And studied good and hard.
Then he laughed, and his hands did rub
Till he thought he'd never stop.
"Why, bless your soul," said Beelzebub,
"This is an open shop!"
—Montreal Star

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THE RESULTS of years of research by Mr. Ellis Lovejoy, upon "Scumming and Efflorescence" now available to all. 50 cents brings the book. Stamps taken.

The Richardson-Lovejoy
(See Page 873.) Engineering Co.

FOR SALE, WANTED, ETC.

FOR SALE—One Raymond repress, practically new, with one set of dies 4½x9. Have changed system. F. H. COBLE, 511 cm Lancaster, Pa.

WANTED—An enterprising, energetic young man to go on road as traveling salesman for brick supply concern. Previous experience not required. Address I. N. D., 511 d Care Clay-Worker.

WANTED.

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WANTED—Position as superintendent or foreman of a brick, tile and sanitary plant, vitrified or glaze brick, or floor tile of all description. Twenty-five years experience. References of the best. Address, 511 d WOOD, care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on
Pages 826, 827, 828, 829 and 830.

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A new system of ties and a positive rail clamp
absolutely prevents spreading of the track.

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THE RAYMOND RADIATED HEAT DRYER

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



BUILDING MARKET in Chicago is strong and brisk this month, and has a good normal tone, although there is nothing unusual. The usual cloud of labor trouble is lowering. When times are good and business brisk is the very season chosen by the unions to start something. They have done it, and as a result, work on the new county building, and on a number of other big jobs in the down-town district as well as in outlying territory are delayed or tied up.

The season opened full of promise and kept on well so far as April. Then there was a falling off from the record of the corresponding month of 1906 of fifty-six per cent. This may seem incredible at first, but is in fact readily accounted for. In April a year ago permits were taken out for the new county building, now nearing completion, and involving a cost of \$4,500,000; for a new twelve-story building, planned by the late Otto Young at 143 State street, involving a total cost of \$800,000; the Congress apartments, involving a total cost of \$750,000, and the Pike building at 163 State street, figured at \$450,000. Thus it appears that last April was abnormally prosperous and that this April was holding its own. Now, however, thanks to the threatened labor troubles, it begins to look as if there might be a sure enough slump.

Since the first of May, when a lot of union contracts ran out, and the trouble has been brewing, the number of permits taken out at the building department has fallen off steadily. The first week in May showed less than the last week in April, and the second week in May made a still poorer showing. This indicates clearly the result of labor troubles.

The ostensible reason for kicking up the present row is the desire on the part of the unions involved—the building and material trades unions—to be paid off on Saturday and to be paid off in currency instead of in checks. If considered seriously, these two points would appear to be in contradiction. A student of practical economy would think that a man would make his wages last longer or at least go to better purpose if the man were paid early in the week. By the time Sunday came with its opportunities for getting jagged, his money would be sufficiently reduced so that he could count the cost, and if he did follow the path of hops and corn, he would not have so much to lose as he would if paid on Saturday night. This would of course apply rather to the married than the single man, and to the laborers rather than to the skilled workmen. On the other hand the union principle has been against the payment of employees by check on the ground that it encouraged them to become patrons of the saloon in order to get their checks cashed. There are, however, those who think the pay day plea a pretty slim basis for strike, and profess to scent a rodent.

Nevertheless the fact remains that building operations have been temporarily suspended because the bricklayers want to enforce a Saturday pay day, and the strike has grown until it now includes the laborers, the derrick hoisters, the terra cotta setters, the granite setters, the mortar mixers, and most recently of all the carpenters out of sympathy, have refused to work on jobs thus affected. The bricklayers were getting 62½ cents an hour, and there was every reason to believe that things would go smoothly for another season when the pay day trouble arose. While there has been no great tumult or uproar, the strike affects all the largest contractors practically, and is said to be the most injurious disturbance in the building industry since the big lockout fight of 1900. Beside the county building, half a dozen large public school buildings being hurried through for use in September have been affected as have improvements in several of the small parks about the city. At Pullman work on contracts involving \$1,000,000 was abruptly brought to a standstill. The strike came a week ago. The

contractors made no effort to avert it, even when there were nearly 6,000 men out, but Commissioner of Public Works Hanberg, who is anxious to house as many city departments as possible in the new county building pending the construction of a new city hall, has taken a hand in proceedings and arranged a peace conference.

It is generally understood that rivalry between the larger and the smaller contractors cuts a large figure in the present controversy. Formerly there was one association known as the Master Masons and Builders' Association, comprising in its list of members nearly every building or mason contractor in the city. Six months ago the larger contractors decided to withdraw. Sixty of the big firms did so and banded together in a new organization called the Mason Contractors Association. It is said that it promised practically to control the field. William Grace is the president of the new organization. Subsequently to its establishment the bricklayers' union and the building laborer's union entered into an agreement with the smaller contractors in which the Saturday pay day was stipulated. The members of the new body refused to sign and the strike has followed. Their chief objection to the Saturday pay day is that Saturday is a half holiday, and that the time is too short in which to get the money from and distribute among hundreds of employees in different parts of the city. They say it would require the services of a hundred paymasters to cover the city and suburbs. The smaller firms are charged with feeling that they had been frozen out by the amalgamation of the larger firms, and with enlisting the aid of the unions to compel the big fellows to abandon the independent venture. This aid, it is said, was readily given inasmuch as the unions go on the theory the more contractors there are, the better it is for the employees. It is believed that compromise whereby the contractors will pay on Saturday, but by check, may be reached.

Aside from the building material market affected by the local strikes, there is every indication of prosperity. The dealers report good demand outside Chicago, and say that it has been good within the city. Bonner and Marshall Company have been lauding their Oriental brick to the skies, until they say there is a brisk demand from all over the country for it. It is to figure in a strikingly artistic job now under way in Washington, D. C., the home being built for John R. McLean, and is to be made the subject of experiment. Not only have many special shapes, all handworked, been ordered, but the tapestry-like brick are to be laid with the horizontal mortar joints of 1⅛ inches. The average mortar joint runs to ⅛ inch. The use of 150,000 of these brick is estimated for this job. Of the many special shapes ordered, it has been necessary to cut some of the brick at an angle of 145 degrees and 55 minutes, and others—for use in moulds—have been cut with a radius of 3¼ inches.

The same brick is to be used in a Congregational church in Waterloo, Iowa. The order calls for 150,000. Another order for 66,000 is to be used in the Farmers' National bank building at Ottawa, Minn.

The strike is not affecting the paving brick business, and contracts are going at a great rate. It is as good a season in this line as any ever on record. The Purington Paving Brick Company has just closed a contract for the paving work of the subways under the new elevated right of way of the Chicago & Northwestern and Chicago, Burlington & Quincy railways. The contract calls for a total of 2,800,000 blocks. This will cover 6,400 square yards. The brick will be laid in the subways cutting through the elevated way between Wood and Union streets.

In front brick, the S. S. Kimbell Company will furnish 70,000 continental brick for the J. V. Farwell building at Congress street and Fifth avenue.

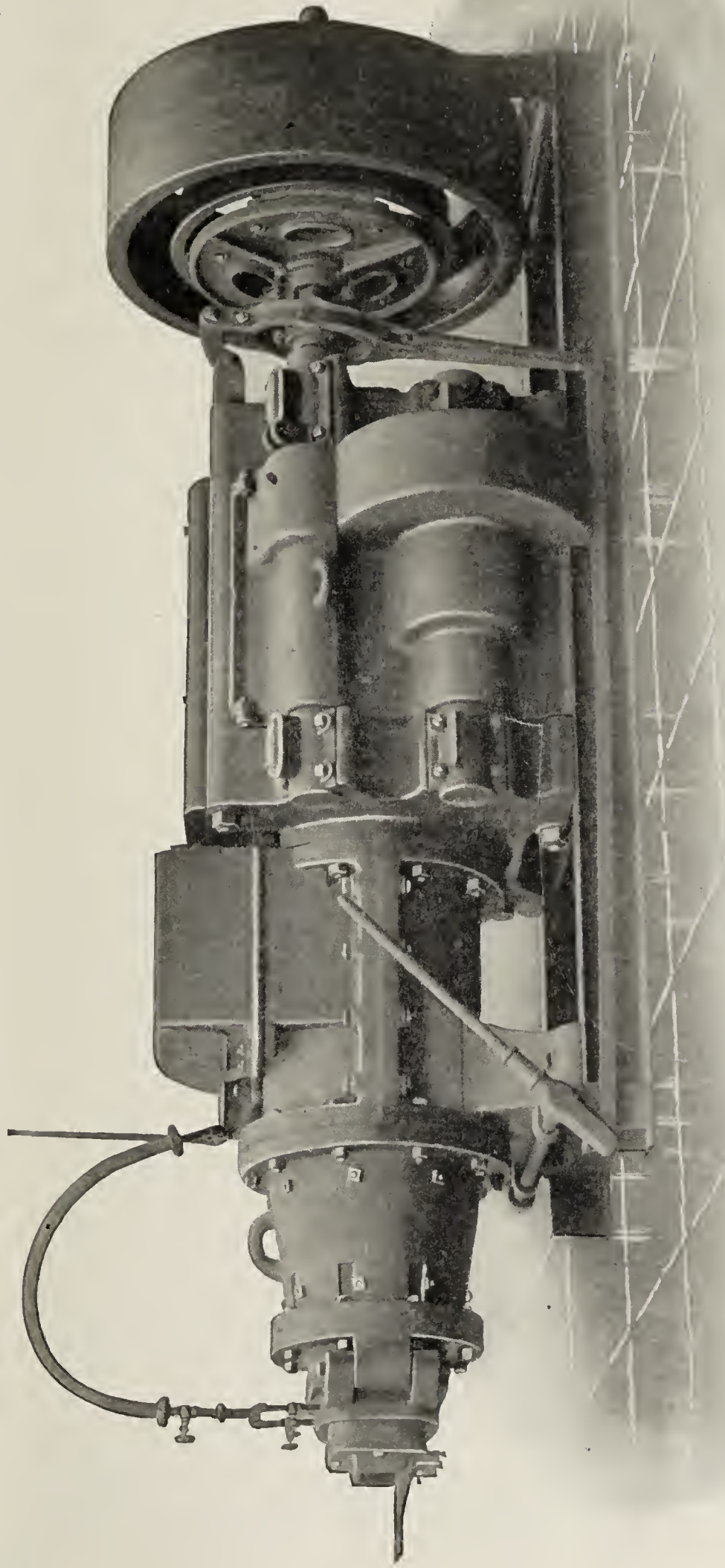
George Birkhoff, Jr., is using the same brick in the new house he is building at Forty-ninth street and Woodlawn avenue. This job calls for 50,000.

The S. S. Kimbell Company is also handling the contract for the 80,000 front brick to be used in the addition to Mercy hospital at Twenty-sixth street and Calumet avenue, as well as a contract calling for 50,000 buff speckled brick for a new theater at Indiana Harbor.

Considerable curiosity has been aroused by the sudden

(Continued on page 820.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

(See ads on pages 870 and 871.)

launching of the "Central Brick Exchange," which has opened its offices on the fifth floor of the Chamber of Commerce building since the first of the month. It is explained that it is a sales agency representing practically all of the smaller brick manufacturers in and around Chicago not included either in the Illinois Brick Company or in the newer National Brick Company. It is pointed out that such a move would be to the advantage of each of the smaller producers. At the headquarters of the new agency there is little inclination to explain, and a question as to what brick they handle brings the answer that they handle brick for several plants. The gentleman with whom the writer conversed during his rubbering expedition on the fifth floor, mopped his fevered brow after about the third question and complained that the heat affected him greatly although he had had only a glass of ginger ale and a cigar since breakfast.

The common brick war, according to all indications, is over, or at least a pleasing truce is "on." The price of common builders is now up to \$7.00, and everybody in the common brick line is wearing a smile. Last year it will be remembered there was a grand price cutting which took the price down to \$5 flat, and there were reports of common brick being sold a shade lower. The Illinois Brick Company took a lead in the price cutting, the intention being to see to it that there was no money made by the new National Company. There was none made by the Illinois Steel that anybody noticed during the months of war, and thereby says rumor there may hang another tale. SCRIP.

Written for THE CLAY-WORKER.

POTTERY NEWS.



A STEADY MOVEMENT of brick and sewer pipe in the Eastern Ohio district has characterized local conditions during the past month. Manufacturers have reported excellent buying, which was general over all grades and prices. The weather was very much against a heavy selling during April and early in May, but with the advent of sunshine large contracts were let and manufacturers received the benefit. Jobbers report a heavy demand for brick and pipe, and there is every indication that this condition will continue to prevail throughout the season.

William C. Hartford, of Toronto, Ohio, has taken the position of general superintendent of the Diamond Sewer Pipe plant at Uhrichsville, Ohio. A number of improvements are contemplated by this firm.

Will H. Phillips, of the Smith-Phillips Pottery Company, of East Liverpool, went to Honolulu, where, on May 22, he wedded Miss Gertrude Baker, formerly in charge of the Carnegie Library at East Liverpool. They will make their home in that city.

Sample rooms of the Homer Laughlin China Company have been removed from their East Liverpool plants to the new factory at Newell, W. Va. The rooms are the largest of the kind in the western pottery district, and the decorations are most elaborate.

Under a West Virginia charter, the Berkley Brick, Tile and Concrete Company was chartered at Charleston, W. Va., with a capital stock of \$25,000, of which \$25 has been subscribed and \$2.50 paid in, all that is required under the West Virginia laws. The incorporators are J. L. King, Wilbur H. Thomas, D. W. Weaver, Edgar Bowen and W. E. Gordon, all of Martinsburg, W. Va. Plans of the company have not fully matured.

Construction work on the plant of the Ceramic Brick Company, of East Liverpool, Ohio, is nearing completion. The company will make a brick from the waste materials from the potteries of the East Liverpool district. The concern has a capital stock of \$25,000, all of which has been paid in. Operations will start within a month.

The West Virginia Pottery Company will be built at Bridgeport, Harrison county, W. Va., for the manufacture of brick, sewer pipe and stoneware. Those back of the concern are V. L. Highland and S. C. Denham, of Clarksburg, W. Va., with J. G. Lawson, C. H. Warner, N. M. Jones, S. S.

Faris and G. B. Late, all of Bridgeport. The company has a capital stock of \$12,000, of which \$1,200 has been subscribed and paid in.

Although the plant of the Warwick Pottery Company, at Wheeling, W. Va., was partially damaged by fire, the firm never lost a day in shipping ware except on account of the March flood. More people are at work at the pottery than before the fire. The burned portion of the pottery is being rebuilt and will be ready for occupancy within a month.

The East End Porcelain Company, at East Liverpool, which was put out of business on account of fire, has started operations again. The firm lost but a month. Entire rebuilding is not completed, but shipments are already being made.

While some delay was caused by the inability of securing heavy timbers to prosecute the task, construction work on the plant of the American Mutual Pottery Company at Columbus, Ohio, is progressing. Brick work has reached the second story. Machinery is being installed. Delay has resulted in starting operations, although this was scheduled for May 1. The plant was formerly the property of the Columbus Pottery Company, and was partially destroyed by fire.

Arrangements are progressing for the starting of the Acme pottery at Crooksville, Ohio, a property recently sold for \$41,500 to the creditors of the concern.

Patents on all high-class syphonic sanitary closets have expired and now practically every sanitary pottery in the country is making the article.

All potteries located along the Ohio river in the East Liverpool district, which were damaged by the recent floods, have been repaired and operations resumed in all departments. O. MEGA.

TRADE SCHOOL CONVENTION.

There is to be a notable gathering at Indianapolis June 10, 11 and 12, when the trade school idea will be exploited by representative men from all sections of the country who have this great work at heart. Originally it was intended to have the convention begin May 30th, so as to enable President Roosevelt to lend the influence of his presence, but that conflicted with previous engagements, so it has been decided to call the convention to order June 10th. Delegates will meet at the Winona Technical Institute and will be addressed by many able speakers, including the Hon. John Whitehead, of Norfolk, Va.; Anthony Ittner, St. Louis; P. M. Kling, McKees Rock, Pa.; A. D. Dean, Boston, Mass.; James W. Van Cleave, St. Louis, Mo.; Rev. E. M. Russell, New Wilmington, Pa.; Dr. Frank Gunsaulus, Chicago; James A. Emery, New York City; Wm. Lodge, Cincinnati; W. A. Whittaker, Jeffersonville, Ind.; Walter A. Page, New York City, and others. Dr. S. C. Dickey, who read the able paper at the N. B. M. A. convention at St. Louis, entitled "Trade Schools for the American Boy," will welcome the guests, and every effort will be made to make their stay in Hoosierdom both pleasant, and helpful to the cause in which they are all so deeply interested, and which is of such vital importance to the American boy. A complete program will be mailed to any reader of the CLAY-WORKER desiring same. Address, Dr. S. C. Dickey, President Winona Technical Institute, Indianapolis, Ind.

TRADE ITEMS.

The Mound Valley (Kansas) Brick Company has increased its capitalization from \$50,000 to \$100,000, for the purpose of buying the Schlomer gas field, which is located one mile from that town. The field includes fifteen wells, and a lease of two thousand acres of ground. The daily flow is estimated at twenty million cubic feet. This purchase gives the brick company its own gas and an almost unlimited supply at that.

The Federal Brick Company, of Providence, R. I., has perfected its organization, and the following officers have been elected. President, Wm. G. Titcomb, Providence, R. I.; secretary, Virgil Palmer, of New Britain, Conn.; treasurer, Wm. L. Studley, of Providence, R. I., and general manager, Frank L. Stiles, of North Haven, Conn. To those who know them the personnel of the officers augurs well for the success of this company.

**OUR NAME
EXTENDS
AROUND THE WORLD**

*Dryers
of all kinds*

THE AMERICAN CLAY MACHINERY CO.

*Complete Plants or Partial Equipments
Clay Working Machinery
Sand Lime Brick Machinery*

**THE AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO, U.S.A.**

*Built Right
Run Right*

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF NORTHWESTERN OHIO.



CONDITIONS IN THE brick industry have never been worse than they are at present in Toledo, at least, not in many years. There is absolutely no business, and the yards are stocked up to the limit. It is estimated at this time that there are fully twenty million brick in stock and no buyers.

Just what has caused this is somewhat problematical, although a general contrariness of several things seems to have operated against the brick men.

In the first place, the weather has been such as to discourage anybody and the early indications for a building boom did not materialize as was expected. There was one bright week along the first part of April but since that time there has been a continuance of absolute winter weather.

Just what effect the indictment of the brick men has had is a question which has not been unanimously decided. However, the weight of opinion seems to be that it has affected the brick industry more than the lumber industry for this reason: Those who intended to build large structures of brick had in mind the question of an investment. With such persons it was not a matter of having to build this year, as they could build this fall or next season just as well. These people undoubtedly having in mind the reduction of the price of ice which followed the indictment of the ice dealers last year, have in many cases undoubtedly come to the conclusion that there is bound to be a panic in the building supplies trades, and that if they will simply hold off their work until fall or next spring the price of brick will appreciably diminish. It is the lack of flat and office buildings being started that is attributed as the principal cause for the deadness of the market.

There has been quite an amount of building going on, but only in the smaller lines, so that the best the brick men have got out of the operations up to date has been the supplying of brick for foundation purposes. It will readily be seen that this condition is bound to make a surplus stock and to practically kill the market. The only hope is that an early trial will show these builders that there is to be no decrease in the commodity or perhaps that an outside demand may cut down the large stocks on hand.

It is feared that because of the unfavorable conditions that if the presumption regarding the delay of building operations is correct, before the season ends some of the brick plants will go out of operation. In fact, two dealers said today that they would never sell their stock for a penny less than the present market prices, and that if conditions continued as they were they would simply shut down their plants and hold their stock for an advance.

"Not enough that we should get the grand jury after us and have a bad building slump in Toledo, but just to make it real good, along come the railroads and pack on an increased freight rate on paving brick."

It was one of the local brick men speaking regarding the semi-official announcement that there is to be an increase of freight rates on lumber, cement and paving brick. Already many of the roads in this section of the country have received official advice regarding the lumber increase, and they are already notifying lumber dealers accordingly. The increase comes in the nature of a new classification on the tariff sheets. Heretofore, fire brick has been classed as a commodity which carries a less rate than any of the regular classes. The new tariff places paving brick in Class 6. As nearly as can be figured at this time, the present rate is about 85 to 90 per cent. of what the new rate will be. In talking with one of the freight agents yesterday, the following explanation for the increase was given:

"The increase is necessitated because the railroads must increase their revenue in order to pay the advance in wages which most of them have granted, and because of the increased price of all materials, necessarily raising the cost of operation. Because of the fact that most of the paving

contractors have already contracted for the summer the increased rate will not become effective until September."

Architect Harry Wachter, of Toledo, has completed plans for two factory buildings to be built for the Webster Manufacturing Company, at Tiffin, Ohio, to cost about \$75,000. The buildings will be brick and reinforced concrete.

Lewis A. Amaden, city engineer, of Ashtabula, Ohio, is preparing plans for a sewer to drain the entire western portion of the city.

Bids will be received by the Marion, Ohio, Board of Public Service until May 14, for the construction of 3,000 feet of 8-inch tile sewer, to cost \$3,000. Bids will be received for the same length of time for 3,190 square yards of brick paving for Girard avenue.

City Engineer H. D. Schultz, of Sandusky, Ohio, expects to have plans ready for bids by June 1, for 26,000 square yards of brick paving.

At Elyria, Ohio, the Board of Public Service is having plans prepared for brick paving on two streets, which will approximate \$45,000. The board recently awarded contracts to G. A. Lagron for 2,700 yards on West Eighth street, and 3,300 yards on West Third street.

Roy L. Williams, of Kalamazoo, Mich., has been awarded the contract for about 24,000 square yards of paving at Conneaut, Ohio, at a cost of \$61,000.

Frank Burt is having plans prepared for the erection of a \$40,000 brick fireproof theatre, to be erected at Lima, Ohio. He also is having plans prepared for a similar structure at Fremont.

The Board of Education, of Akron, Ohio, is having plans prepared for a twelve-room school house to be built of pressed brick and terra cotta, at a cost not to exceed \$50,000.00.

William Schmidt has been awarded the contract for the erection of a \$40,000.00 brick and stone church for the St. Matthews' Lutheran congregation of Toledo.

The Erie County Infirmary at Sandusky, Ohio, is to build a \$15,000.00 hospital building of brick and stone, fire proofing and tile.

James Hopple, brick manufacturer of Defiance, Ohio, has just completed the erection of a shed 24x90 feet in size, and is preparing to erect another kiln, in order to accommodate his increasing business.

The brick plant being erected by the Columbus & Hocking Coal and Iron Company, near Straitsville, Ohio, will be ready for operation by the latter part of May. The company has experienced some delay in securing machinery, and the weather has been against much progress, but the work is being pushed rapidly and will be completed very shortly.

Work has been commenced for the erection of a four-story fire-proof building for the American Clay Machinery Company, of Bucyrus, Ohio, to be used as a place for the storage of patterns. The new building is being erected on the vacant lot opposite the American Clay Machinery Works on East Warren street, and will be modern in every respect. It will be 50 feet wide, 100 feet in length, and four stories high. The first story will be twelve feet in height, the other three stories each eight feet in height. The structure will be built of brick and will be fire-proof in every particular. Electricity will be used for lighting, and modern heating apparatus will be installed.

The work of construction on the new brick plant of the Federal Brick Company, near Shawnee, Ohio, will be commenced at once. The organization has been completed and a large part of the capital stock subscribed.

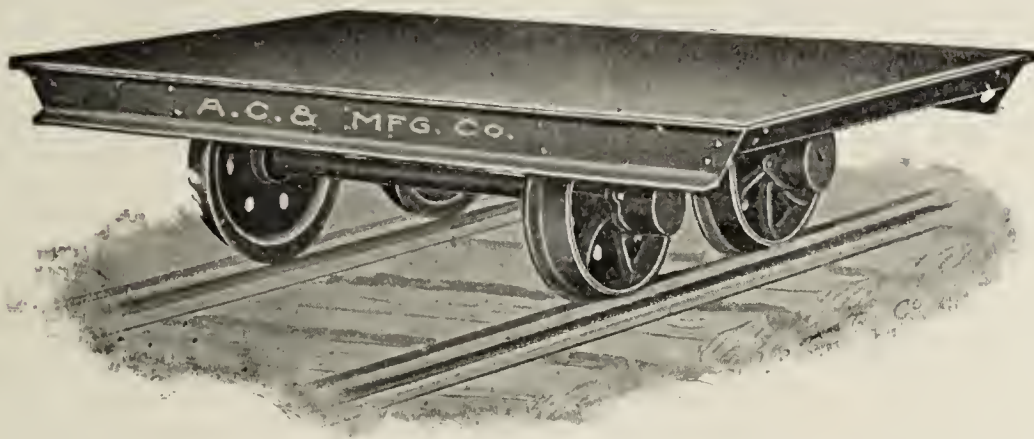
TRADE NOTES AND NEWS.

The Union Brick and Tile Company has been organized with an authorized capital of fifty thousand (\$50,000) dollars to develop the clay beds near Burgaw, N. C., on the Atlantic Coast Line railroad, and to manufacture ordinary brick, front repress brick, vitrified brick, drain tile and other terra cotta products. The company has purchased 70 acres of what they believe to be the most valuable clays in North Carolina.

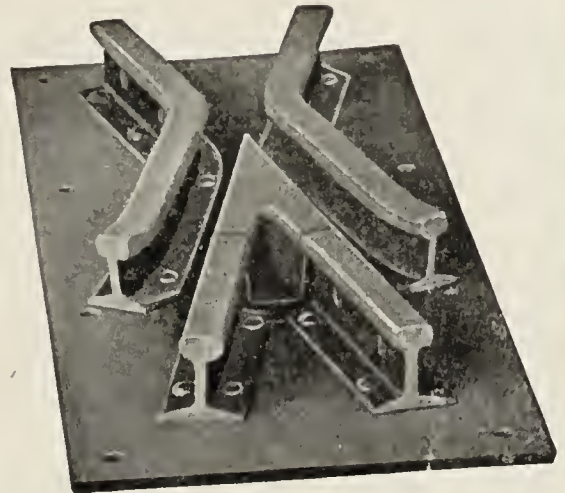
R. C. Penfield, president and general manager of the American Clay Machinery Company, of Bucyrus, Ohio, recently returned from Mexico, where he was in the midst of the earthquake disaster, and escaped unharmed. When stepping off a trolley car a day or two after reaching home, a pebble turned under his foot and he was so seriously injured that he was laid up for a while.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

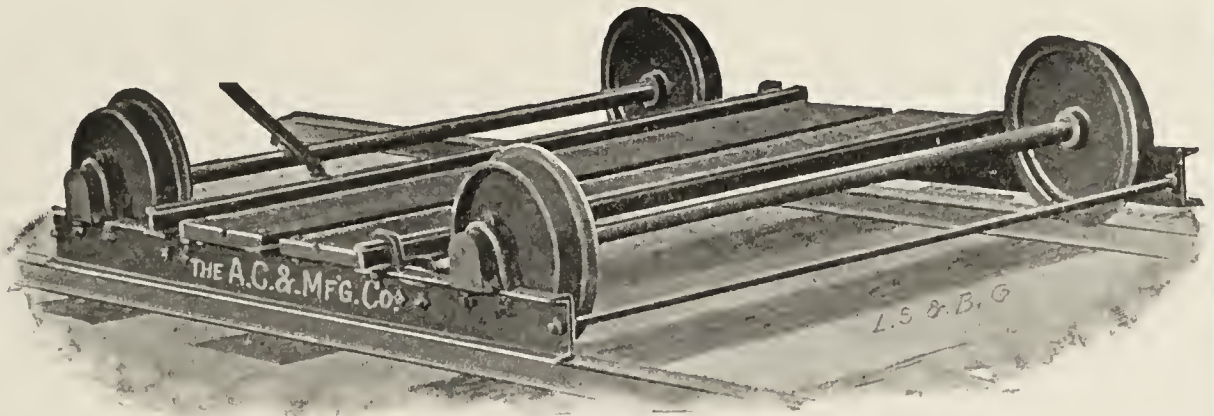
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



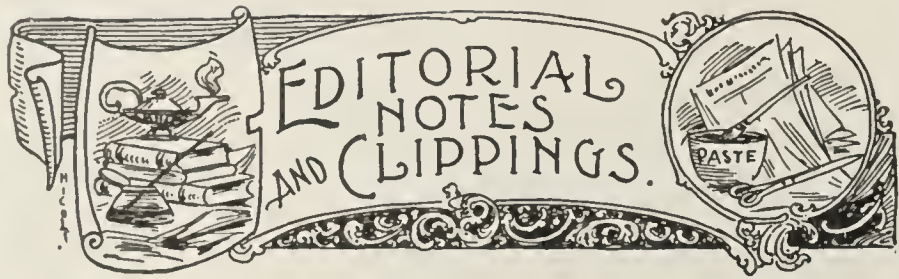
No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.



Andrew Dertinger has purchased the brickmaking plant of John Kimble, at Genesee, Idaho.

Sheffield, Iowa, is to have a \$50,000 brick and tile making plant. Mason City people are interested.

H. Kern is at the head of a company that is being organized to establish a brick making plant at Grand Junction, Col.

George Weiss, president of the Weiss & Schmidt Pottery Co., Milwaukee, Wis., died May 8, at his home in that city, aged 78 years.

The plant of the Van Briggie Pottery Company, Colorado Springs, Colo., is to be enlarged. Plans have been drawn for a \$25,000 structure.

The brick plant of Merritt & Co., of Camden, N. J., was completely destroyed by fire April 26. The loss is estimated at \$25,000, partly covered by insurance.

The Oberlin Brick and Tile Company, of Oberlin, Ohio, has been incorporated by D. A. Gager, A. E. Griffith, Volney McRoberts, Charles I. Vance and Lewis E. Burgner.

The Waverly Brick Company, Waverly, Va., has been incorporated with \$5,000 capital stock. John Sailes is president, H. T. West, secretary and treasurer, and W. C. Carr, manager.

Wm. K. Abbott, in addition to operating a brick plant at Quincy, Ill., is also interested in a new plant at Hannibal, Ill., which has a daily capacity of 25,000. Both plants are now in full operation.

Dr. A. Reichard has purchased the Paola (Kansas) Brick and Tile Works. The plant which has been closed since last November will be put in operation at once, and will hereafter be run the year around. Both building and paving brick will be turned out.

The Harbison-Walker Refractories Company, of Pittsburgh, Pa., will erect a large plant at Indiana Harbor, Ind., for the manufacture of fire brick. They hope to have the new plant ready for operation early in September. Plans have been drawn for a \$350,000 plant.

The Golden Gate Brick Company is turning out sand-lime brick at a rapid rate at its plant at Antioch, Cal., adjoining the works of the Holland Sandstone Brick Company. A new sand dryer has been installed enabling the plant to be operated in wet weather.

The Waycross Stone and Tile Company is the name of a new concern recently organized at Waycross, Ga., to manufacture, buy, sell and deal in brick, tile, conduits paving block and cement block. The incorporators are: J. B. Strickland, T. J. Darling and V. C. Parker.

A charter has been granted the Unit Brick and Tile Company, of Charlotte, N. C., with authorized capital of \$50,000, partly paid in. The incorporators are: L. B. Johnson, Paul Chatham, J. N. Hoos and J. McM. Sawyer. The object is to manufacture and sell brick, tile, cement blocks, etc.

The Monterey Sand-Lime Brick Company's plant at Seaside, on the bay, near Monterey, Cal., which has manufactured quite a lot of brick since it was placed in commission, is temporarily shut down. Several handsome looking buildings in Monterey, Pacific Grove and elsewhere have been constructed of these brick.

W. A. Burke will move his brickmaking plant from Bentonville, Ark., to Vinita, Ind. Ter., where a company has been formed to operate the plant, under the name of the Vinita Brick and Tile Company. The officers of the company are: President, W. A. Burks, of Bentonville; vice-president, E. B. Frayer, of Vinita; secretary, South West, of Bentonville; treasurer, J. W. Orr, of Vinita.

Some important improvements are now being made at the large brick yards of Voelker & Groff, at Winona, Minn., including the installation of a cable brick conveyor to convey the bricks from the brick machines to the drying sheds. Three large motors are being installed and the plant will be operated by electricity instead of steam. The plant turns out 25,000 brick daily, and if business continues as good this

season as it has for the last couple of years, a dryer will be built in the fall.

The Calora Coal Company, Jasonville, Ind., has in contemplation the erection of a 200,000 daily capacity plant for the manufacture of shale brick.

The Howard-Park Brick Company, Chattanooga, Tenn., sustained a \$1,500 loss by fire recently, which started in the kiln sheds. The loss is partly covered by insurance.

J. B. McGorrisk has purchased the plant of the Merrill Brick Company, at Des Moines, Iowa. The plant is located in the southwestern part of the city and has a capacity of 30,000 brick per day.

The factory buildings for the Claytonia Brick and Clay Products Company, Evansville, Ind., are about completed, and the machinery will be installed in a short time. G. M. Uhl is the manager of the company. Tile and other clay products will be manufactured.

F. M. Jarvis, of Valley, Wash., has bought a one-half interest in the brickyard at Chewelah with S. P. McPherson. They have the yard equipped with a brickmaking machine of a capacity of 10,000 per day. They will have a kiln burnt by the first of next month.

The Francesville (Ind.) Clay Product Company has been organized with a capital stock of \$50,000. The plant is located just outside the town, where there are acres of fine clay, which will be used for the manufacture of terra cotta and large drain tile. The officers are: O. T. Higgins, president; William Schleman, vice-president; J. L. Beesley, treasurer.

The plant and equipment of the Diamond Fire Brick Company, in South Canon, Col., has been sold to S. C. Cowgill & Son, of Montezuma, Ind., who will organize a new company for the conduct of the business. The senior Cowgill is president of the National Drain Tile Company, which is said to be the largest concern of its kind in the world. He has plans for extensive improvements here, and will increase the capacity of the plant as rapidly as the demands of the trade warrant. The new company has practically unlimited capital, and will develop the fire brick industry in Colorado and adjoining states to an extent not previously attempted. One

(Continued on page 826.)

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

EDITORIAL NOTES AND CLIPPINGS—Continued.

of the products of the company will be silica brick, used for lining the furnaces of foundries, smelters, etc.

The Lindale Brick Company, Lindale, Texas, has been granted a charter. The incorporators are Robert Clark, of Dallas, Robert H. Clark and Kelly Nowlin of Lindale.

The Lebanon Pressed Brick Company, Lebanon, Ohio, has been incorporated by W. H. Hopping, George Shimp, B. C. Howell, Jr., C. Wilber Evins and William Evans.

John Theriault, Chippewa Falls, Wis., is making a number of improvements at his brick plant, getting same ready for operation, putting in a new boiler and additional machinery.

The brickmaking plant of Berry & Fields, Chester, Pa., is being enlarged. About \$40,000 will be spent in making a modern up-to-date plant equipped for running the year through.

The J. T. Watson Brick Company has been incorporated to manufacture brick at Danville, Va. Those interested are J. T. Watson, Jr., M. G. Watson and M. G. Johnston. The company is capitalized at \$20,000.

Fire which was supposed to have started in the dryer almost completely destroyed the plant of the Wolf & Dei Brick Company's plant, Springwells, Detroit, Mich. The loss is estimated at \$15,000, with no insurance. The plant will be rebuilt immediately.

The plant of the Cleveland Brick Company, Canton, Ohio, has been sold to the Metropolitan Paving Brick Company for \$46,000. The plant will be greatly improved and equipped with modern machinery. New kilns will be added, and in course of time the capacity of the plant doubled.

Harry S. Grimes, the well-known paving brick manufacturer of Portsmouth, Ohio, is also a member of the firm of H. S. Grimes & Co., grain dealers, and at a recent meeting of the Ohio Shippers Association at Columbus, was elected president. Mr. Grimes is one of the best-known grain men in the state, has been president of the National Grain Dealers' Association, and also executive head of the Ohio Grain

Dealers' Association, and has taken a prominent part in the shippers' association since its organization four years ago.

Mr. Snyder, of Portage, Wis., has purchased a tract of land at Gilbert Plains, Manitoba, Canada, and will put in a brick plant of 35,000 daily capacity.

Lincoln Shackelford, of Des Moines, has purchased the Melbourne (Iowa) Brick and Tile Company's plant. He will spend \$5,000 improving the plant.

The plant of the Alonzo Curtis Brick Company at Grant Park, Ill., was damaged to the extent of \$1,500 recently by fire which started in the kiln sheds. The loss is fully covered by insurance.

A shale brick plant is to be established at Calera, Ala., in which well known Birmingham men are interested. W. H. Merritt is president, A. J. Krebs, vice-president, and J. W. Hunter, general manager of the company.

The Cleveland Car Company, West Park, Ohio, is increasing the capacity of its plant by adding a new forge shop and increasing the boiler capacity. This will enable them to handle their work even more promptly than heretofore.

The Budwig & Meyer Clay Manufacturing Company has been incorporated to engage in a general clay manufacturing business at Birmingham, Ala. The company is capitalized at \$10,000, with J. E. Budwig, president; Henry W. Meyers, secretary and treasurer, and R. H. Kerr, vice-president.

C. D. B. Howell, president of the Illinois Brick Company, Chicago, Ill., announces that a contract has been signed granting an all around increase in the wages of employes. The agreement is made for three years, and the advances, which vary according to the different classes of employment, will amount to about 10 per cent. in the aggregate of increased expense the company will have to bear in payment for labor.

The first kiln of paving brick ever burned in Allen county, Kansas, with oil as fuel instead of natural gas, was turned out by the Union Brick Company, at their plant between Iola and Gas City. The results of the oil burning experiment are exceedingly gratifying to the brick company, and it is their intention to use the oil for that purpose in the future. The kiln was burned in eleven days.

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FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

FOR SALE.

One 4-mold dry press in good condition.
Address, P. B. G.,
5 1 L Care Clay-Worker.

FOR SALE—Two Eagle represses. Never been used. Price, \$500 each, f. o. b. St. Louis. Address NO. 333,
4 tf d Care Clay-Worker.

FOR SALE—One Raymond No. 999 brick machine with cutting table, complete. Apply, SHAWMUT BRICK WORKS,
5 3 d Shawmut, Elk Co., Pa.

WANTED—Position as superintendent or foreman in shale brick plant, by a man thoroughly familiar with all details of brick manufacture. A first-class burner. Address, W. H. R., Box 68,
5 1 c Postal Sta. E., Cleveland, Ohio.

FOR SALE.

United States patent on brick and paving block, superior to all. Made of any material. Price, \$5,000. Address,
J. GLENDINNING,
5 1 cm 648 N. 17th St., Philadelphia, Pa.

FOR SALE—Second-hand machinery, including one Quaker brick machine, one pug mill, one sander, six trucks and barrows, 6,000 wood pallets, with grates, doors, brick molds, dump table, etc. All in good condition. Very low price for cash deal. Address, F. B. DUNN,
5 1 d Conneaut, Ohio.

FOR SALE—One $\frac{3}{4}$ housed bottom horizontal discharge belt driver Sturtevant blower, wheel 72-inch diameter by 3 ft. 6-inch face in A1 condition. One 60 h. p. Westinghouse engine, in fine order; just been overhauled. Can be seen running. Address, THE STANDARD BRICK CO.,
5 1 d Charleston, W. Va.

FOR SALE CHEAP.

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machines first-class. Capacity 7,500 to 10,000 brick per hour. Greatest bargain. Write for particulars.

GREAT EASTERN CLAY CO.,
5 3 cm 39 Cortlandt St., New York City.

FOR SALE—One E. M. Freese & Co's. Mammoth Junior brick machine, one E. M. Freese & Co's. No. 12 12-ft. pug mill. Both machines practically new and in good order. In use less than eight months. Reason for sale, machines too large and heavy for our business. Address,

RICHLANDS BRICK CO., Inc.,
5 1 d Richlands, Tazewell Co., Va.

FOR SALE—Only building brick plant in city of 30,000 people. Steel town. Orders greater than capacity of works. Sixteen acres of good clay. Abundance of shale. 30,000 daily capacity. 125 h. p. boiler and engine, two 9-ft. dry pans, 8 30-ft. round down draft kilns, 150 steel dryer cars, 10 tunnel improved Shearer dryers. Works new. Have been run only two years. 1 $\frac{1}{4}$ yard steam shovel. Owners have other business. Address, J. V. ROSE,
5 3 d Sharon, Pa.

FOR SALE—A first-class tile and brick plant in Iowa, capacity 15,000 brick, and tile in proportion. Reason for selling, age. Address, H. L. SWIFT,
5 3 d Riverside, Iowa.

FOR SALE.

Two complete sets brickmaking machinery, including Chambers brick machines, elevators, clay rolls, granulators, hoists, etc. Address ILLINOIS BRICK CO.,
3 3 c Chicago, Ill.

WANTED—A good foreman for dry press yard in the South; also good sorter. State wages expected and experience, with references. A good opening for the right man. Address, DALE,
5 1 d Care Clay-Worker.

WANTED—Position as superintendent of stiff mud or dry press brickyard. Down draft or continuous kiln. Salary \$125 per month. Northern states preferred. Address, C. F. V.,
5 1 c Care Clay-Worker.

FOR SALE—One No. 80 Brewer board delivery cutting table with attachments for cutting two thicknesses of brick. First class condition, used only three days.

BESLEY BRICK COMPANY,
3 3 d Council Bluffs, Iowa.

FOR SALE—The following Raymond machinery, capacity 20,000 to 24,000 per day: One Daytonia No. 2 brick machine, one 8-ft. pug mill, one No. 20 separator, one board delivery cutter, one 30-ft. conveyor. Clay not suited for stiff mud process. Address, JOS. H. WHITE & SON,
5 1 cm Easton, Md.

WANTED—Situation as general manager or assistant of either dry pressed or stiff mud plant, by one who thoroughly understands the designing, erecting, operating and marketing of the finished product. At present have good position, but desire to make a change on account of climatic conditions. All references from both present and past employers. Address
4 tf d CHICAGO, Care Clay-Worker.

Do you want to sell your brickyard?
Do you want to buy a brickyard?
If you want to buy, sell or exchange any kind of business or real estate, anywhere at any price, address

FRANK P. CLEVELAND,
Real Estate Expert,
965 Adams Express Bldg.,
5 tf d Chicago, Ill.

FOR SALE—750 acres undeveloped brick property directly on Cape Fear river, 12 miles north of Wilmington, N. C., with deep-water transportation to all Atlantic ports. This property contains an ample supply of fresh running water, large deposits of fine red clay and sufficient standing timber to cut 15,000 cords of pine wood, making it almost an ideal location for an up-to-date brick manufacturing plant. Will sell outright and will make a low price to a satisfactory purchaser. S. & W. H. NORTHROP LUMBER CO., Inc.
5 1 dm Wilmington, N. C.

AN OPPORTUNITY FOR BRICKMAKERS.

We have several excellent brick propositions, unworked beds and plants in running order, which if opened up will make big money for the investors. We can sell all the output to good advantage and get good prices for it, but haven't the money to work the thing ourselves. We are willing to sell controlling interest at low price to get a plant running. Opportunity on Puget Sound is the best in the United States. Write us for particulars.

A. M. McKILLOP & CO.,
5 1 dm Building Materials,
524 Alaska Bldg., Seattle, Wash.

WANTED—Immediately, single man who thoroughly understands burning drain tile and fireproofing; must be sober and reliable and wages moderate. Address, giving age, wages expected and full particulars, to P. O. BOX 227,
5 2 d Albany, N. Y.

FOR SALE.

One No. 26-48 pug mill and one No. 40 hollow ware auger machine, both American Clay Machinery type. Used only six days on a very plastic clay, which did not brighten blades. Are in perfect condition. Reason for selling, will not work our clay. Are replaced by wet pan and steam press. Address, THE CAMP CONDUIT CO.,
5 3 cm Akron, Ohio.

FOR SALE—Soft mud outfit manufactured by the American Clay Machinery Co., consisting of upright stock brick machine with direct attached pug mill, mold sander, brick molds, 5-leaf dump table, 10,000 wooden pallets. All in fine condition; very reasonable price. Apply to
BALTIMORE VITRIFIED CLAY CO.,
5 1 d Baltimore, Md.

FOR SALE—Thirty acres of land containing shale for making paving brick; also high grade of potters clay, limestone and one lime kiln for burning fertilizing lime, coal enough on land to burn lime, 8 brick kilns. All located on the B. & O. R. R. Inquire, A. H. COLEMAN,
5 3 cm Massillon, Ohio.

OPPORTUNITY.

Ironton, Ohio, and vicinity, is destined to be the greatest clayworking center of the United States. This region has unbounded supply of clays and shales of all kinds, except kaolin. Railroad facilities are unexcelled. Fuel the cheapest. We can supply you with common or preferred stock in going concerns, or sell plants outright, or sell you clay lands, or furnish sites for plants with clays on royalty. Right people financially assisted. Paving, or fine pressed brick, terra cotta or fire brick propositions will find this locality superior. Reference, any responsible person in Ironton. THE TRI-STATE IMPROVEMENT CO.,
5 3 dm Ironton, Ohio.

FOR SALE.

Brick yard consisting of 20 acres of land, twelve 2-room tenement houses, three 4-room tenement houses; one large 2-story barn, 4-mold Boyd dry press, one 6-ft. dry pan, one clay gatherer, one Hercules mud machine and sander, one 13-inch by 20-inch H. S. & G. engine, one 54-inch by 16 foot boiler, one fireproof waste heat dryer, 80 rack cars for same, two large up draft kilns. Machinery all practically new, having been used only a few months. Yard located on railroad near large city in the South. Demand for all the brick which can be made, at \$7.50 to \$8 for common brick and \$15 for press brick. Will sell entire plant for \$6,000, \$1,000 cash, balance on easy terms. Address, J. C.,
5 tf d Care Clay-Worker.

COMPLETE BRICK MAKING OUTFIT FOR SALE CHEAP.

We are consolidating our paving brick plants. This throws out of use:
One center crank, 100 h. p. engine.
Two boilers, 50 h. p. each.
One feed pump.
One 8-ft. Frost pan, wood frame.
One elevator.
One pug mill.
One auger machine, 50,000 capacity.
One Freese automatic cutter.
Shafting, pulleys and belting.
All in good working order and valued at over \$5,000.
Will sell same cheap—immediate delivery.
STREATOR PAVING BRICK CO.,
4 3 c Streator, Ill.

Philadelphia **LINK-BELT COMPANY** Indianapolis
 New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY

CLAY MANUFACTURING PLANT TO LEASE.

Located near Wilkesbarre, Luzerne County, Pa. In first-class condition and fully equipped for the manufacture of common brick and paving brick, with large supply of shale; capacity 40,000 bricks per day. Shipping facilities are excellent, there being switches from Lehigh Valley Railroad and Central Railroad of New Jersey directly into the yards. Good accommodations for superintendent and men. Fine opportunity for a live brick manufacturer.

This plant will be leased on favorable terms to a responsible party.

For further particulars address

CLAY MANUFACTURER,

Care Clay-Worker, Indianapolis, Ind.

Robert Twells Will Buy or Sell Second-Hand Brick Machinery.

For some time past, I have been devoting my time to assisting fellow clayworkers who have had trouble in burning their ware, and have always succeeded in obtaining better results in burning, as well as improving the ware, shortening time of burning, saving coal and getting the desired color.

SECOND-HAND BRICK MACHINE EXCHANGE.

I have now opened an Agency or Exchange for second-hand brick machinery and brickyard supplies of every description. Why buy a new machine when you can buy a good second-hand machine for half the price? Many machines are taken out to make room for one of larger capacity, or because it was not adapted to the particular clay it had to work, or because the clay bank becomes exhausted, or the plant burned down, or the owners failed in business, or for a number of reasons, none of which reflect upon the machine itself. Tell me what you want, and I will tell you at once whether I can furnish it.

If you are putting in new machinery, and have any machines or supplies that you wish to dispose of, send me a description of same, stating exact condition of machine, and the lowest cash price you will take for same, f.o.b. cars at your place. Listing it for sale with me will not hinder you from selling it yourself if you get a buyer.

ROBERT TWELLS, Walnut Hills, Ill.

TRIPLE PRESSURE BRICK PRESS

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

**We build and equip complete
SAND-LIME BRICK PLANTS,
SHALE AND CLAY BRICK PLANTS.**

Ross-Keller Triple Pressure Brick Machine Co.,

Offices Fullerton Building,

St. Louis, Mo.

FOR SALE.

One 4-mold Boyd press, in first-class condition of repair. Address, 5 1 L IOWA, care Clay-Worker.

FOR SALE.

One combination Freese brick machine, capacity 20 to 30,000 per day. Hand cutting table and winding drum. Excellent condition and only run four months. Good reasons for selling. Address, DAY, 4 2 L Care Clay-Worker.

WANTED—CLAY SELLER.

WANTED—Man familiar with clay business, especially the selling end, who knows where to find market for ground clay. Address,

THE COLUMBUS & HOCKING CLAY CONSTRUCTION CO.,

Harrison Bldg., Columbus, Ohio.

3 3 cm

FOR SALE OR LEASE.

Complete stiff mud brick plant, located between Waterloo and Cedar Falls. R. R. switch to kilns and coal bin. Four Stewart's down draft kilns, American Clay Machinery Co's brick machine, four faced slide cut automatic machine, Phillips steam dryer. The clay car runs direct to clay pit. Abundance of good clay. Good 140 h. p. Corliss engine and 40 h. p. engine. Cars, trucks and tools. Demand for all output at good prices. Exceptional opportunity for good practical brick man. Address

WATERLOO AND CEDAR FALLS BRICK CO., Cedar Falls, Iowa.

4 3 c

FOR SALE.

SECOND HAND MACHINERY.

PUMPS.

One 20x6x18 "Hughes" duplex outside end packed plunger pump, pot valves.

One 16x8x18 outside end packed plunger pump, brass valves, for heavy press.

One 12x8½x12 "Snider-Hughes" duplex pump, inside packed pistons.

One 8x6x10 "Smith-Vaile" duplex pump.

AIR COMPRESSORS.

One 10x10x12 "Guild & Garrison" horizontal duplex, steam driven.

One 8x8 vertical, steam driven.

One 13x8x12 vertical compound, belt driven.

GAS ENGINES.

One 50 h. p. "Olds" gas or gasoline.

One 50 h. p. "Fairbanks-Morse" gas or gasoline.

One 15 h. p. "Miami," gas.

One 20 h. p. "Ohio," gas.

One 5 h. p., gas or gasoline.

CONDENSERS.

One 7x9x10 "Dean Brothers," jet condenser.

One 10x14x18 "Laidlaw-Dunn-Gordon" condenser.

BOILERS.

One 66 inches by 16 feet, standard horizontal tube.

One 54 inches by 16 feet, standard horizontal tube.

Two 60 inches by 16 feet, standard horizontal tube.

Three 72 inches by 16 feet, standard horizontal tube.

Two 72 inches by 18 feet, standard horizontal tube.

One 105 h. p. "Wickes" horizontal water tube.

ENGINES.

One 18x26x42 heavy duty, tandem compound, Allis-Chalmers corliss.

One 16x24 "Atlas," R. H., plain S-V.

One 12x20 "Mansfield," R. H., plain S-V.

One 12x20 "Columbus," R. H., plain S-V.

One 10x16 box bed, plain S-V.

One 16x32 "Buckeye," R. H. automatic.

One 14x20 "Atlas," L. H. automatic.

One 10x18x12 "Erle-Ball," Ver. Cross Com. Aut.

Two 9x15x9 "Westinghouse," Com. Ver. Aut.

One 8x7 "Westinghouse," Aut. Ver.

HEATERS.

One 300 h. p. Ver., closed.

One 250 h. p. Hor. closed.

One "Rice" heater and B. F. pump, combined.

Also other sizes than given in list, if wanted.

Prices and description on application.

C. C. WORMER MACHINERY CO., 77 Woodbridge St., W., Detroit, Mich.

3 3 d

WANTED, FOR SALE. ETC.

WANTED—Position as sanitary or terra cotta presser, by steady teetotaler. Have had twelve years experience in making all kinds of fire clay enameled goods. Can give good references. Address, 5 1 c J. W., care Clay-Worker.

WANTED—Position by an experienced middle aged married man, now employed, as general sales agent or manager of brick plant. Full of energy and good character. Address, SOL, 3 3 cm Care Clay-Worker.

FOR SALE—One Wellington No. 2 disintegrator, price \$100. One Wellington 16 ft. clay elevator, 12-inch belt, price, \$50. One Carnell's all iron clay tempering wheel, price, \$50. Address, 3 tf d MAC, Care Clay-Worker.

FOR SALE—Only brickyard in rapidly growing city of 12,000, common brick selling for \$12.00. Demand enormous, great possibilities for this plant. Will easily pay for itself this season. Price \$4,500 to quick buyer.

T. H. McMICHAEL,
Lewistown, Pa.

FOR SALE—Brick and tile plant doing excellent business in a live town. Make and sell two million brick and tile annually. Everything in first class running order. Splendid proposition. Plant built 3 years ago. Reason for selling, to close partnership. No triflers or traders need apply. Address, OAKES BROS., 3 3 cm Iowa City, Iowa.

FOR SALE.

We offer at a sacrifice the following Boyd presses: One 3 mold standard 1891 pattern; two 4 mold standard 1897 pattern. All in good condition. Inspection invited. Immediate shipment.

HARBISON-WALKER REFRACTORIES
COMPANY,
Farmers Bank Bldg.,
Pittsburg, Pa.

3 4 c

FOR SALE CHEAP.

One Henry Martin letter A brick machine and pug mill, complete and in good condition. One 50 h. p. boiler. 40,000 lath pallets, 10 by 33, also standards for same. Standard 2 by 4 inches by 6 feet, pine, with a 2 by 4 by 24 inch foot piece, 10 one inch pins. Cheap for cash, f. o. b. Cleveland, Ohio. Address,

JOHN WILSON,

23 Stillson st.,

3 tf d Cleveland, Ohio.

FOR SALE.

A practically new outfit.
Martin Letter B Brick Machine.
Martin 9 Ft. Pug Mill.
Martin elevator with belt.
Martin Brick Barrows (six.)
Martin double deck trucks (three.)
Kiln grates, doors, 10,000 pallet boards.
A complete outfit. Been used but three months. Good, desirable property, in excellent condition, but must be sold at once at some price.

SIRENO F. ADAMS, Attorney,
3 3 cm Dansville, N. Y.

HAVING received a patent covering an improved method of conveying brick from machine to kiln, and drying and burning same by forced draught without dry kilns, doing away with center distributing ducts as in other systems, I am prepared now to install plants with my system at a much lower yard right than charged by others.

An interest in my patent is for sale. CHAS. WELLER, owner of patent No. 842043, Box No. 65, Atlanta, Ga. 5 2 d

COX'S Special Drawn Coil Wire is

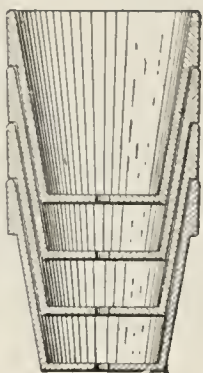
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

For End-Cut, Side-Cut and Automatic Tables.

GEO. S. COX, East Liverpool, Ohio.

Satisfaction guaranteed. Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots;	3,500 five-inch Pots;
4,000 four-inch "	2,000 seven-inch "

Write for Circular and prices.



The Rockwood Mfg. Co.,

1801 English Ave.

INDIANAPOLIS, IND.

The Kiln of Kilns is the
"IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

For full particulars please apply to

J. OSMAN & CO., Ltd.,

Cable Address: Dampening, London.

Arundel St., Strand, London, W. C.

THE
WEBB WIRE WORKS

MANUFACTURERS OF

MUSIC WIRE

NEEDLE WIRE

NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE
CUTTING WIRE, drawn especially
to withstand abrasion.

Send for prices of wire in coils.

CANADIAN TRADE.
Wooden Brick Pallets.

WRITE US

BARCHARD & Co., Limited,

135-151 Duke St.,
TORONTO, CANADA.

BOOKS FOR BRICKMAKERS

"CLAY GLAZES AND ENAMELS," H. R. Griffen.....	\$5.00
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"TABLES OF ANALYSES OF CLAYS," Alfred Crossley.....	1.00
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Mailed, postage free,
on receipt of price,

T. A. RANDALL & CO., Publishers, Indianapolis, Ind.

Warwood Kiln Co.

SEMI-CONTINUOUS, ROUND AND SQUARE DOWN-DRAFT KILNS
MUFFLE KILNS and
DIRECT AND WASTE HEAT DRYERS.

Warwood's Semi-Continuous Kiln, the cheapest, simplest and most effective first-class kiln on the market. It combines all the advantages of the best type of single down-draft kilns with the fuel saving features of the continuous kilns.

It can be built either round or square and each kiln can be used individual or continuous, as desired.

Your present kiln, now constructed, can be easily and cheaply changed to Warwood's Semi-Continuous System, and in most cases your own style of kiln bottom can be used, and without any perceptible difference to its working features.

Warwood's Semi-Continuous System can be successfully applied to all kilns for burning all grades of Brick, Sewer Pipe or Fireproofing. In fact, anywhere a single down-draft kiln is now used.

In a correctly weighed test in a 100,000 capacity round down-draft kiln, we have burned all hard brick with 300 lbs. of coal per M, a saving of more than 60% of the fuel formerly used, and will guarantee to burn 95% hard brick.

Warwood's Kiln will burn any kind of fuel that any ordinary down-draft kiln, either coal, oil or gas. Address:

WARWOOD KILN CO.,

BEAVER FALLS, PA.

**Southern Address,
Augusta, Ga.**

We Manufacture

These Buckets

In All Styles, Sizes and Gauges.

Orders Shipped Promptly.

**COLD ROLLED
SPIRAL STEEL CONVEYOR.**

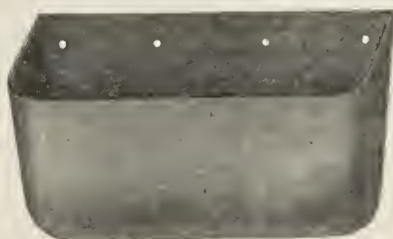


**We Also Make Shafting,
Pulleys, Friction Clutches,
Sprocket Wheels, etc.**

**WEARS BEST, Costs No More.
WE MAKE this Conveyor in All Styles
and Gauges.**

SKILLIN & RICHARDS MFG. CO., CHICAGO.

SALEM BUCKETS



FOR SALE.
One 3-mold Andrus press, in first-class condition of repair. Address,
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Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States.
WESTERN CLAY DEVELOPMENT CO.,
Van Meter, Iowa.

FOR SALE—Wiles horse power brick machine, used one summer; two tempering wheels, complete; three mud barrows; nine green brick barrows. Will sell at a reasonable figure and will put them up for person wishing them. Will show them how to manufacture brick; am a practical brickmaker. Reason for selling, have given up the business. Address,
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ATTENTION!

Steam Shovels, Cars, Locomotives of all kinds and Rails.

Give us your requirements.

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FOR SALE.

One Chambers end-cut brick machine and pug mill, line shaft, pulleys and boxes, capacity 30,000 brick per day; also six steel trucks and pallets and covers to hold 400,000 brick. This machinery is as good as new, having been run one season only. It is being taken out to install a plant of 100,000 per day, on account of increased demand. Address
THE ALTAMAHA BRICK & TILE CO.,
4 tf d Theo, Ga.

FOR SALE—BRICK MACHINERY.

One 999 Raymond brick machine.
One Raymond automatic cutting table.
58-ft. carrier belt, 112 wood rollers, pulleys, etc.
Three Victor represses, each fitted with three set of dies.
One 10-ft. Raymond pug mill, complete.
We have discontinued the manufacture of paving brick and offer these machines at attractive prices. Address,
ROBINSON CLAY PRODUCT CO.,
3 3 c Akron, Ohio.

ENGINES AND BOILERS.

Engines, 12x36, 16x42, 18x36 and 20x48, Corliss; also, 40 other sizes; all styles in stock.

Boilers, 84x18, 78x16, 72x18, tubular; also, 60 other sizes; all styles in stock.

Let us know what you need and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.,
1735 Powers St., Cincinnati, Ohio.
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DRY PRESS BRICK MACHINERY

New or Second-Hand.

Correspondence solicited.

H. S. SIMPSON,
817 Chamber of Commerce,
CHICAGO, ILL.

[Continued on next page.]

WANTED, FOR SALE, ETC.

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND
CONTRACTING COMPANY,
5 tf d Zanesville, Ohio.

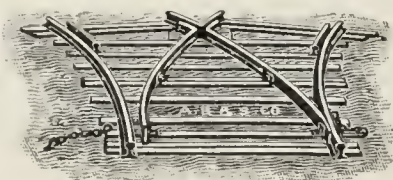
WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH, 5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE CHEAP.

One iron horsepower soft clay machine.
One steam power soft clay machine.
One hand repress.
One disintegrator.
One second-hand sand grinder and sifter.
One 4-mold Boyd Dry Press, never used.
One 250 horsepower heater.
About 500 feet of one-inch wire cable, never used, one-fourth price.
Second-hand dryer cars for sale cheap.
All in first-class condition.

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Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

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(See additional ads under Table of Contents.)

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Established by the Legislature
in 1902 at the

New Jersey State College,

RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture.

Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

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Department of Ceramics.
DR. W. O. THOMSON, President.
Columbus, Ohio.

The Wonder of the Age, Grateless Furnace (Patented.)



For up draft clamp kilns, and down-draft kilns remodeled.

Also plans for new kilns furnished. Yard rights for sale.

Write for particulars to

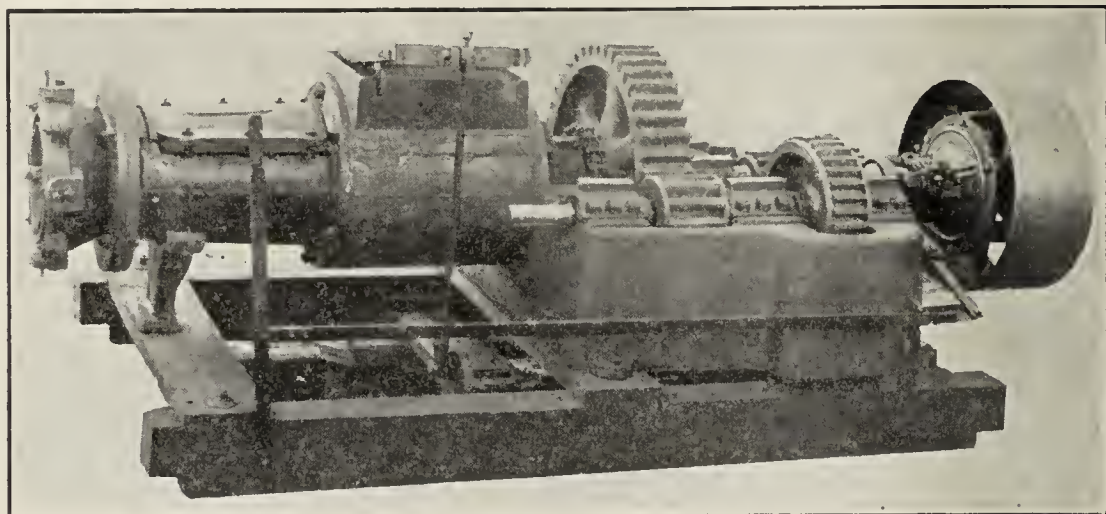
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514 West Fourth St., Dayton, Ohio.

MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers of Brick and Tile Machines.



No. 5 Auger Tile and Brick Machine with our New Endless Belt Cut-off Table, which has no equal for handling tile of all sizes from 3 to 12-inch. This table has carriers which move with the tile, and can be readily and perfectly adjusted to any size tile.

Our Upright Tile Machines are unequalled for large tile, 10 to 24-inch. These machines are all sold on their merits, and warranted to do first-class work. We also manufacture Soft and Stiff Mud Brick Machines.

Full line of Tile and Brickyard Supplies kept constantly on hand. Get our prices.

MADDEN & CO., Rushville, Ind.

[See ads on pages 866 and 867.]

PHILLIPS & McLAREN CO.

PITTSBURG, PA.

Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.

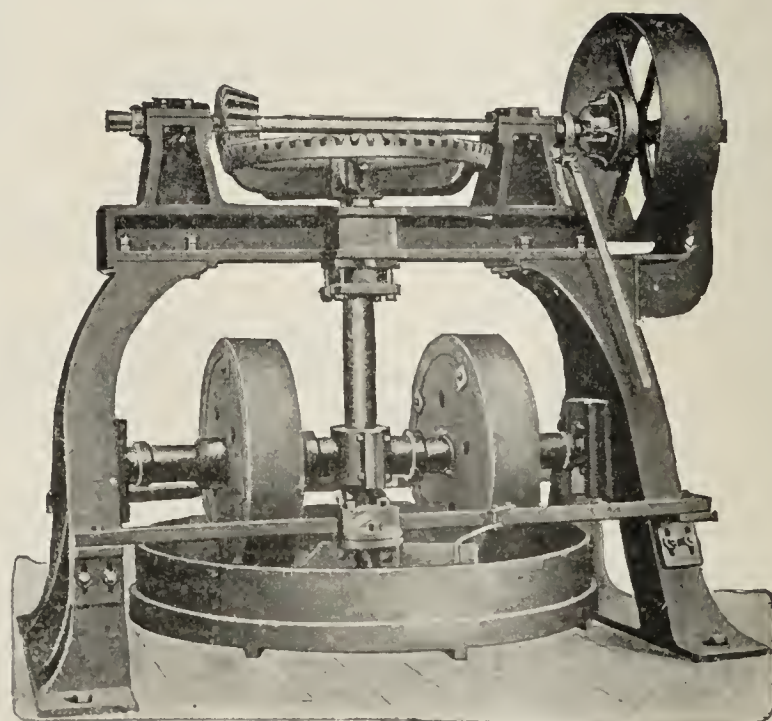
Also
Rock and Ore Crushers.

When writing for Prices state
kind of Clay or Material to be
ground and capacity required.

Eastern Sales Agents

BORTON & TIERNEY CO.,

Stephen Girard Bldg.
Philadelphia, Pa.



Conveying, Elevating and Power-Transmitting Machinery.



The only perfect spiral conveyor. Continuous flight—no laps or rivets.
A Complete Line of the Best Supplies.

Belt, Chain and Cable Conveyors.

Ask for General Catalogue.

H. W. CALDWELL & SON CO., Chicago.

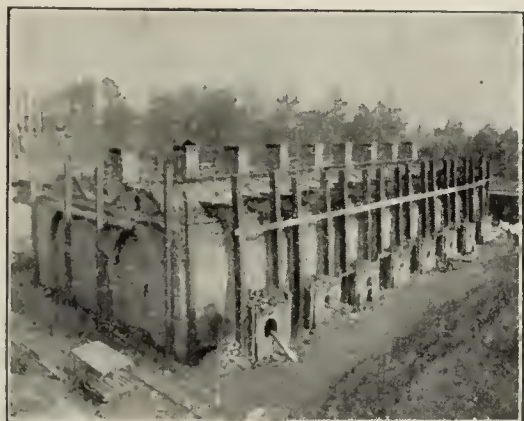
Woodward, Wight & Co., Ltd., New Orleans.

NEW YORK.

Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

A set of plans with all information on how to set and burn either my double or single kiln for \$100 00. This offer is to give every one a chance. It will stand good for but 60 days.



Double Up and Down Draft Kiln.

THE FULTON BRICK WORKS.

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Dear Sir—We are now preparing to build another Dennis Kiln. Kindly send us by return mail your latest prints, showing the furnaces at the corners of the kiln and the updraft holes in the ends.

We are getting fine burns; absolutely all hard.

Yours very truly,
FULTON BRICK WORKS.

W. J. Parrish, Prop.

Wood burning kilns changed to coal burning. Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

F. W. DENNIS,

145 Water Street, Norfolk, Va.

MANGANESE

FOR ALL USES.

LUMP, GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS GOODS A SPECIALTY.

SAMPLES AND PRICES ON INQUIRY.

KENDALL & FLICK

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C. K. WILLIAMS & CO.,

EASTON, PA.

Largest Manufacturers in
United States of

Brick and Mortar

COLORING.

Correspondence solicited.

Samples and estimates cheerfully furnished
on application.

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Sole Importers in the United States of the

Precipitated



Carbonate
of Barytes

The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

Chattanooga Paint Co.,

Chattanooga, Tenn.

Manufacturers of

Red Oxides for Brick-makers' Use.

**Eclipse
Mortar Colors,**

Red, Brown, Buff, Black.

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EXPERIENCED HELP?
See Clay-Worker
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THE PIONEER. Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-working industry for the past thirty years.

It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality
of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

The Kells Foundry and Machine Co.
ADRIAN, MICH.

Mention the CLAY-WORKER
When writing to Advertisers.

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," \$1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

T. A. RANDALL & CO.,
Indianapolis, Ind.

ATTENTION.

Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

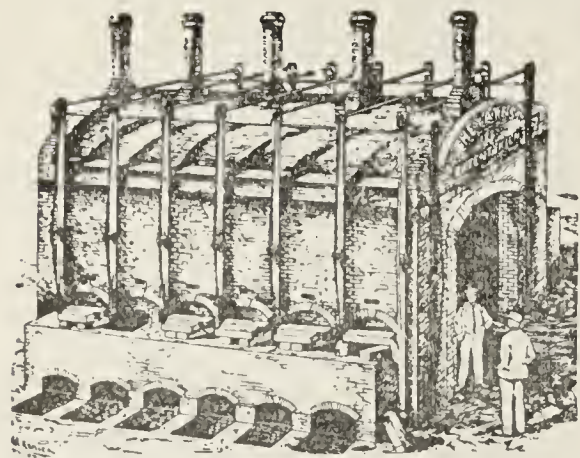
Do you want to buy a

Good Clay Screen?

If So

Correspond with

Stedman's Foundry & Mach. Works
Aurora, Ind.



For Economy of Fuel and Percentage of Hard Burned Brick,

This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

ALFRED YATES,
SHAWMUT, PA.

Or Eastern Terra Cotta, Brick and Tile Co.,
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White Pine Pallets

**For Brick, Roofing Tile,
And Sewer Pipe Boards.**

The Best Are the Cheapest.

Send Specifications and Get Prices.

Mershon, Schuette, Parker & Co.,

Saginaw, Mich.



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NEW ORLEANS
AND CUBA**

REACHED VIA

QUEEN & CRESCENT ROUTE

—AND—

Southern Railway

Winter Tourist Tickets On Sale Daily via Cincinnati. Through Service from Cincinnati, Chicago, Indianapolis, Cleveland, Columbus, Detroit, Toledo and Louisville to Chattanooga, Atlanta and St. Augustine. Double Daily Service Cincinnati to Knoxville, Asheville, Savannah and New Orleans. For Particulars and Booklet write

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Converted to Leviathanism.

"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

"Thanking you for your courteous dealing, and assuring you of our patronage for anything in your line we may need in the future, we beg to remain.

"Yours very respectfully,

"Signed: VALLEY BRICK & TILE CO."



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BOSTON—140 Pearl St.

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NEW YORK—309 Broadway.

PHILADELPHIA—1215-1245 Carpenter St.

Testing and Controlling Apparatus for Clayworkers.

Draft Gauges, Pyrometers, Cones, Watersmoking and Dryer Thermometers, Test Kilns, Electric Furnaces, Experimental Ball Mills, Automatic Brick Counters, Watchmen's Clocks and other apparatus. All designed to keep a record of your business. Prices on application.

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MANGANESE.

BEST QUALITY MANGANESE, CAREFULLY AND UNIFORMLY PREPARED FOR BRICKMAKING. WRITE US FOR SAMPLES AND PRICES.

NATIONAL PAINT AND MANGANESE CO.,
LYNCHBURG, VA.

MINERS AND GRINDERS.

TO PRODUCE POTTERY ECONOMICALLY
USE

CROSSLEY MACHINERY

THE CROSSLEY MFG. CO.
TRENTON, N. J.

If you intend to build or rebuild your brick plant acquaint yourself with the

Chmelewski Patent Kiln

That's just the thing you need to get prosperous.
For descriptive booklet write to

DR. HERMAN ROBERGH,

Sole Agent in the U. S. A. and Canada

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THE secret of **successful burning** of any clay product lies in the **right application of heat**. To apply heat **where it is needed** it is obvious that **draft control is necessary**. **Positive draft control is provided by our**

IMPROVED FLUE SYSTEM

which has **the right principle** and is simple and easy in operation and construction.

Our kilns are profit makers, burning the brick with the **minimum fuel, shortest time; all the same color and all hard**.

We welcome correspondence from those who intend building new kilns, and from those having old kilns that are not giving satisfaction. Address

J. P. BRADLEY & CO., New Cumberland, W. Va.

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Sewer Pipe and Clay-
Working Machinery.

ESTABLISHED 1862.

— AN — Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



for sewer pipe plants, paving and pressed brick plants and potteries. Full information furnished upon application. In writing please be specific in your inquiries.

Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

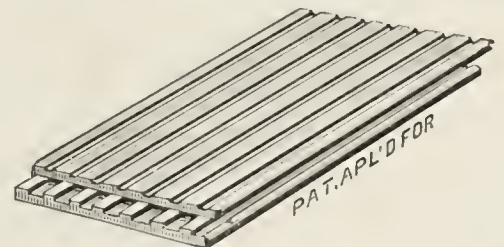
M. SCHULTER,

Industrial Commissioner,

Rock Island-Frisco Lines,

1144 Frisco Building, ST. LOUIS, MO.

Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles. Dies for all shapes, Hips, etc., in metal or plaster

Special Roller and Auger Presses for Shingles, Interlocking Spanish Tiles. Automatic Shingle Cutting and Punching Tables. Special Tile Tables

Stiff Mud Machinery for smaller capacity and horse power, stiff mud brick and hollow block dies, dry press liners.

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Mention The Clay-Worker
When Writing to Advertisers.

Terms
reasonable.

First-class
references.

If you have trouble with Clay, Machinery
or Kilns, then consult

THE BRICKMAKERS' ADVISOR,

Julius J. Koch,

(25 years practical experience)

3325 Caroline Street, St. Louis, Mo.

Special attention paid to dry clay press
processes and down-draft kilns.

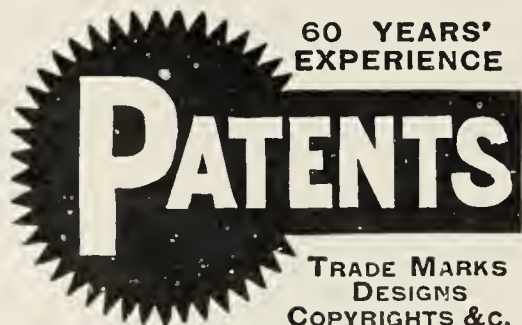
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VANDUZEN'S PATENT STEAM JET PUMPS.

Lowest priced reliable steam-
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Always ready for in-
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quickly ascertain our opinion free whether an
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All patents taken out by me are adver-
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Write for my special offer for obtain-
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Loan and Trust Building,
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Are the Best for
BUILDING KILNS.
Laclede Fire Brick Mfg. Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

**Fire Brick for
Building Kilns.**

Factories:
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Brickton No. 2 } Ottawa, Ill.

General Office:
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CHICAGO, ILL.
Phone Yards 525.

Evans & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

— Made by —

MITCHELL CLAY MFG. CO.,

5627 Manchester Avenue.

ST. LOUIS, MO.

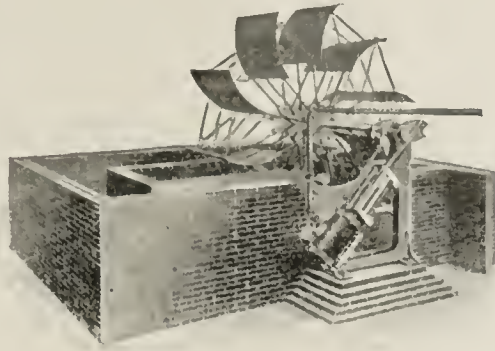
\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

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Purposes, and for mines, with long, heavy shafts and two or more journals. No wobbly shafts, and no overhung fan wheels. Just plain fan wheels. Large volume at moderate pressure. Experience of more than twenty-five years. Orders come spontaneously and as liberally as ever. Voluntary testimonials from users everywhere.

Waste Heat Fans, acknowledged by users to be superior to others working side by side.

Cheap and substantial construction. Original Flexible Braces. Air Cooled Ring Oiler Boxes. Moderate Speed. Brick fan house, most durable of all construction. An efficient Cooler made integral with the machine. Lower price owing to cheaper and better mode of construction. Extensively used.



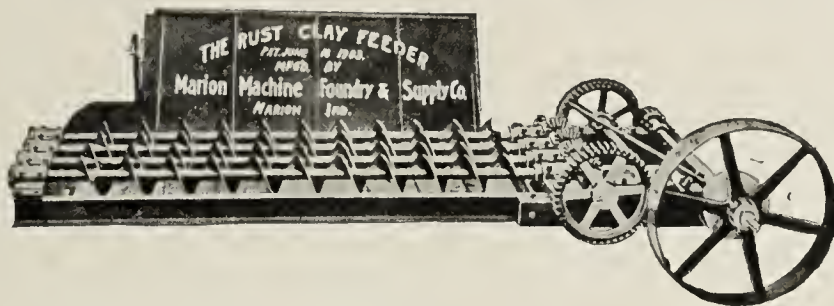
QUALITY IS ECONOMY—Established 1869.

Crawford & McCrimmon Co., Brazil, Ind., U. S. A.

Manufacturers of Hoisting and Hauling Engines, Ventilating Fans for Mines, Waste Heat Fans for Clay Plants, Roofing Tile Presses, etc.

A New Clay Feeder and Mixer.

Send for full descriptive circular.



BOSTON BRICK COMPANY,

Main Yard and Office, South Boston, Va. Branch Yard, Banister River Branch N. & W. Ry. Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

South Boston, Va., Jan. 19, 1907.

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Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men, besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.



If...

You Want to Sell or Buy...

Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

If... You Want a Man

for any position or a position in any connection with the Clayworking Trades use the

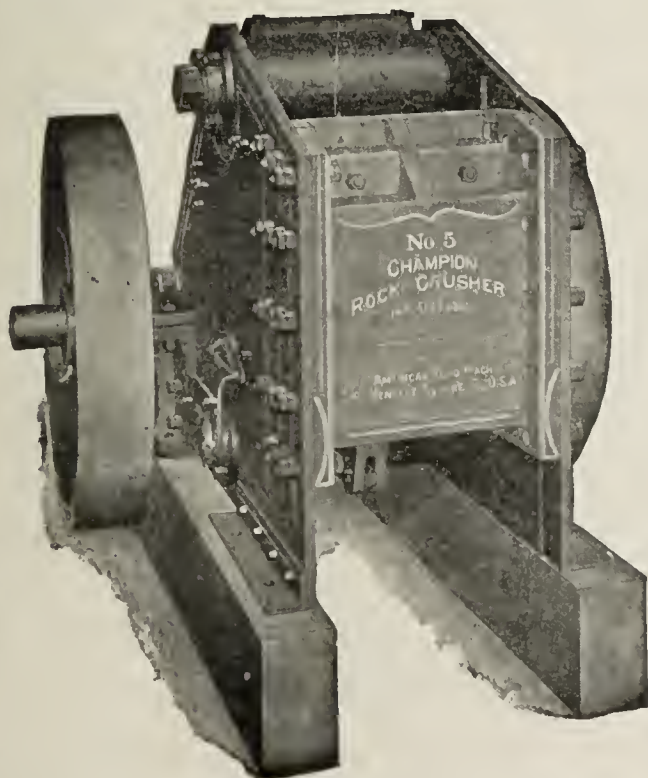
For Sale and Want Columns of...

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The Best, Quickest, Cheapest Method of Securing Results.



NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good

on paper.

It Looks Better

crushing shale, fire clay, rock and other hard material.

THE CHAMPION CRUSHER

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Catalogue is free on application. Address

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A SURE CURE FOR THE CONCRETE CRAZE

"BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE"

AN ELABORATE PUBLICATION

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Issued by the

BRICK CONSTRUCTION ASSOCIATION,

which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

Every brick man should have a book, and see to it that everyone interested in construction in his locality has a copy.

This publication is not sold for profit to the Brick Construction Association, all proceeds being spent for the promotion of the use of Burnt Clay Products.

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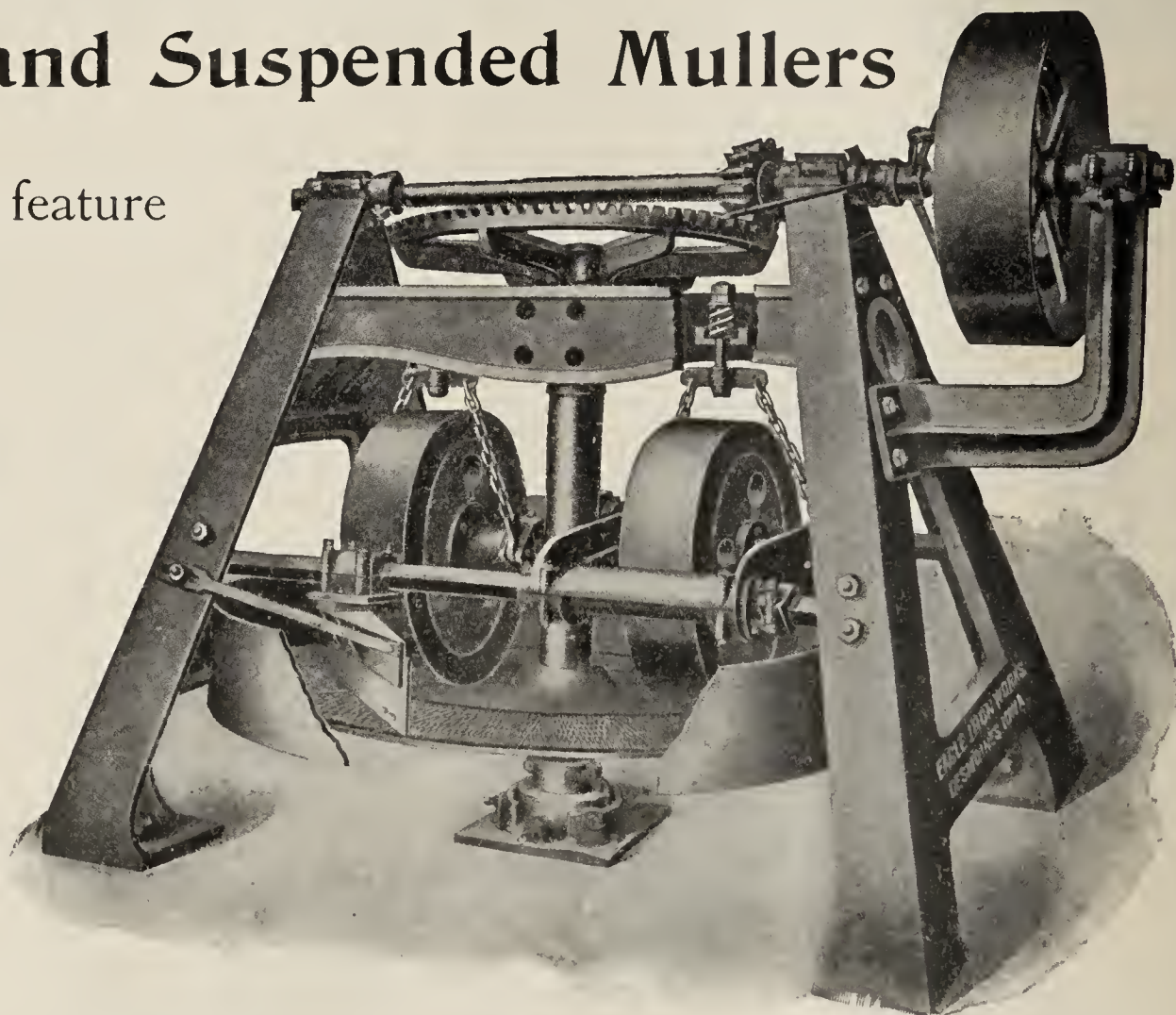
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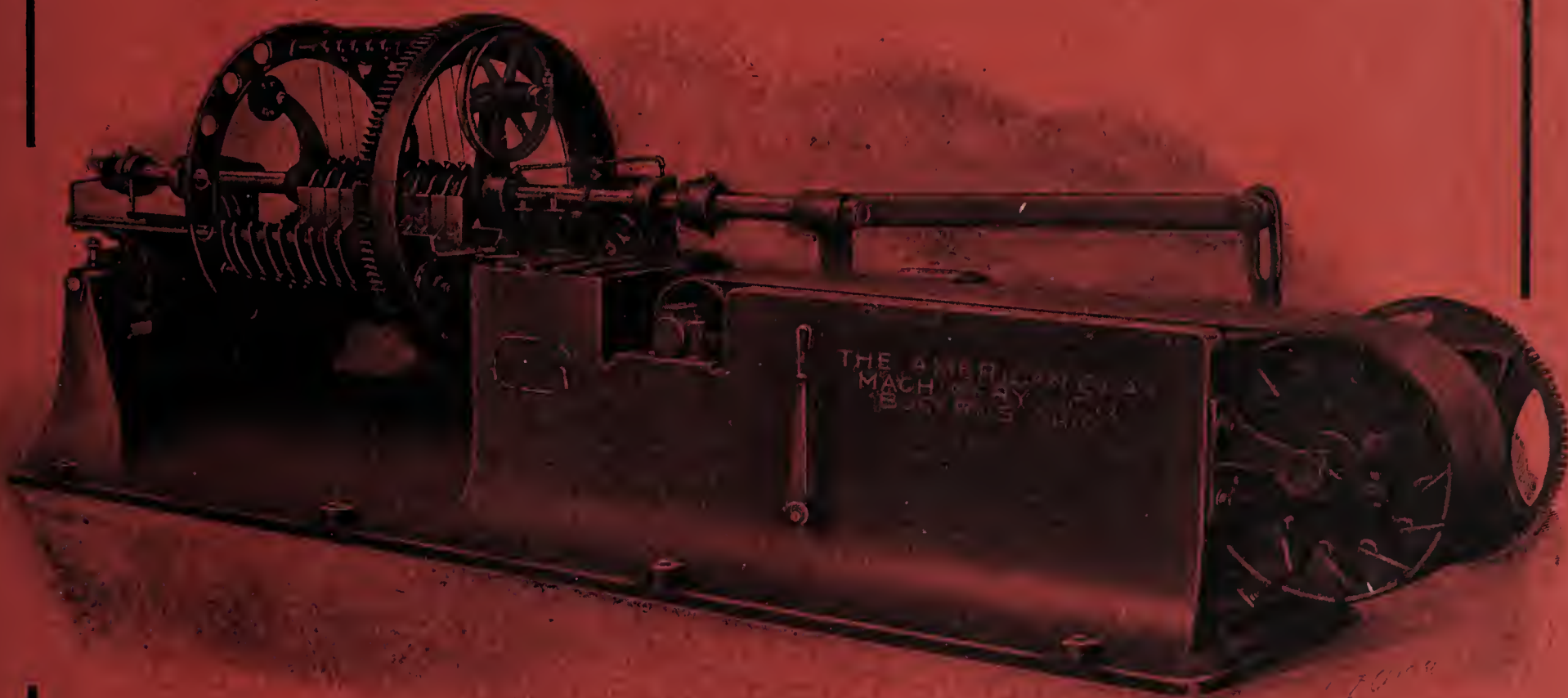
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An Easy Leader in Cutters

The New No. 83 Automatic Brick Cutting Table of the American Clay Machinery Company is an easy leader of all other cutters. It is by far the largest capacity cutter on the market, and has a range from a few thousand brick per hour to the full capacity of the fastest brick machine ever built. Could two ordinary brick machines combine their efforts in pushing a column of clay into this cutter it would easily take care of the output and deliver it in the form of faultless brick, every one perfect and of the same size, free from crooked or odd shapes, and all of a quality to make repressing unnecessary.



No. 83 Cutting Table, Front View.

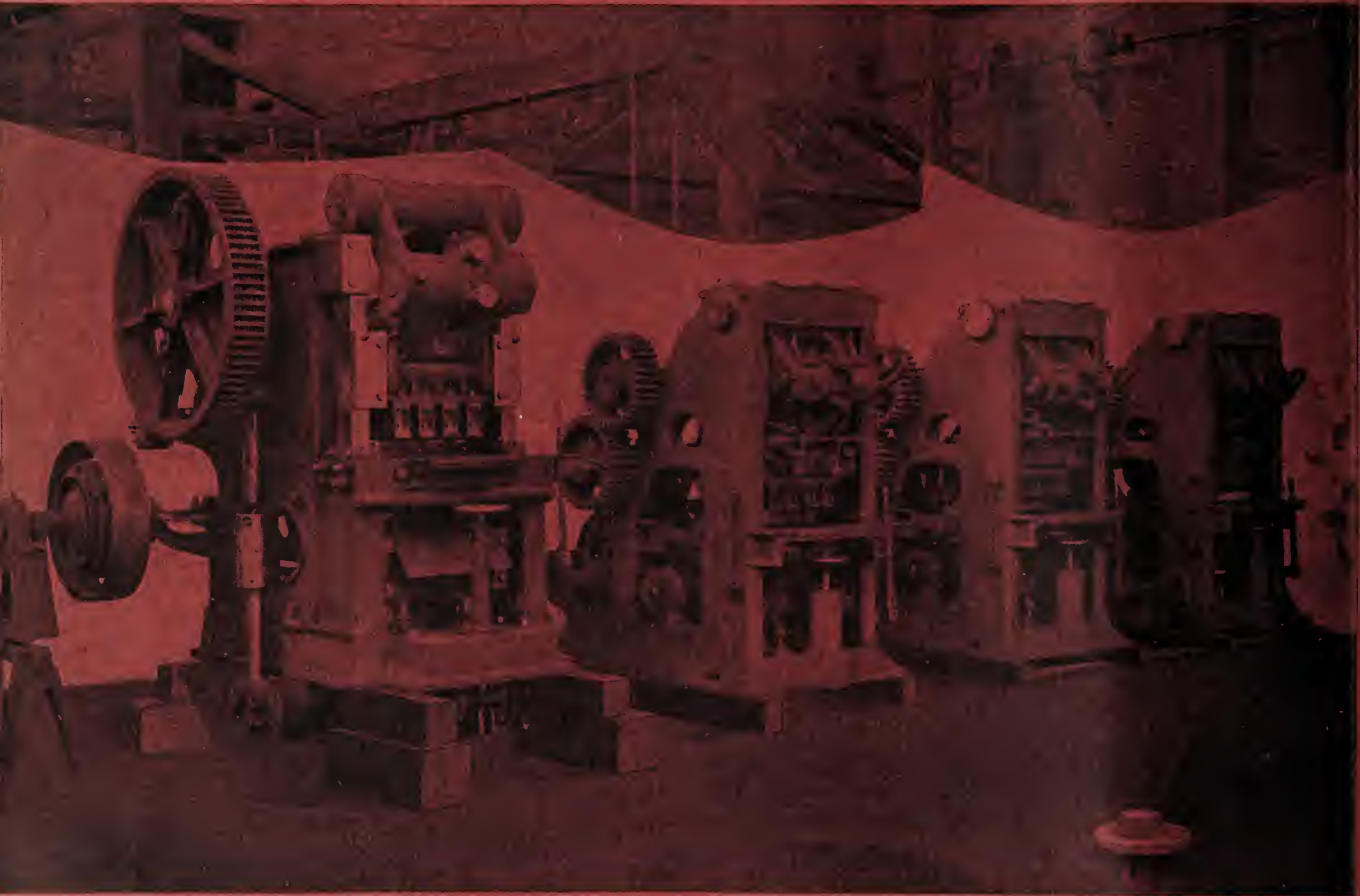
The illustration shows the heavy construction of the No. 83 Cutter. It has a massive cast frame which insures a substantial base to carry all moving parts. The bearings are ample, the movement continuous and easy. The oiling is automatic. The reversal of the cutter is jarless; the wire fasteners simple; the governing mechanism most accurate and sensitive. In brief, this cutter is the very best permanent investment you can make. Full particulars for the asking. We build every machine and appliance for making every class of Clay Products by every known process, including Sand-Lime Brick. Your plant complete in one shipment is our specialty.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

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There is a wide range in capacity in our line of Dry Press Brick Machinery. No matter what capacity you may desire we can furnish machinery to meet your needs. Every Dry Press built in our factory is of a standard Superior quality, no matter whether its capacity be great or small. Our machines are exactingly built,



View Showing Dry Press Floor in Our Factory.

carefully inspected and tested. When you install one of our Dry Press Plants or a single machine you have the very best that experience, a modern factory and excellent material can produce. Particulars on any class of Clayworking machinery or Sand-Lime machinery, on application.

The American Clay Machinery Co.,

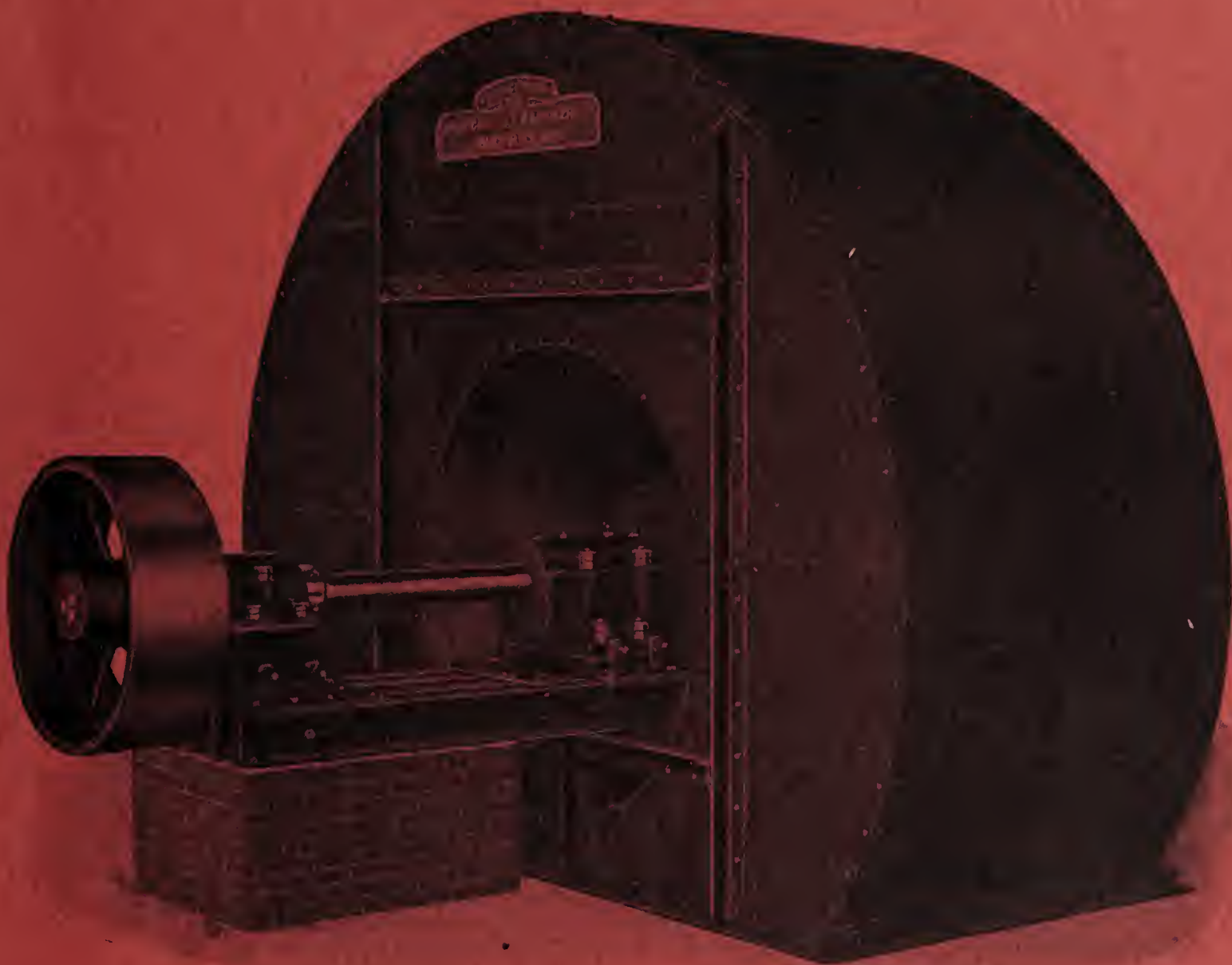
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Quality of Equipment is an Insurance



The quality of your equipment acts as an insurance policy. Without quality in your equipment there is little chance of successful operation.

We are exacting on the point of quality. No opportunity to secure better quality is neglected. That's why we build every part of our equipment in our own factories. We watch the material, construction and workmanship with exacting care. When the equipment is complete we can guarantee it to be free from defects, poor material and workmanship, and the purchaser is assured that he has a standard of quality.



Pulley Driven Steel Plate Fan With Water Cooled Bearing.

We will be pleased to submit a Dryer Layout that will handle your clay successfully and at a marked saving in cost of drying and maintenance. We build every machine and appliance necessary for making every class of Clay Products. Also the most complete and successful line of Sand-Lime Brick Machinery.

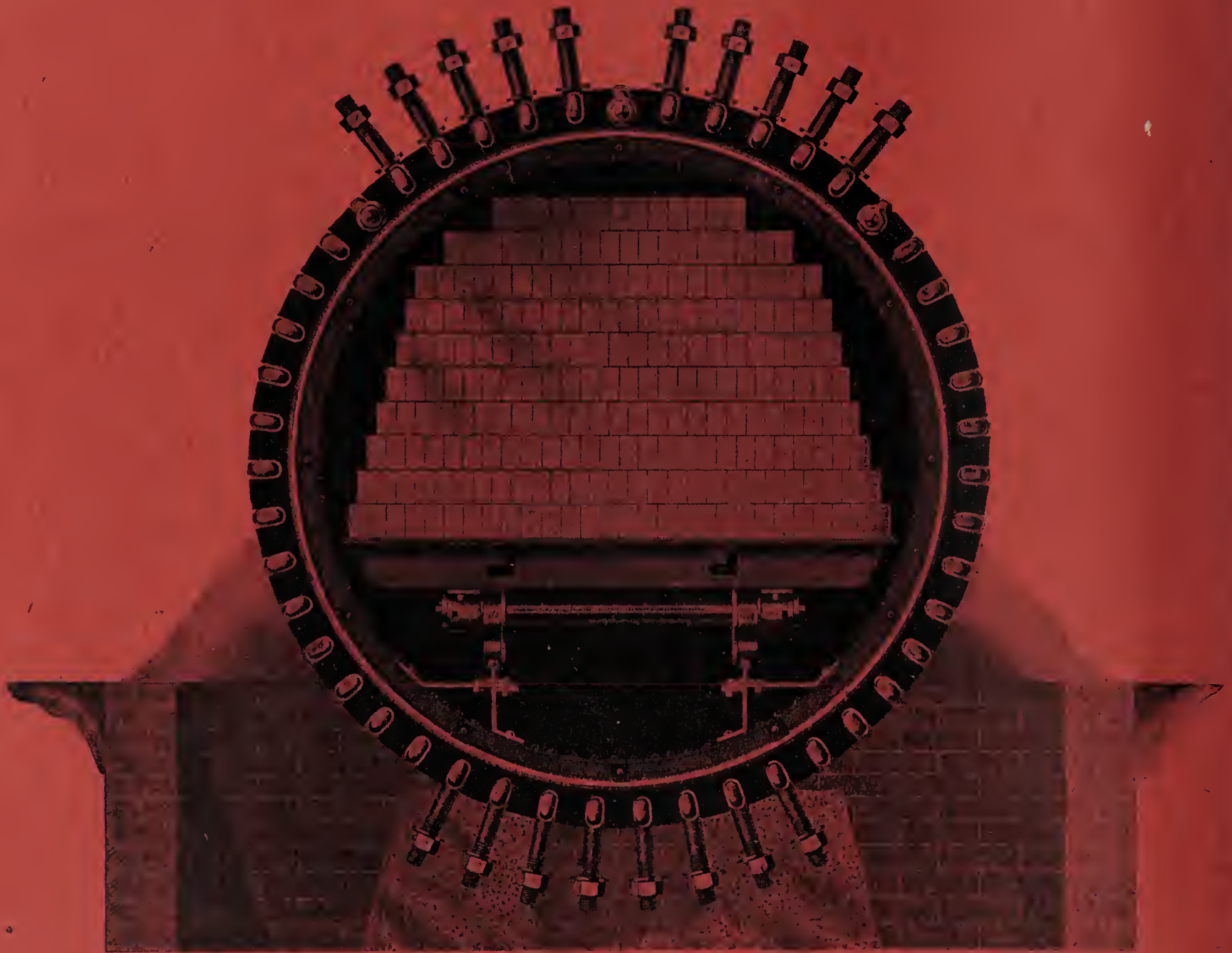
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Sand=Lime Brick Machinery



As builders of machinery for the manufacture of brick by every known process, we have placed upon the market a complete line of Sand-Lime Brick Machinery and appliances. There is no line of machinery so complete for making this class of brick. We have every machine or appliance necessary and equip the entire plant from our own factory. Every machine is substantially and carefully built of the very best material. Being constantly under the supervision of our own foremen we are able to guarantee the quality.

We also build the largest line of Clayworking Machinery and appliances in the world.



The American Clay Machinery Co.,
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REMARKABLE OFFER.

We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for **\$3.00**



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“POST” SELF FILLING CLEANING FOUNTAIN PEN.



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NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



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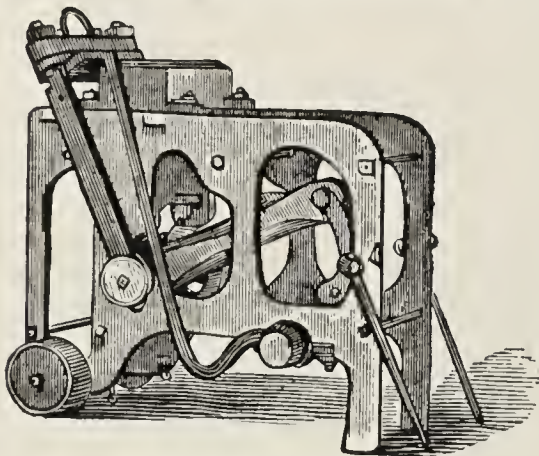
Arranged to Suit All Locations. These Kilns Can be Seen Burning

Roofing Tile, Dry Pressed Facing,
Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

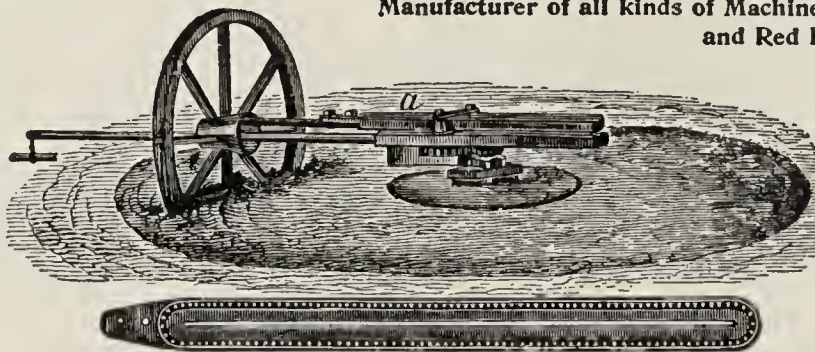


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Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

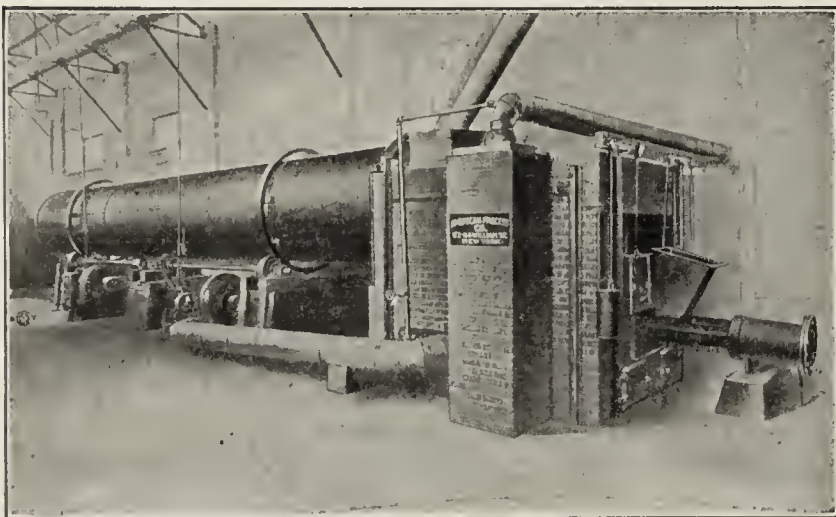
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL, 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

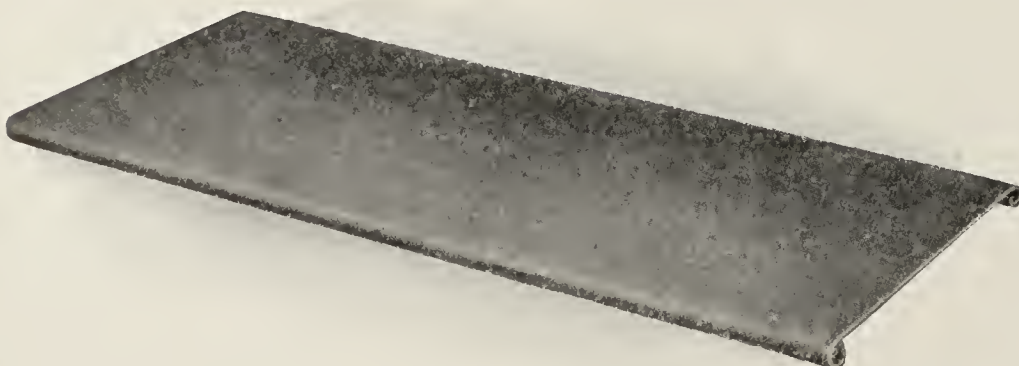
For Clay, Coal, Sand, Marl, etc.

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"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

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THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.

The Spring Rains

will leave your clay pits full of mud and water.

The Pulsometer Steam Pump

will drain them, no matter how muddy or gritty the water. It requires no engine, belt, oil or packing; only a steam pipe from the boiler, and operates equally well suspended as set stationary. Over 25,000 now in use. Send for catalogue.



PULSOMETER STEAM PUMP CO.,

14 Battery Place
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The
**ROESSLER-HASSLACHER
CHEMICAL COMPANY,**

100 William Street,
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As a Preventative of Scums Use
CARBONATE OF BARYTES
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Oxide Tin,
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and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

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THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Lumber City, Ga., Dec. 4, 1906.

Mr. John C. Boss, Elkhart, Ind.

Dear Sir—We are now burning our fourth kiln of 435,000 brick each since installing your system of burning brick with coal (in August.) I liked it at first and would not do without it now, for we get results with it.

Yours, etc.,
Lumber City Brick Co.,
Per W. H. Pitt, Gen Mgr.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

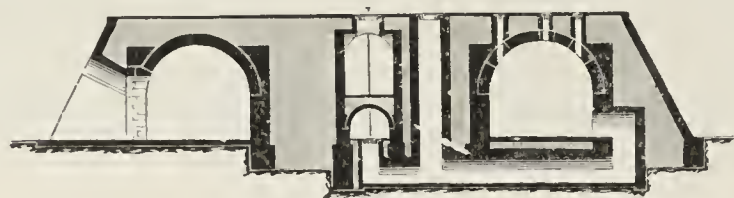
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German Kiln and Construction Co.

(Incorporated)

Engineers and Contractors,

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All Styles of Kilns in the Ceramic Industry.

Hoffman's Continuous Kiln.

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Up and Down-Draft Kilns, Round and Square.

Shanks and Two-Story Kilns, largest in the world.

Muffle Kilns for Glazing and Enameling.

Chimneys built of radial brick.

We guarantee satisfaction, the best work and lowest prices.

Correspondence solicited.

An Old-Time Favorite.

Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & CO.,

P. O. Box 756.

Rome, Ga., U. S. A.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906.

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of 5,000 each,	15,000
2 " 4 "	" 3,000 "	6,000
1 " 5 "	" 2,040 "	2,040
2 " 10 "	" 550 "	1,100
2 " 12 "	" 415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.

The 10 " " 6 ins. and 4 ins.

The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am

Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.



STANDARD Double Side All Steel DUMP CARS (Cradle Type)

Carried in stock in gauges of 24 and 30 inches and in capacities up to 40 cb. ft.

TWENTY YEARS EXPERIENCE.

Railway Equipment for All Industries.

Portable, Industrial and Permanent Tracks, Switches, Frogs, Turntables, Transfer Cars, Steel and Wooden Cars of every Discription for All Industrial Purposes.

Large stock on hand.

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RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
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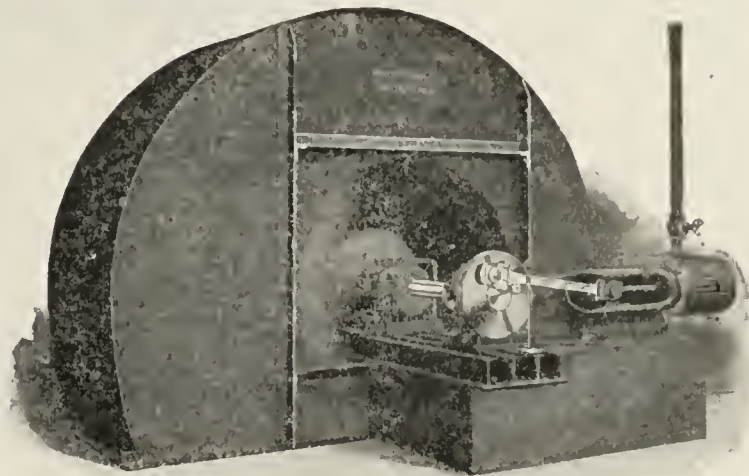
Works: Youngstown, Ohio.
64 Broad St., New York. First Nat'l Bank Bldg., Chicago.
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The Youngstown Car Mfg. Co., Youngstown, O. representatives
for West Virginia, Ohio and Western Pennsylvania.

COAL — HEAT MONEY

All Saved by Using Our
WASTE HEAT DRIERS.

Get Catalogue 56F.

ESTIMATES AND PLANS FREE.



The New York Blower Co.,

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Office:

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BUCYRUS, OHIO.

Stewart Ave. and 25th Place,
CHICAGO, ILL.



B. E. BECHTEL.

We Are PRACTICAL BRICKMAKERS.

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



~~~~~ Jacob Buhrer's Technical Bureau, ~~~~~ CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In Buhrer's Shortened Kiln (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in $1\frac{1}{2}$ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

STEAM SHOVELS FOR BRICK YARDS.



We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co., Marion, Ohio.

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

F. H. HOPKINS & CO., Agents,
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Sand-Lime Brick Machinery

BOYD QUALITY

MODERN METHODS . NO EXPERIMENTING

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation.

Machinery and product guaranteed.

Correspondence solicited.

Chisholm, Boyd & White Company,

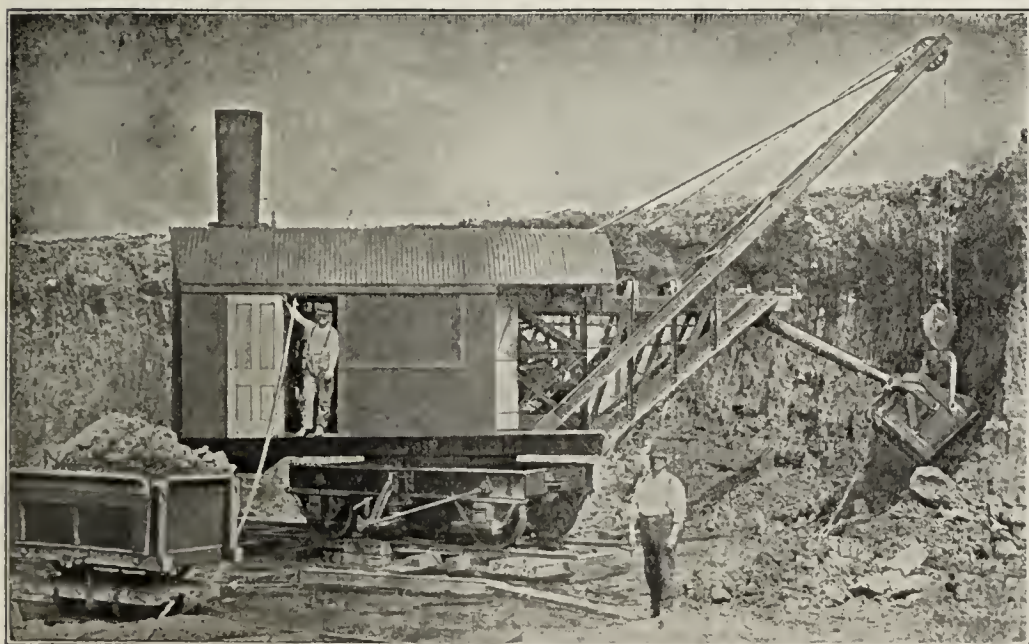
Office and Works, 57 and Wallace Sts.

CHICAGO, ILL.

SEE ADS ON PAGES 758 AND 759.

**Handle Your Clay
With One Man and**

The Thew Steam Shovel.



Type No. 3—George Gynn Brickyard, Cleveland, Ohio.

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

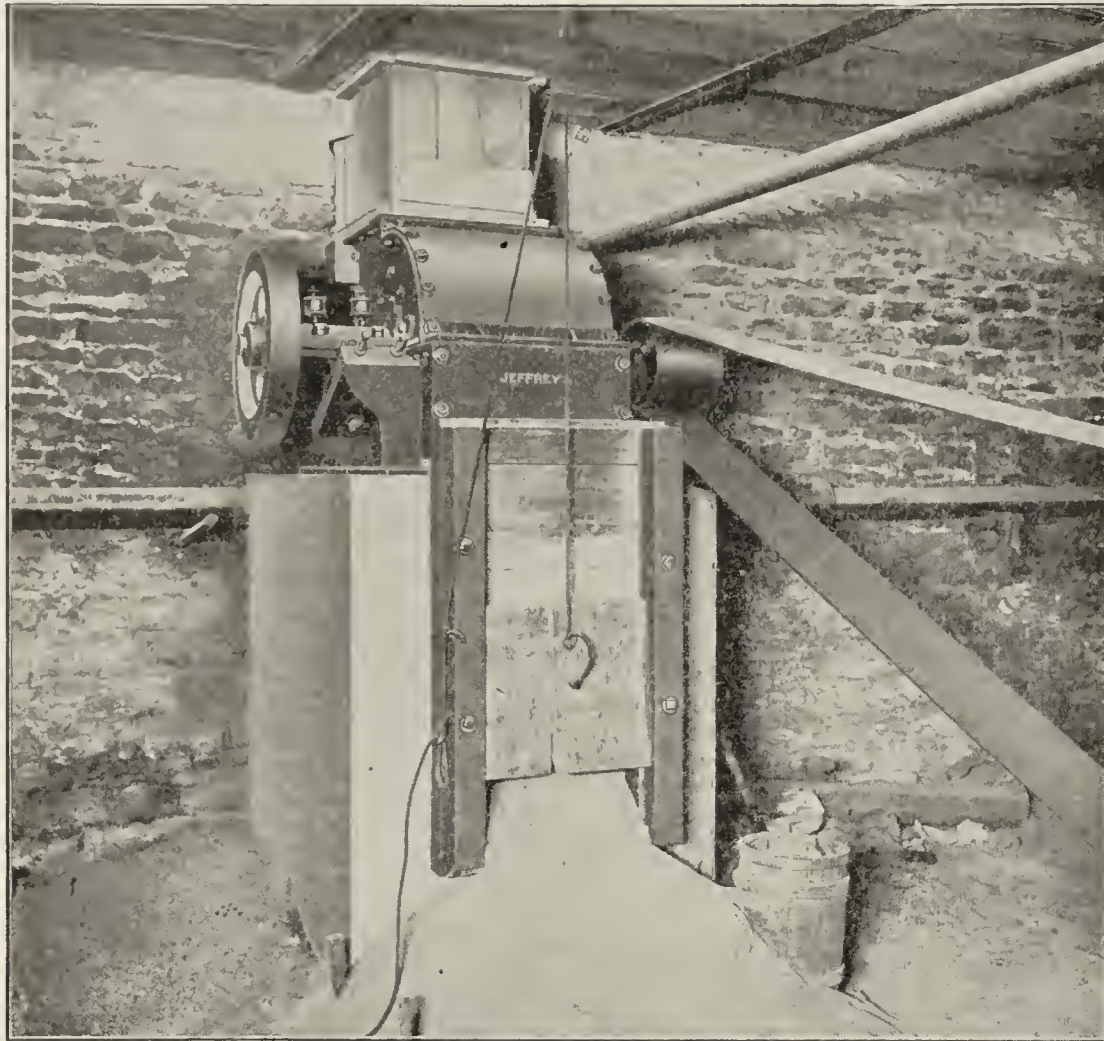
Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.



Crusher Installed for the Cincinnati Gas and Electric Company.
WE MAKE FREE CRUSHING TESTS.

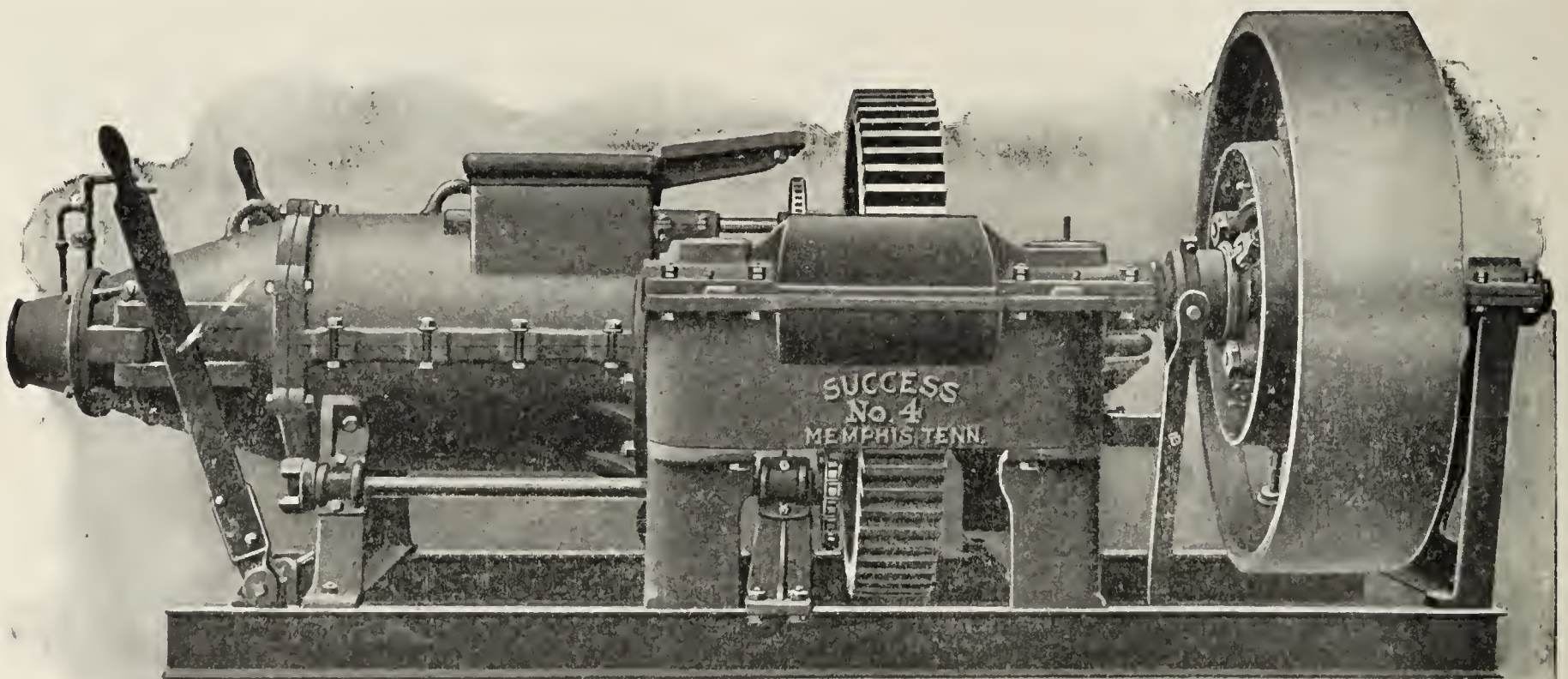
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**RESULTS
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**The JEFFREY
CRUSHER**
on
BROKEN BRICKS.
Reduced to Any Mesh
Desired.

Limestone, Hard Shale,
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Clay and many other ma-
terials treated.

Correspondence invited.

The Jeffrey Mfg. Co.,
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**ELEVATING
CONVEYING
SCREENING**



Cut represents our SUCCESS No. 4 Stiff-Mud Machine, constructed on **steel** foundation, **self-contained** and fitted with **steel** gears throughout. The strongest, most desirable and modern brick machine on the market.

Success Brick Machinery Company,

1403-4-5 Tennessee Trust Bldg., Memphis, Tenn.

The New San Francisco Continuous Kiln

REVOLUTIONIZES THE BRICK BUSINESS IN ANY SECTION OF THE COUNTRY THAT IT IS INTRODUCED IN.

Why?

Because it burns more brick and better brick, with less fuel than any other kiln.

How is that?

Because it has regenerative furnaces.

What are regenerative furnaces?

Furnaces which automatically deliver the heat of the already burned bricks to the fuel just entering.

What does this mean?

Perfect combustion.

What is the most desirable feature of fuel economy?

The use of pre-heated air is of the greatest importance whenever it is desirable to use fuel in an economical manner. All the industrial furnace experts are well acquainted with this principle. In any furnace using gas, powdered coal or atomized fuel oil, it is desirable to use the air of combustion at a temperature considerably above that of the atmosphere. The primary function of preheated air is to increase the intensity of combustion. At a high temperature the affinity of air for carbon or hydrocarbon (coal or oil), is greater than at atmospheric temperature, and combustion will be very much more vigorous.

What are the advantages of such firing?

FIRST—Less loss by oxidation in the furnace; this is made by decreased air excess required for combustion. Oxidation causes shrunken and badly checked brickwork in the furnaces.

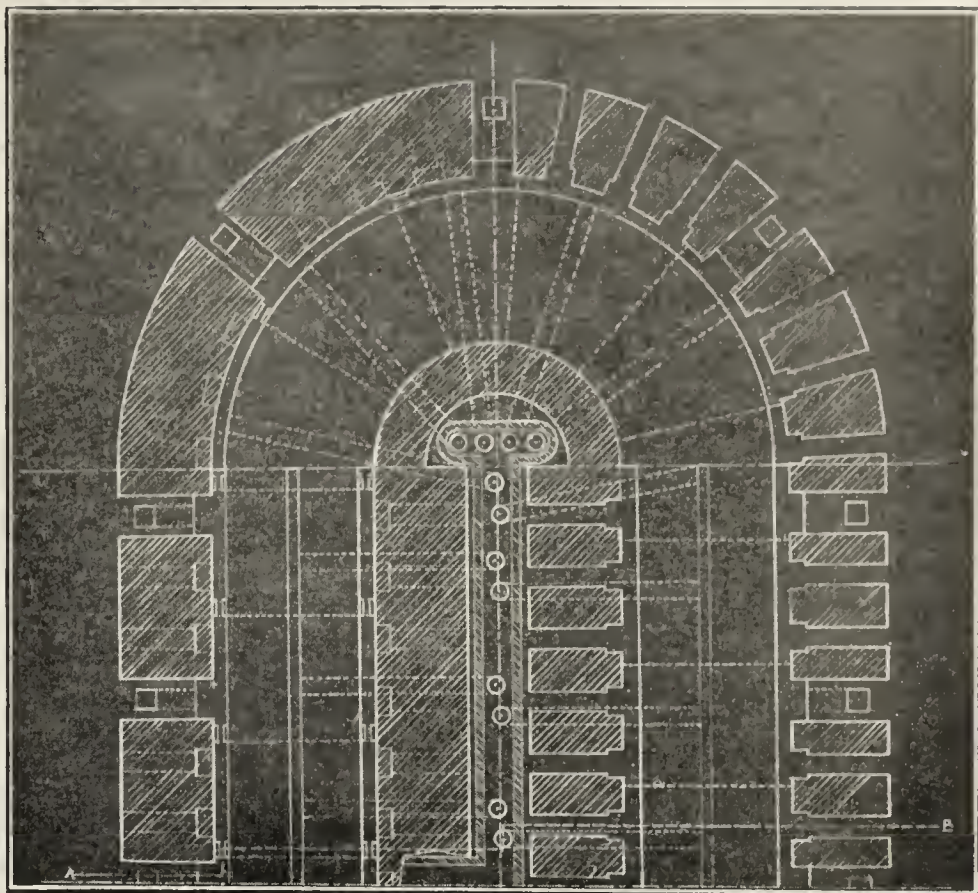
SECOND—Temperature and character of the flame are under better control. Therefore a more even burn can be insured.

THIRD—Higher working temperatures may be obtained; therefore the length of time required to burn the ware is shortened, and a greater variety and better quality of goods can be produced.

FOURTH—Increased fuel economy; this means reducing the cost of production and that is the road to prosperity.

The only perfect continuous kiln with regenerative furnaces for using crude oil, gas or powdered coal fuel is

The New San Francisco Continuous Kiln.



WILLIAM A. BUTLER, Patentee, 34 Parkside Avenue, San Francisco, Cal.

The Exhaust Steam Dryer is THE NATIONAL.

CARROLLTON BRICK CO.

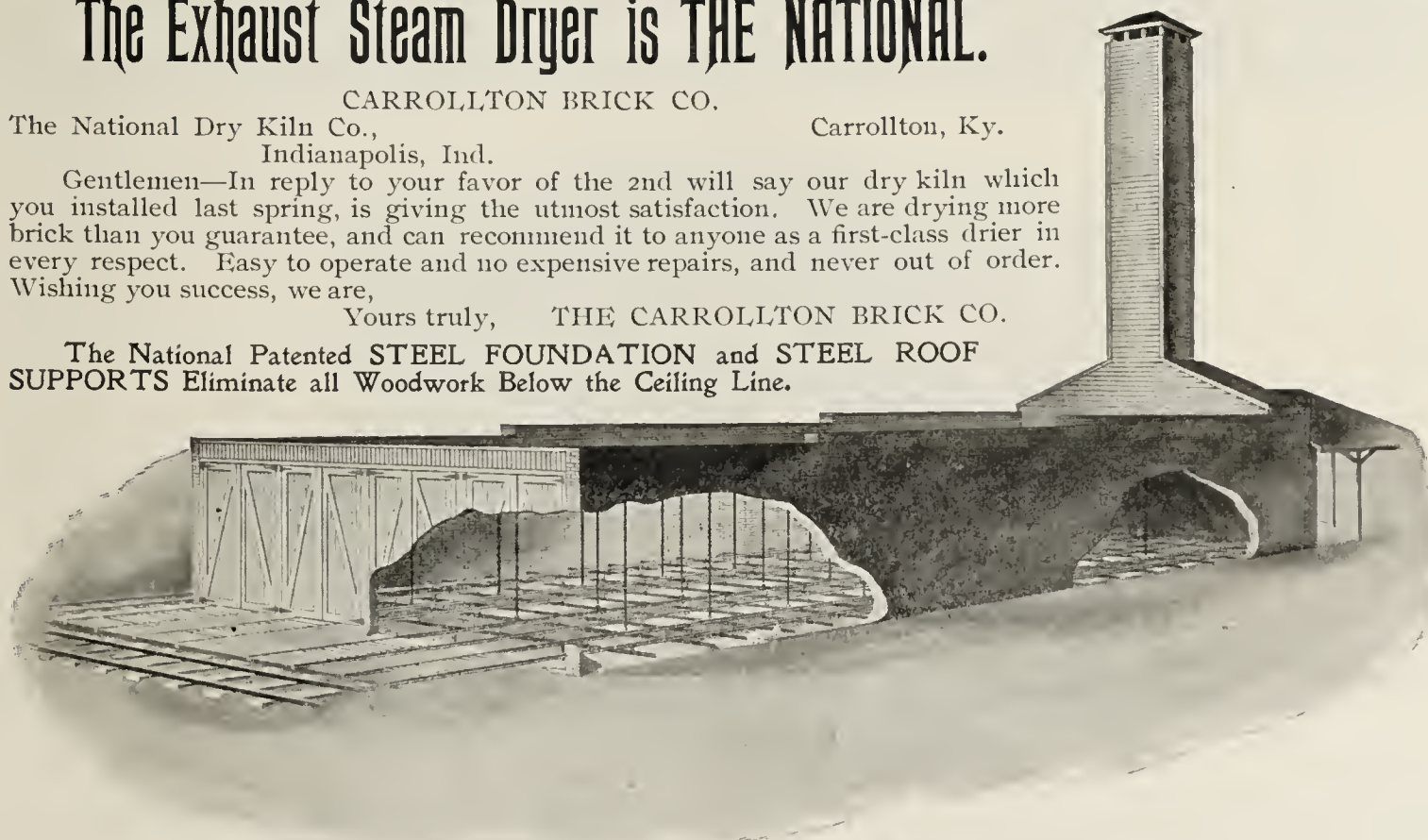
The National Dry Kiln Co.,
Indianapolis, Ind.

Carrollton, Ky.

Gentlemen—In reply to your favor of the 2nd will say our dry kiln which you installed last spring, is giving the utmost satisfaction. We are drying more brick than you guarantee, and can recommend it to anyone as a first-class drier in every respect. Easy to operate and no expensive repairs, and never out of order. Wishing you success, we are,

Yours truly, THE CARROLLTON BRICK CO.

The National Patented STEEL FOUNDATION and STEEL ROOF
SUPPORTS Eliminate all Woodwork Below the Ceiling Line.



We make all kinds of Cars for carrying Brick, Turntables, etc.

The National Dry Kiln Company,

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & BOWEN, Pacific Coast Agents, Seattle, Wash.,
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BRICKMAKERS WHO FAIL

to take advantage of every opportunity to reduce the cost of manufacturing their products are working on a smaller margin than is necessary.

Every dollar's worth of labor or fuel saved is clear profit to the brickmaker.

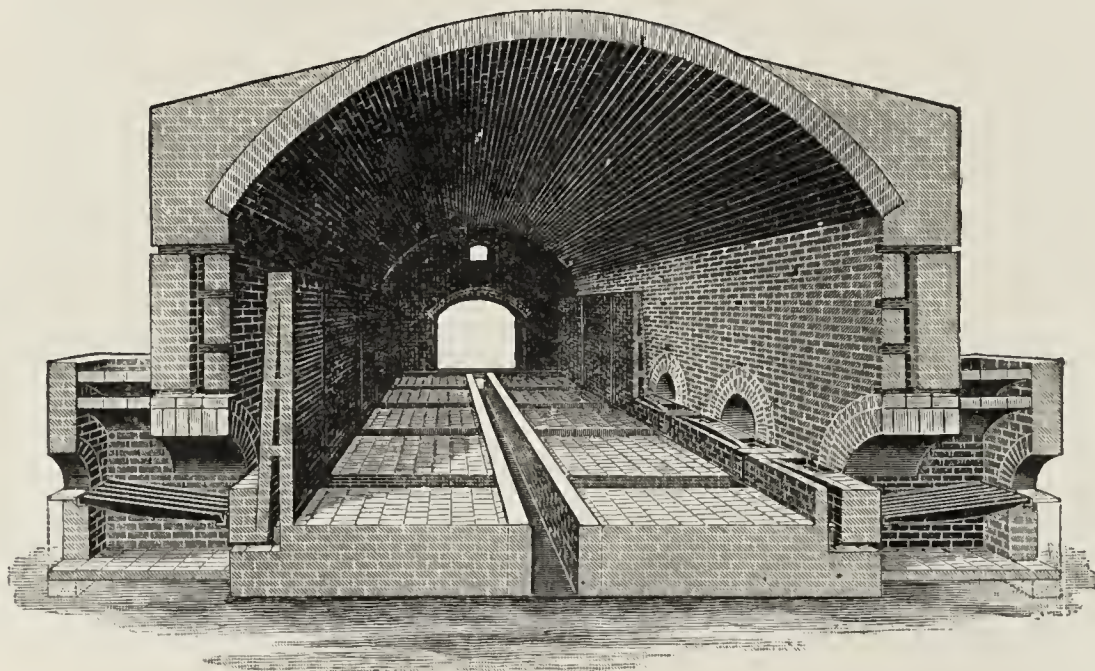
Our new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud or soft mud brick.

THE DRYMORE SYSTEM

7TH AND CHESTNUT STS., ST. LOUIS, MO.

The EUDALY DOWN DRAFT KILNS

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

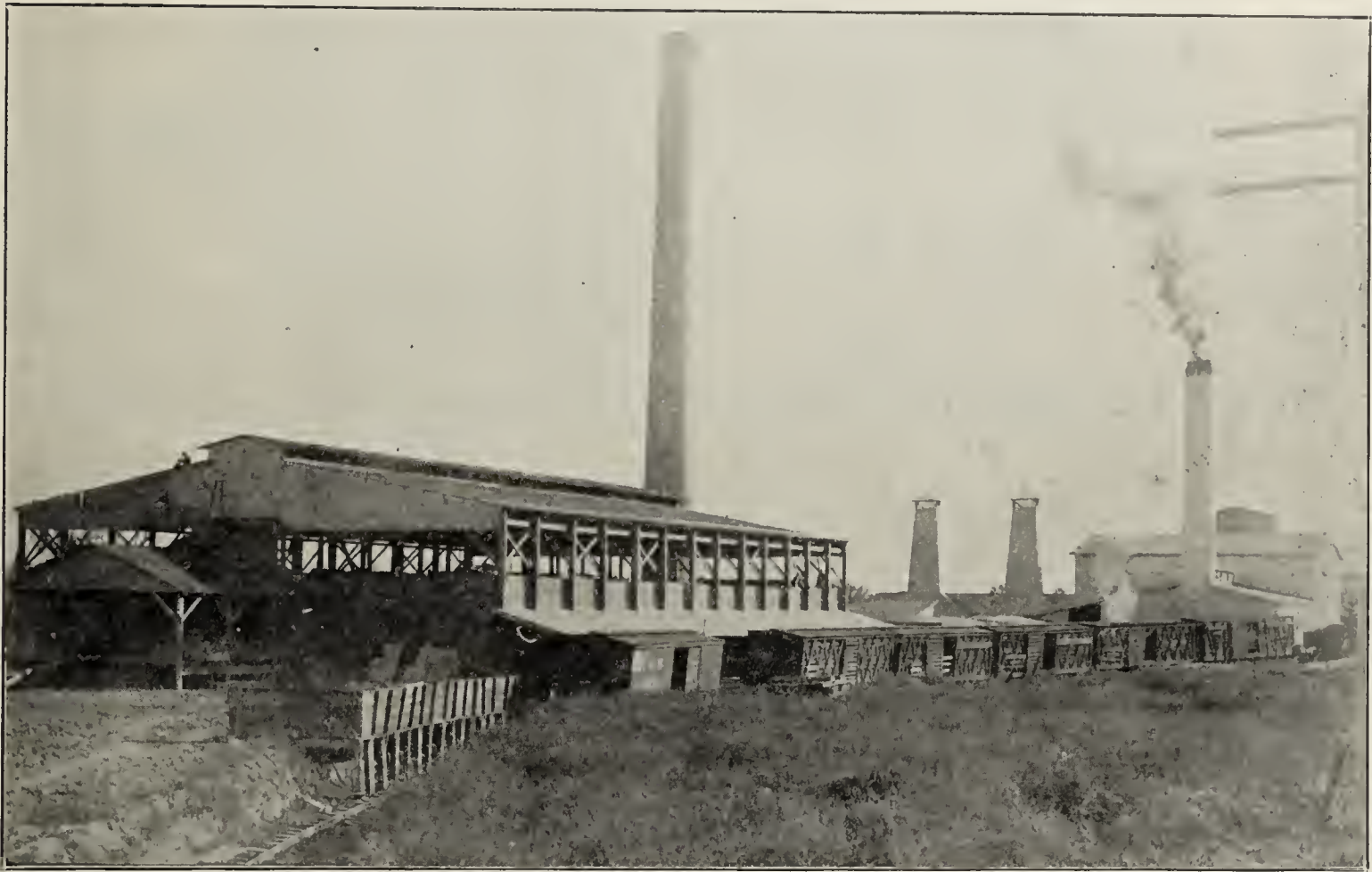
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal, or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg., Cincinnati, Ohio.

The Youngren Continuous Kiln Producer Gas Fired.



THE YOUNGREN GAS FIRED CONTINUOUS KILN AT THE PLANT OF THE INDIANA
DRAIN TILE COMPANY, BROOLYN, IND.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO
Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untieing knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the issue. Enclosed find \$.

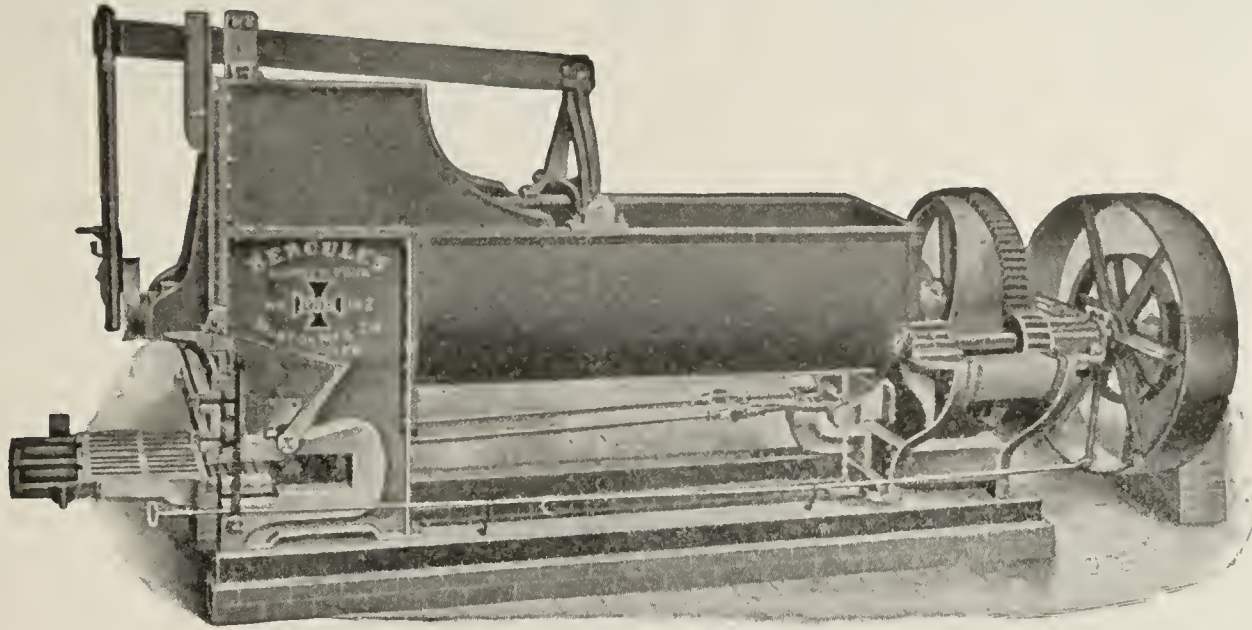
Name

Postoffice

Street and Number

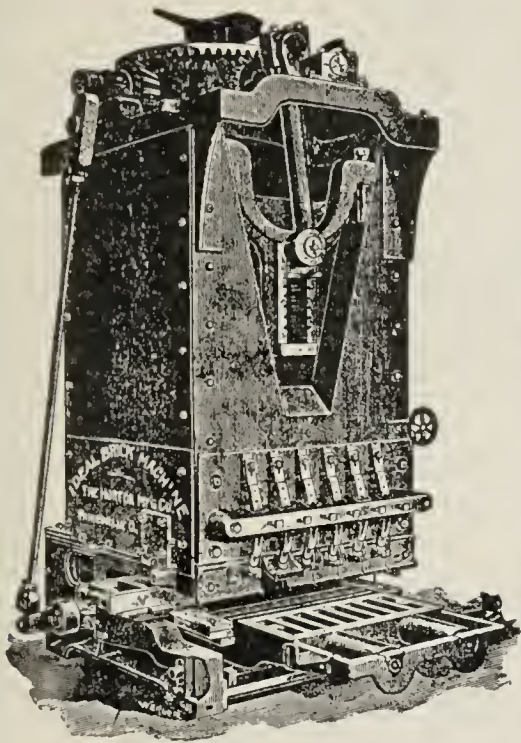
County State

Do Not Miss This Opportunity.

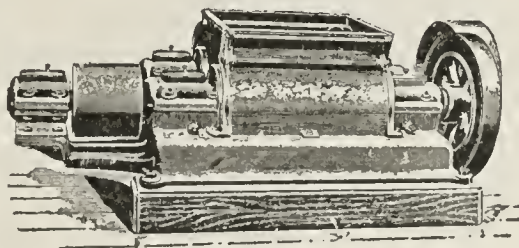


Hercules No. 4 Brick Machine.

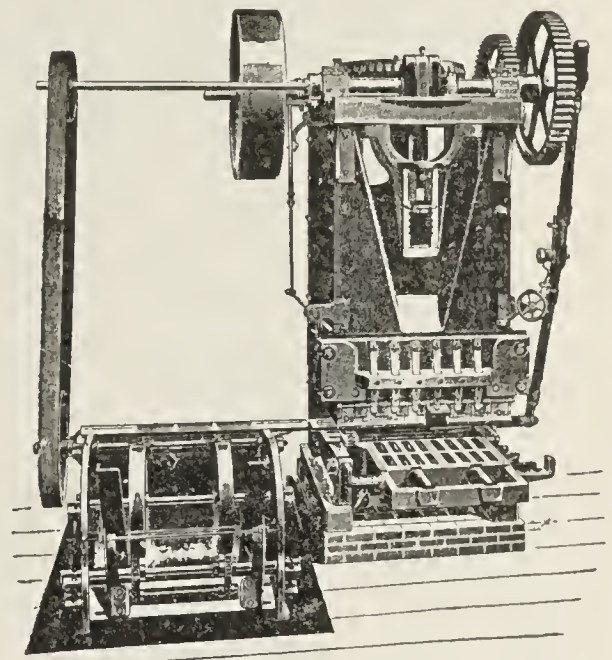
Let Us Have Your Inquiries Today.



Ideal Horse Power.

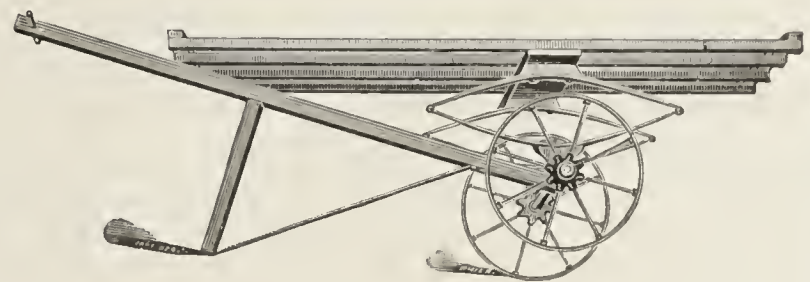
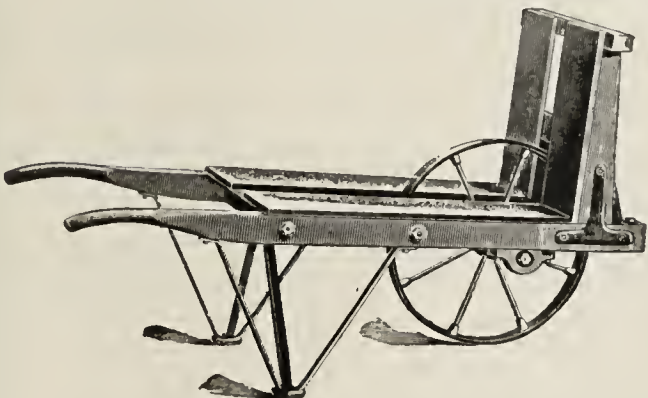


Disintegrator.



Ideal Steam Power and Sander.

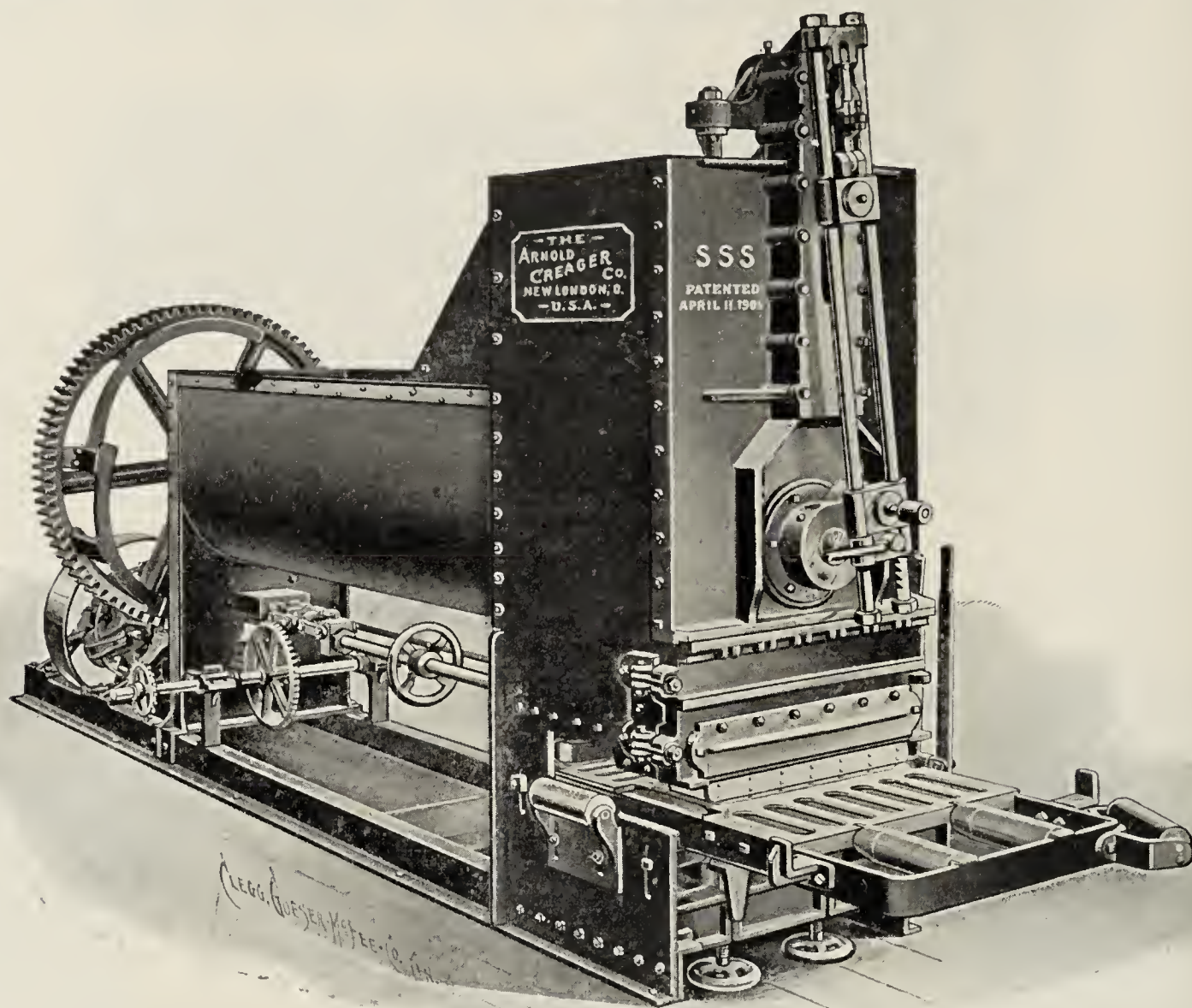
OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

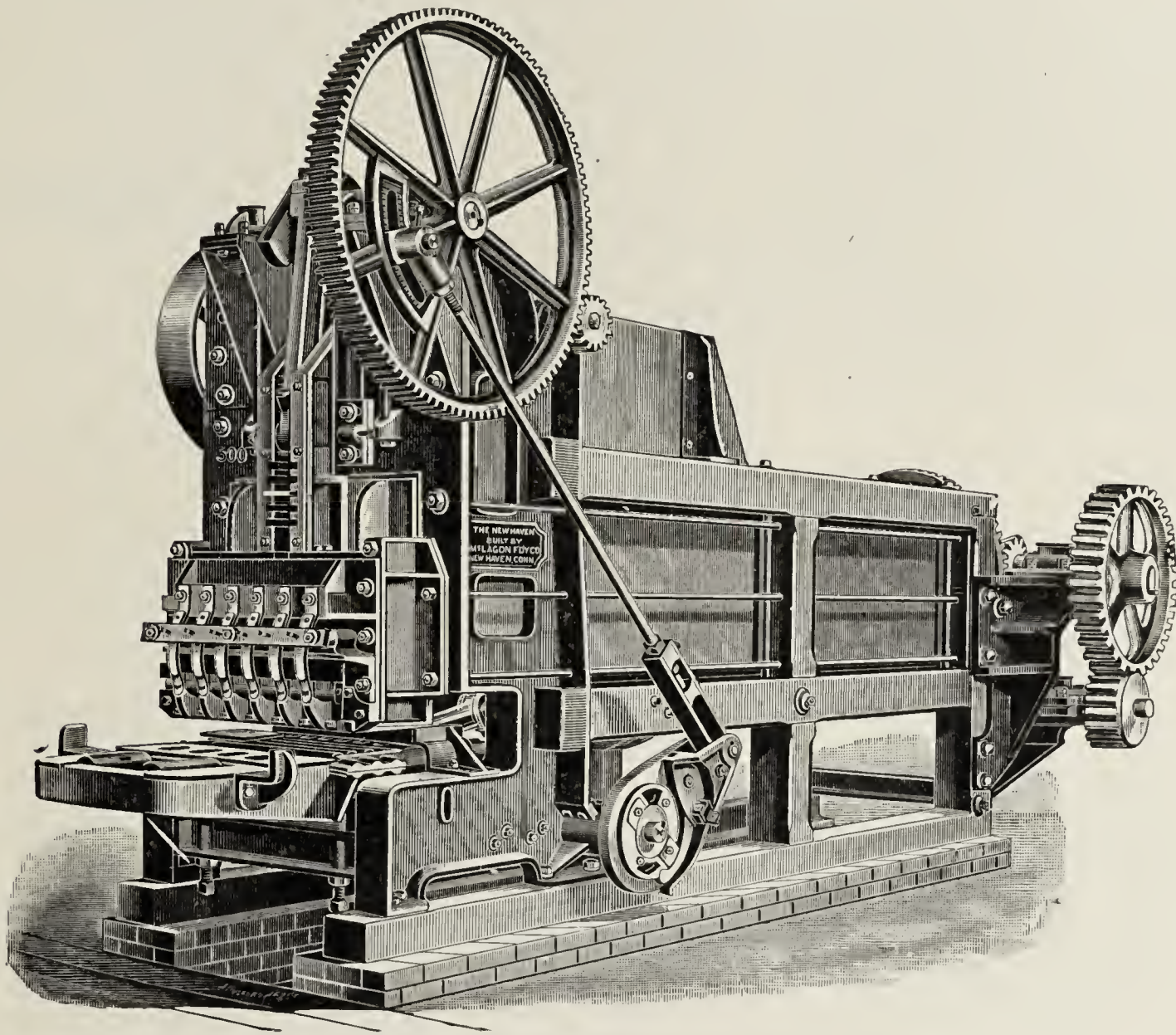
CINCINNATI, OHIO.

CABLE "AUTOMATIC".

Endurance the Crowning Quality.

The "New Haven" Horizontal Brick Machine is the Strongest Soft Clay Brick Machine in the World.

It is adapted to work any clay and is suitable for any yard, large or small, that uses steam for motive power. The brick made on it are solid and square, having smooth surfaces and sharp corners. For **Quantity** and **Quality** of production we challenge comparison with any machine built. The capacity of the machine is really limited only to the facilities for handling the brick as they are made.



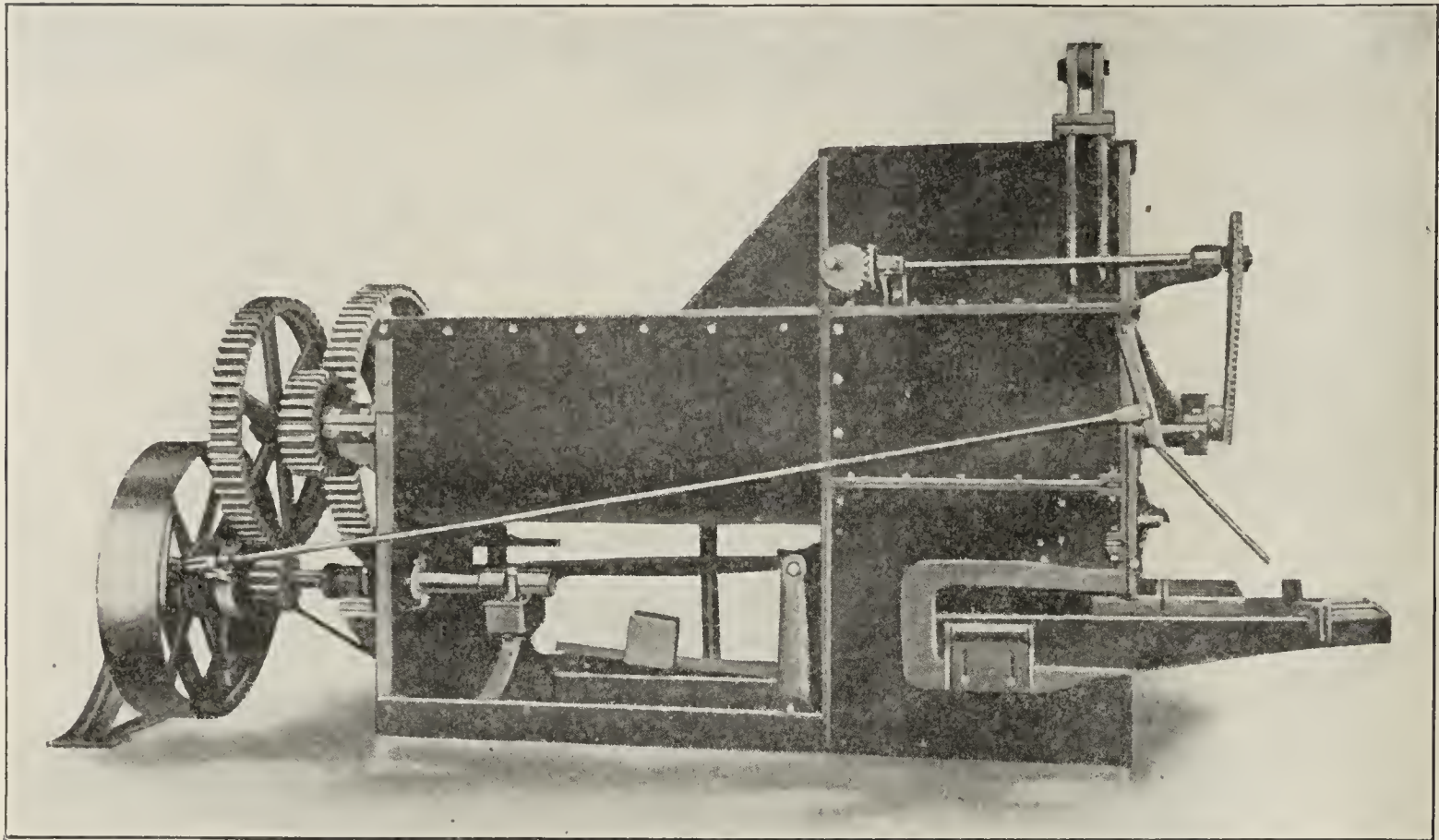
"New Haven" Horizontal Brick Machine.

We will be pleased to submit estimates for a complete plant or any portion of one. We can furnish machinery of the most modern and approved construction for soft mud plants of any capacity at reasonable prices. Shafting, hangers, bearings, pulleys, gearing and machine work of all description.

The EASTERN MACHINERY CO.,

NEW HAVEN, CONN.

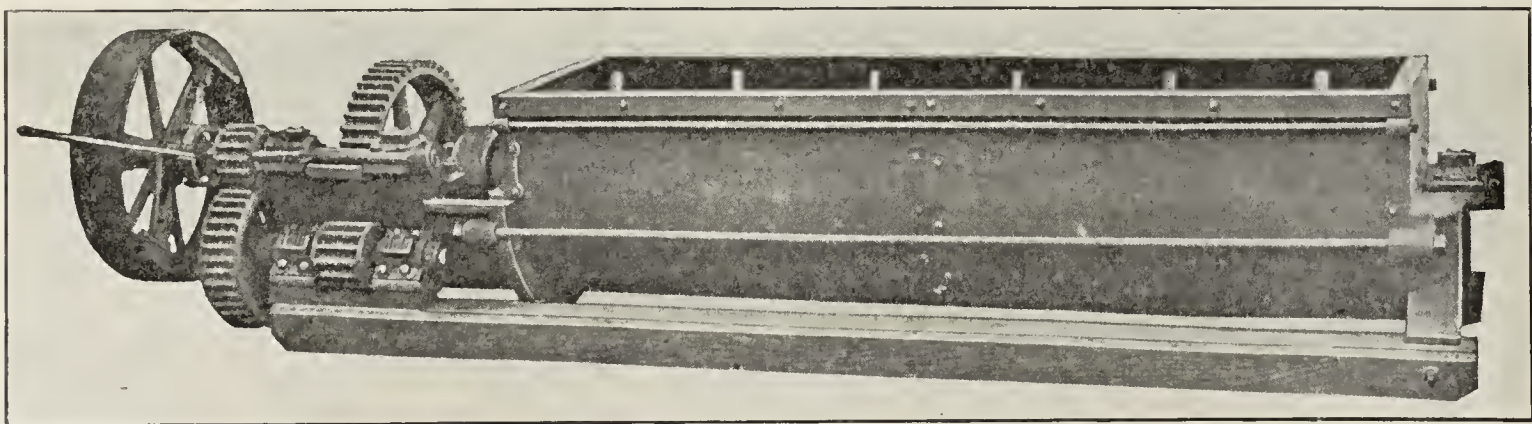
THE DUKE OF WELLINGTON BRICK MACHINE.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine of large capacity, strong and heavy, with vertical press. To meet this demand, we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

Compound-Geared Horizontal Pug Mill or Granulator.



Built for Side, Bottom or End Delivery, as ordered. Tub is boiler steel. Shaft is $3\frac{1}{2}$ inch square steel. Length, 10 to 14 feet, according to order. **Capacity**—35,000 to 50,000 brick per day. Friction Clutch Pulley, 36x8 inches. **Speed**—200 to 300, according to capacity desired. **This is a Massive Machine**, very heavily constructed, and intended for the hardest work. The gears have 5-inch face. The end-thrust bearing is very large and heavy, and of the best design.

Don't place your order for Machinery or Supplies until you have seen my 1907 Descriptive Catalogue. Mailed free on application.

For small capacity yards there is nothing that is quite as good as the "Quaker" Machine, which is made for horse power as well as steam.

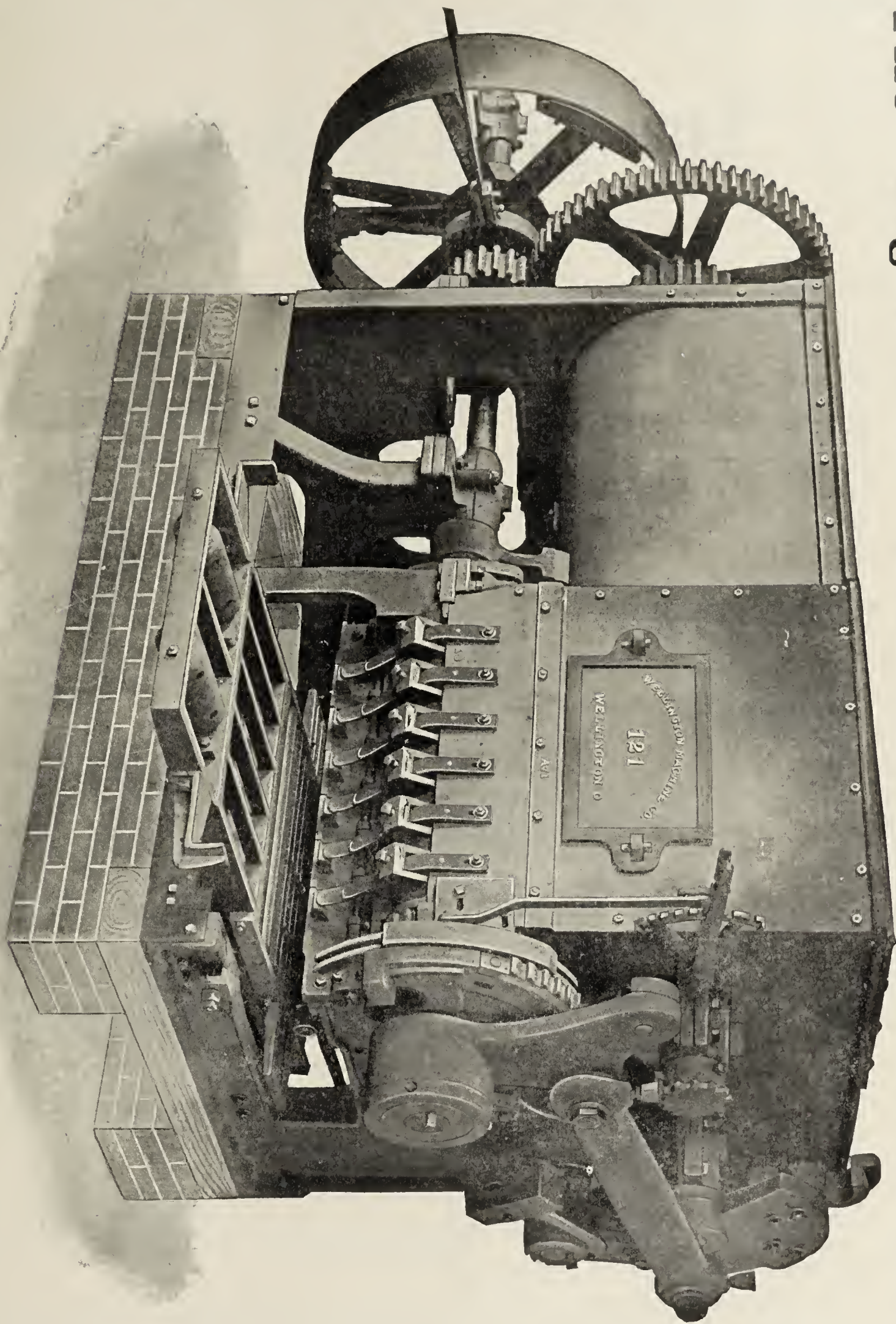
JAMES W. HENSLEY,

Indianapolis, Ind., U. S. A.

Let me give you full particulars.

List of users furnished on application.

OVER
235
"Monarch"
Brick
Machines
in use
==
OVER
565
"Quaker"
Machines
in use.
==
WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our
ROLLER-BEARING
BARROWS.

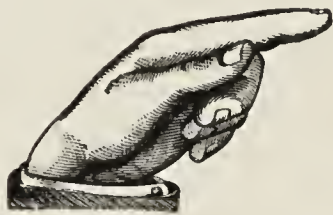
The Wellington Machine Co.,
WELLINGTON,
OHIO.

Send for Catalogue.

Sand Mould Brick Machines

By this process you will make a brick that will sell in preference to brick made by any other process, in the majority of markets for more money.

WE MANUFACTURE



HORIZONTAL BRICK
MACHINES
DISINTEGRATORS
MOULD SANDERS
GRANULATORS
PUG MILLS
WINDING DRUMS
CLAY CARS
SAND DRYERS
MOULD WASHERS
TRUCKS
BARROWS AND
MOULDS.

We are the Largest Manufacturers of this line of Machinery in the World.

We furnish everything complete from the Clay Bank to the Kiln and guarantee results.

Potts Horizontal Brick Machine, Disintegrator and Mould Sanders make an outfit equaled by none, one which will make Quality as well as Quantity.

Every Machine fully guaranteed and shipped subject to trial. Write for our new Catalog.

C. & A. POTTS & CO., Indianapolis, Ind.

Mention The Clay-Worker.

BRICK DRYERS

as Manufactured by C. & A. Potts & Co., are complete in every respect and built upon scientific lines. Every advantage is taken to get the best results from a given amount of fuel.

NO HOT WELLS
NO CARS OR TRACK
NO FANS OR HIGH STACKS
NO EXTRA ENGINE

Will dry the most tender clay in from 8 to 12 hours. So constructed that Exhaust Steam can be used the entire day.

A Labor Saver and Money Maker on any Brickyard.

Will more than Double the Capacity of your Brickyard.

A cheap dryer to erect, as well to operate.

The Best and most Complete Dryer on the Market.

Let us tell you about it.

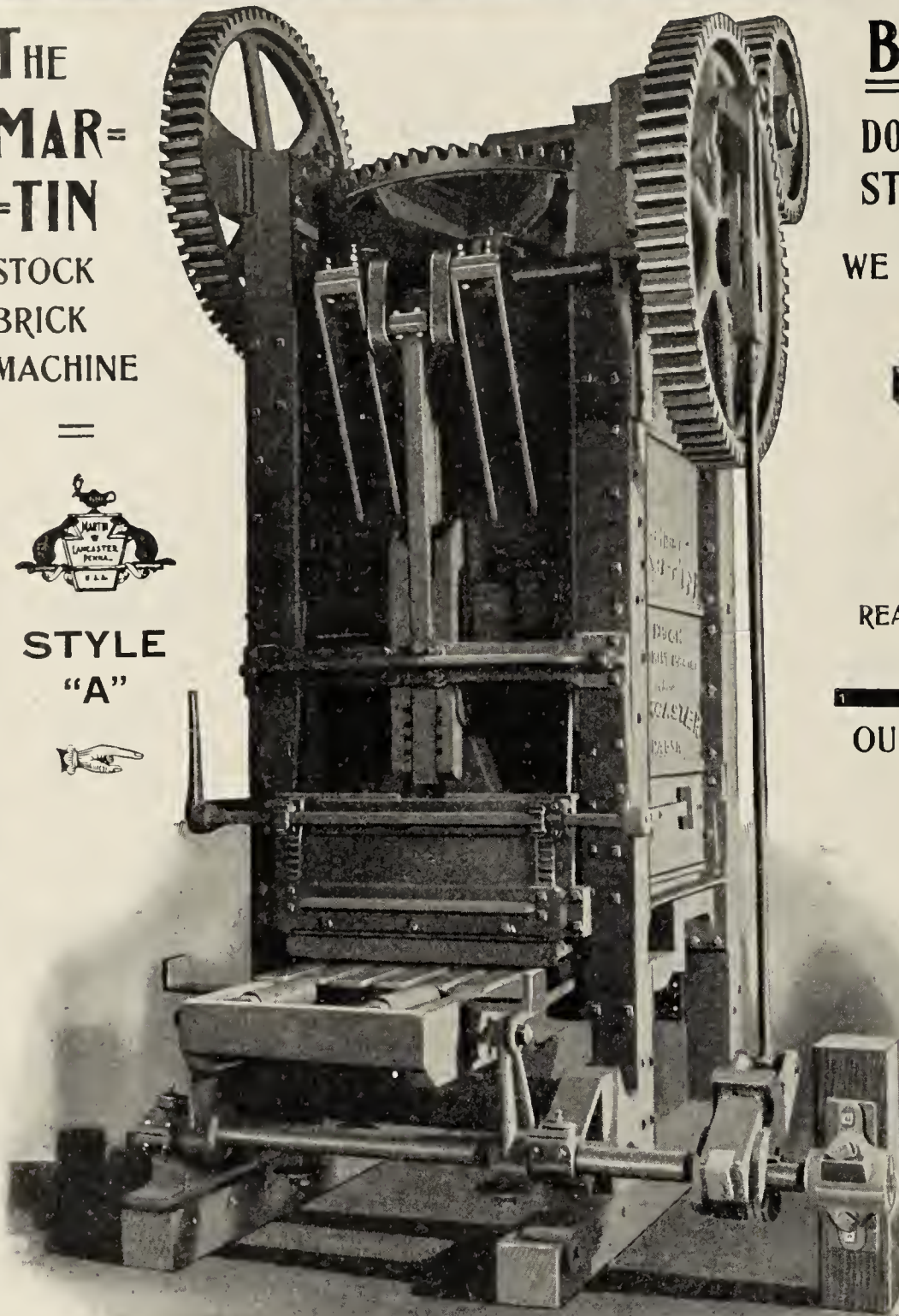
C. & A. POTTS & CO., Indianapolis, Ind.

Mention The Clay-Worker.

THE
MAR-
=TIN
STOCK
BRICK
MACHINE

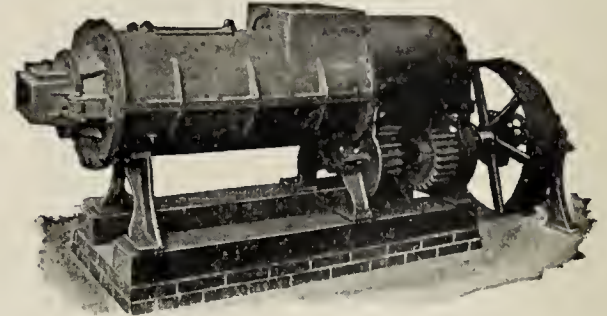


STYLE
"A"



BUILT RIGHT AND LEFT
DOUBLE MOULD ENTRANCE—
STEAM POWER BRICK MACHINE

WE HAVE PLANS AND SPECIFICATIONS

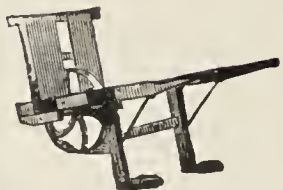


READY TO MAIL YOU—ON ANY CAPACITY
YOU MAY DESIRE—THINK IT OVER

OUR FIFTY YEARS' PRACTICAL EXPERI-



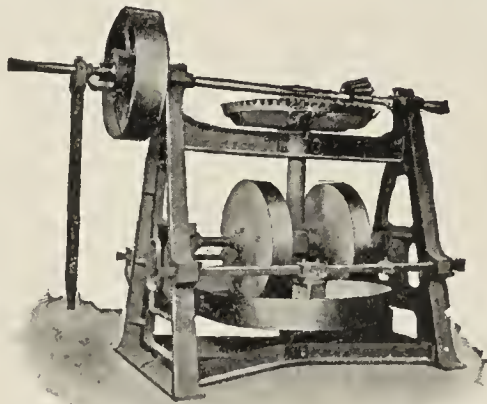
ENCE AT YOUR DISPOSAL—IT'S RIGHT



AND
TRUCKS

EVERYTHING IN ITS PLACE

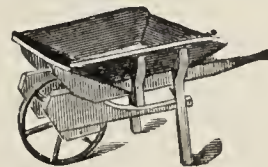
BARROWS



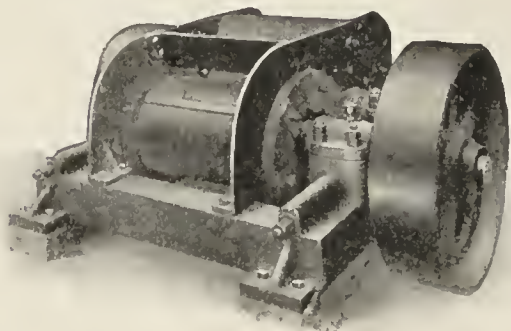
DRY OR WET PANS—5-7-9-FT.

"MARTIN"
LANCASTER
PENNA. U. S. A.

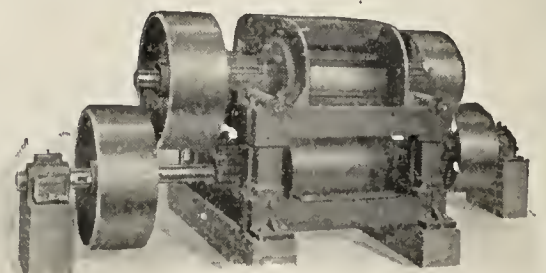
OUR MACHINERY IS BUILT OF
THE BEST MATERIALS.



BRICK YARD SUPPLIES.



HIGH-SPEED DISINTEGRATOR



FOUR-ROLL PATENT DISINTEGRATOR

THE "MARTIN" RACK PIPE STEAM BRICK "DRYER SYSTEM"



PATENTED February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.



This Drier and the design in arranging it are under the protection of the United States Government by virtue of patents granted. Patents also have been taken out in the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS.

Brick
Dried
In From
Six to
Twelve
Hours.

Building
Practically
Fire-
Proof.

Labor
Saving
Through-
out.
Good
Results.



No Fans
No Blowers
No Tunnels
No Cars

All Iron
And Steel
Construc-
tion
Excepting
Roof.

Can We
Dry Your
Brick—
Write Us
Today.

ADAPTED FOR SOFT MUD OR STIFF MUD BRICK.

Superior in Every Respect to Any Other System—Labor-Saving Through-
out—Dispenses With Truckers and Car Pushers—Pallets Auto-
matically Returned to Brick Machine—Quick to Install and
Low in Price and Takes Up Very Little Yard Room.

The Sale and the Construction of the "MARTIN" Rack Pipe Steam Brick
Dryer is Under the Direct Supervision of the Factory Office at Lancaster, Pa.

For further information address

The Henry Martin Brick Machine Mfg. Co., Inc.
LANCASTER, PA., U. S. A.

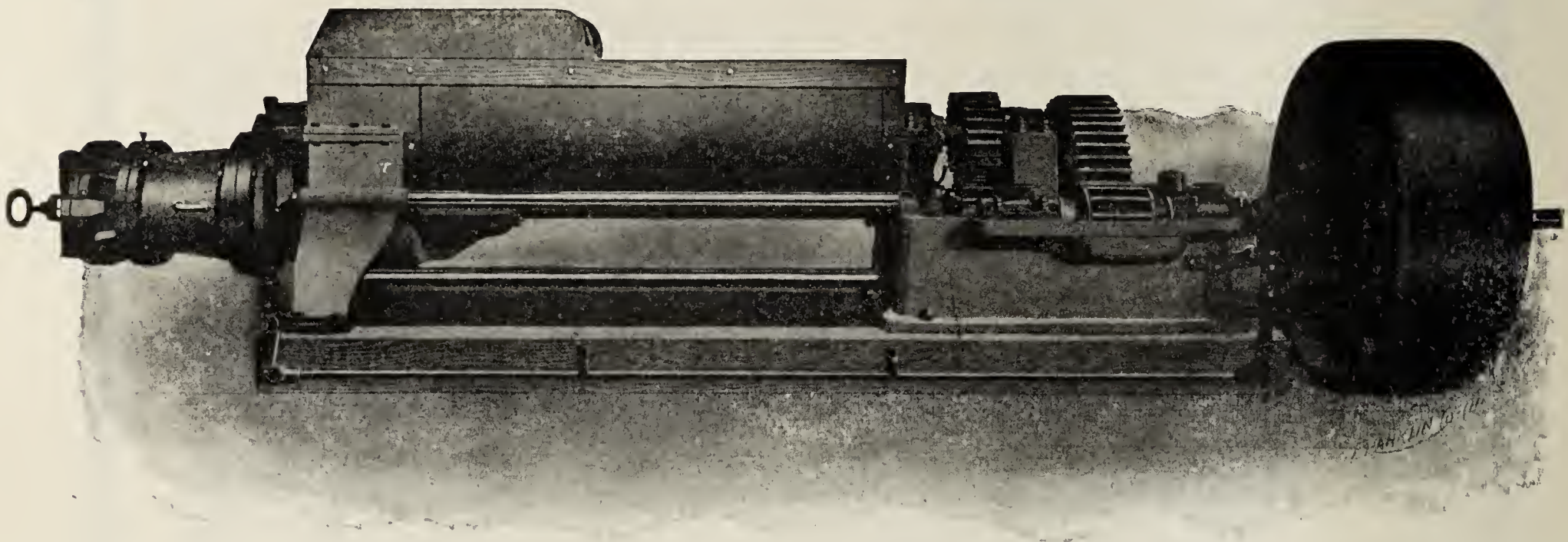


The J. D. Fate Co.

Richland County,

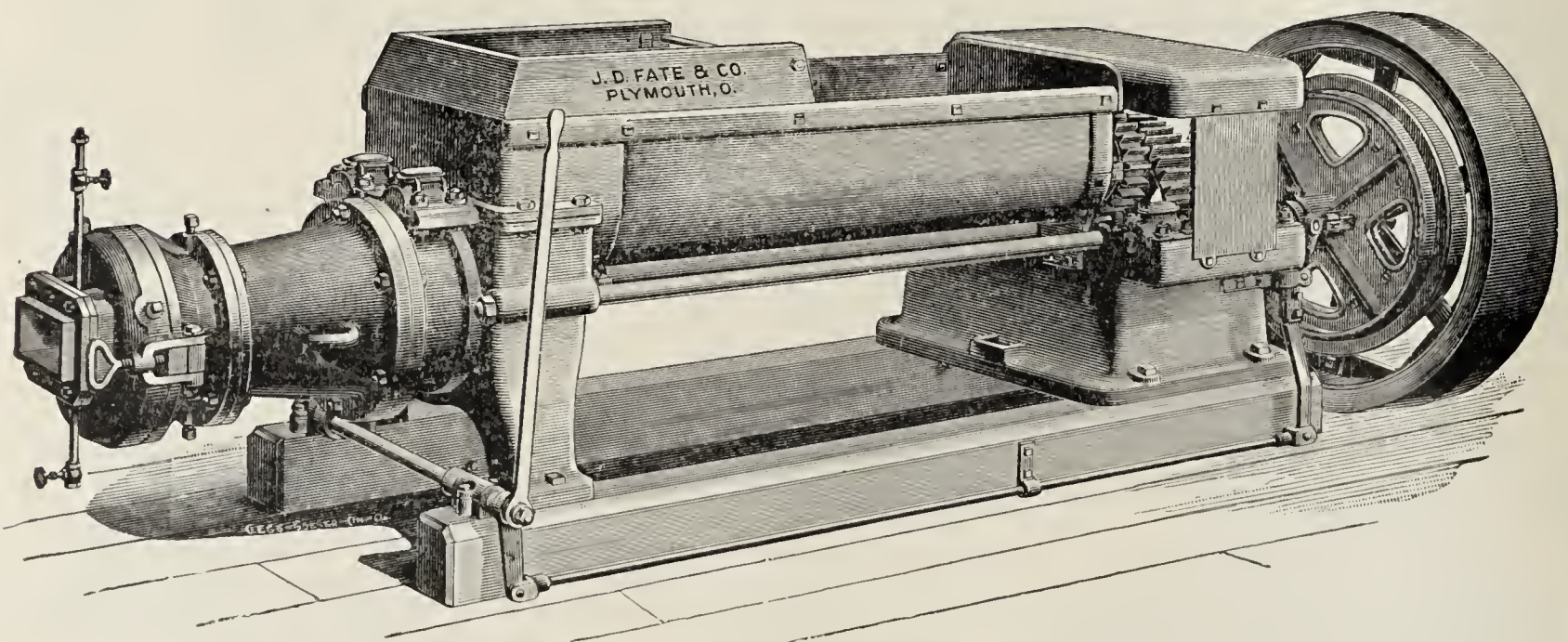
Plymouth, Ohio.

Imperial Combined Machine.



This is our middle size Combined Machine and is a favorite with the brick maker who wants to make from 30,000 to 40,000 brick per day, and more so with the tile maker who wants very large capacity in drain tile, combined with the very finest quality. Look at the cut of this machine with vertical attachment.

Hummer Combined Machine.



This was the first of our Combined Machines, and one of the best for the clayworker with a medium capacity plant, either of Brick or Tile, or both.

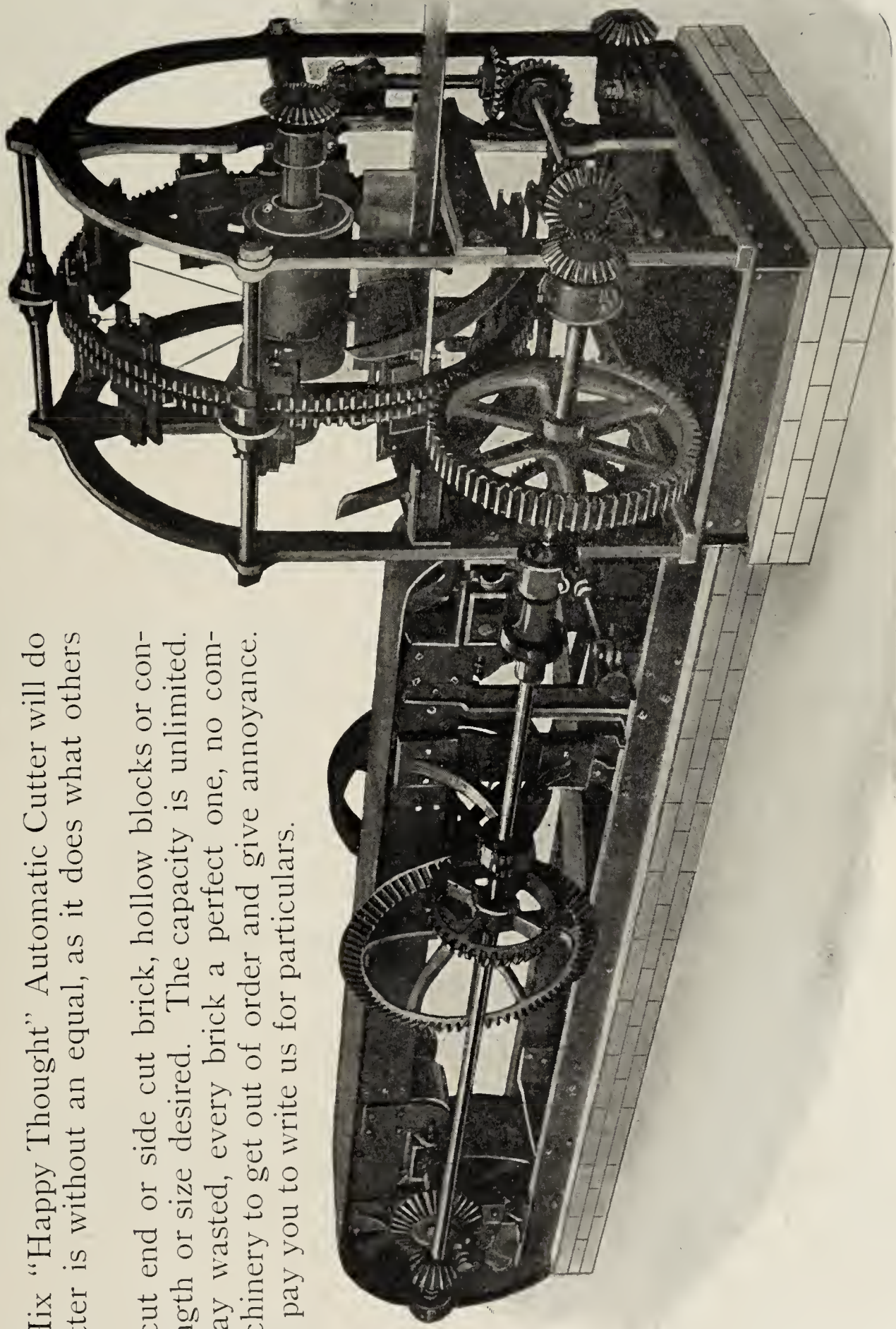
Are You Interested in a Cutter That Will Double Your Profits For 1907?

The Hix "Happy Thought" Automatic Cutter will do it. This Cutter is without an equal, as it does what others can not do.

Will cut end or side cut brick, hollow blocks or conduits any length or size desired. The capacity is unlimited.

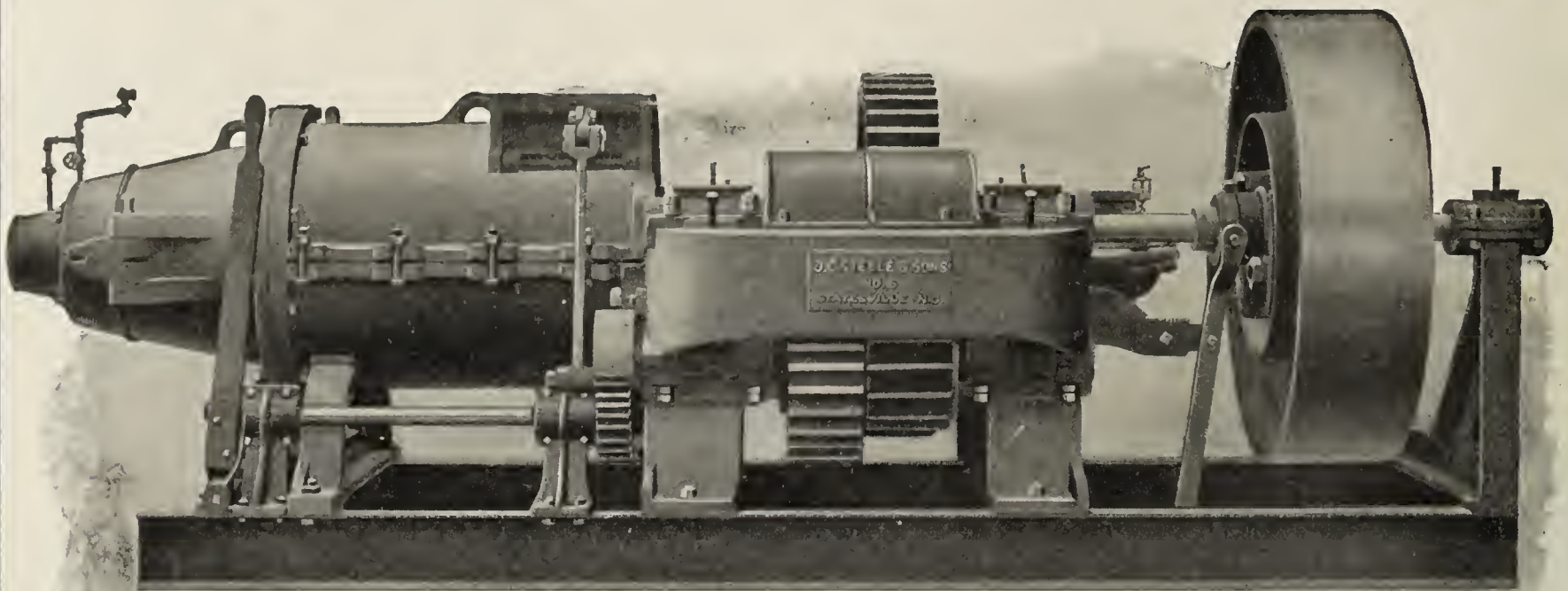
No clay wasted, every brick a perfect one, no complicated machinery to get out of order and give annoyance.

It will pay you to write us for particulars.



THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

THE WALLACE MFG. CO., Frankfort, Ind., U.S.A.



**No. 5. CAPACITY 50,000 to 100,000
PER DAY.**

**Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.**

Wetumpka, Ala., Dec. 19, 1905.

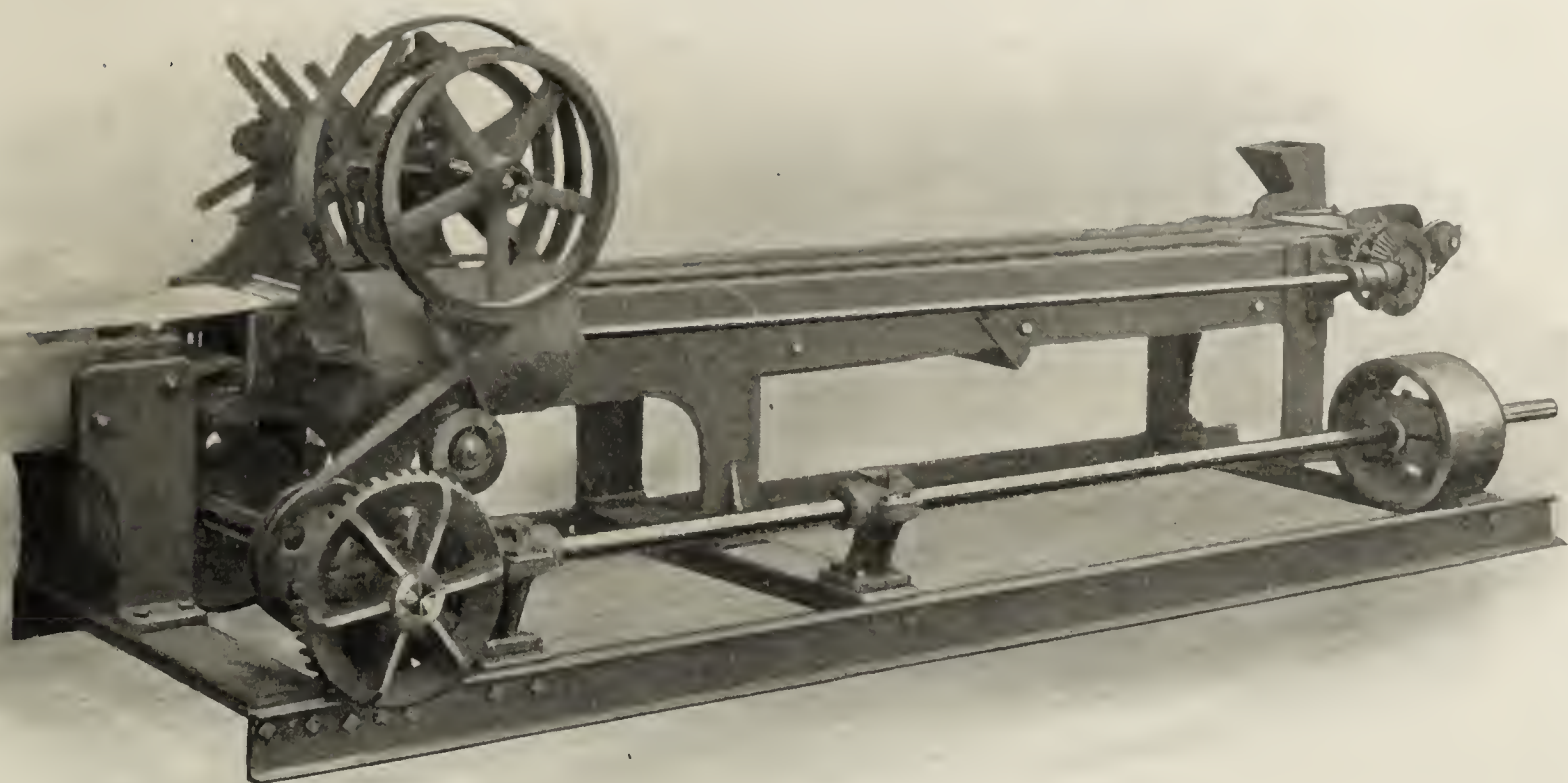
Gentlemen:—After using your machinery for some years, which included the Nos. 1 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

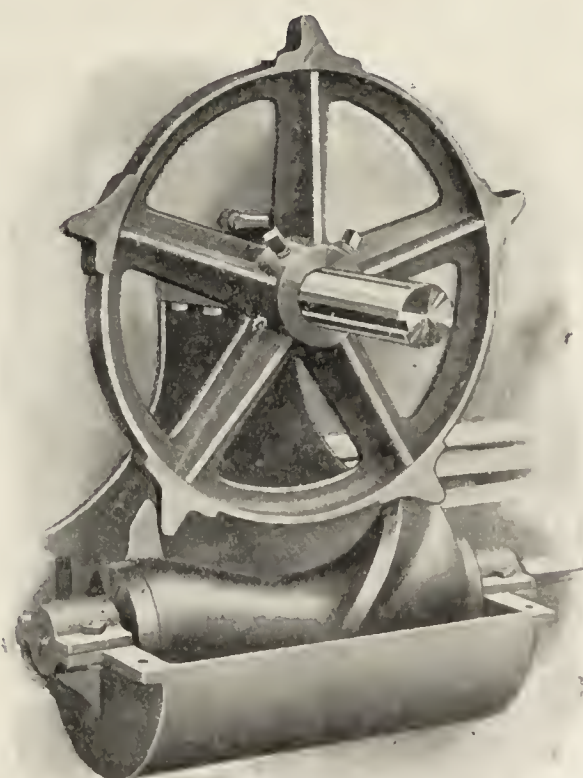
Success Brick Machinery Co., Memphis, Tenn., Western Agents.



THE BREWER No. 14 AUTOMATIC BRICK CUTTER

Is strong, simple, rapid and accurate. The wires are controlled by a spiral cam of novel form which has the advantage (over all other mechanical devices used for the same purpose) of taking up its own wear. Once set, always set until it is worn out completely. No adjustments. No rattle.

H. BREWER & CO.
TECUMSEH, MICHIGAN



HOME OF HOOSIER CLAY MACHINERY.

ESTABLISHED 1878.

INCORPORATED 1906.



New Factory of Madden & Co., Manufacturers of Hoosier Brick and Tile Machinery.

Hoosier Upright Tile Machines are in a Class by Themselves. Machines for all Sizes of Tile—3 inches to 30 inches.

Hoosier Cutting Tables for Brick and Tile are unsurpassed for accuracy and service.

WATCH FOR OUR NEW CATALOGUE.

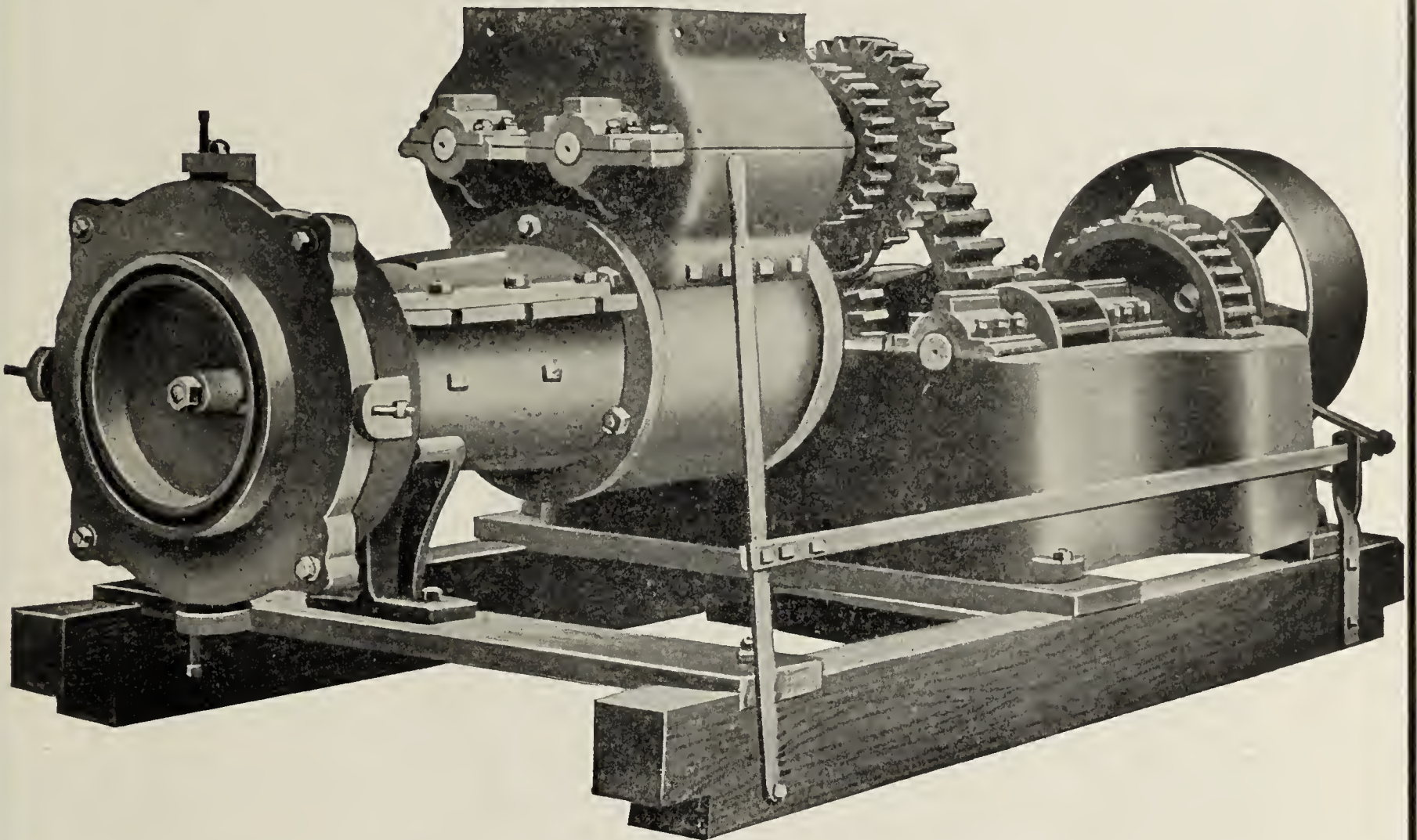
Write us for information.

MADDEN & COMPANY, Rushville, Ind.

Hoosier Clayworking Machinery

1878—Twenty-nine Years' Experience—1907

Brick, Tile and Hollow Block Machines



Note **DESIGN, STRENGTH** and **SIMPLICITY** of this machine.
THIS IS OUR NEW MODEL Stiff Mud Machine with extra pugging
 and feeding attachment, the use of which practically eliminates lamination.
 Made in two sizes for capacity up to 100,000 per day.

AUSTIN BRICK AND TILE WORKS.

ED. BARR, Proprietor.

Manufacturer of PAVING AND COMMON BRICK AND DRAIN TILE.

Dealer in St. Louis Fire Brick and Fire Clay.

Austin, Minn., December 29, 1906.

MADDEN & Co., Rushville, Ind.

Gentlemen—It affords me pleasure to give my testimonial of the efficiency of Madden machinery. Fifteen years ago I put in an outfit of your machinery in Mason City, consisting of a 5 B Brick and Tile Machine, Pug Mill and Granulator, which has been in continuous operation ever since, and has worked enough clay to make a string of tile to encircle the globe. The machine is rated at 25,000 brick per day, and the last time I saw it, it was making tile at the rate of 36,000 4-in. tile a day, which was about a month ago. There has been three other outfits of Madden machinery installed there. Eleven years ago I installed an outfit of your machinery in Austin, consisting of 5 B Brick and Tile Machine, Pug Mill and Granulator in which I have worked a great variety of clay from the fattest to the leanest, and the machinery does its part well.

I consider the Pug Mill the best mixer I ever saw. It operates with mill level full of clay from one end to the other and with little power.

I don't think my repair bill has exceeded \$300.00 in 10 years on the brick machinery.

Yours respectfully,

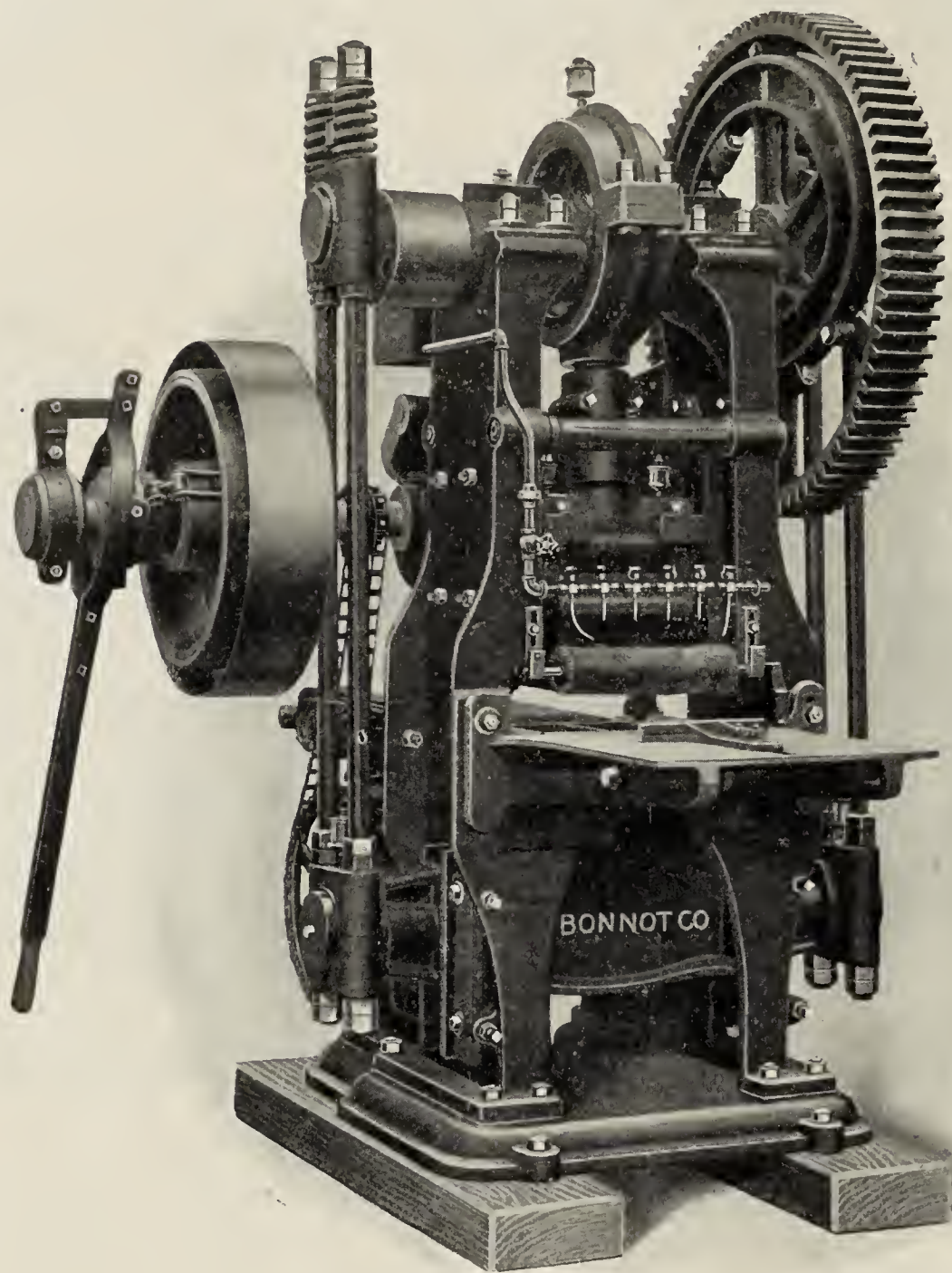
ED. BARR.

For further information address

MADDEN & COMPANY, Rushville, Ind.

DO YOU WANT THE BEST REPRESS?

The
Canton
Repress
has
fewer
parts.
No toggles.
Heavy
Pressure.
Convenient
Adjustment
for
Changing
Thickness
of Brick.



Pressing
strain
taken on
the heavy
steel
side rods.
Large
shafts
and
bearings.
No
wearing
parts
below
the die.

The Canton Repress

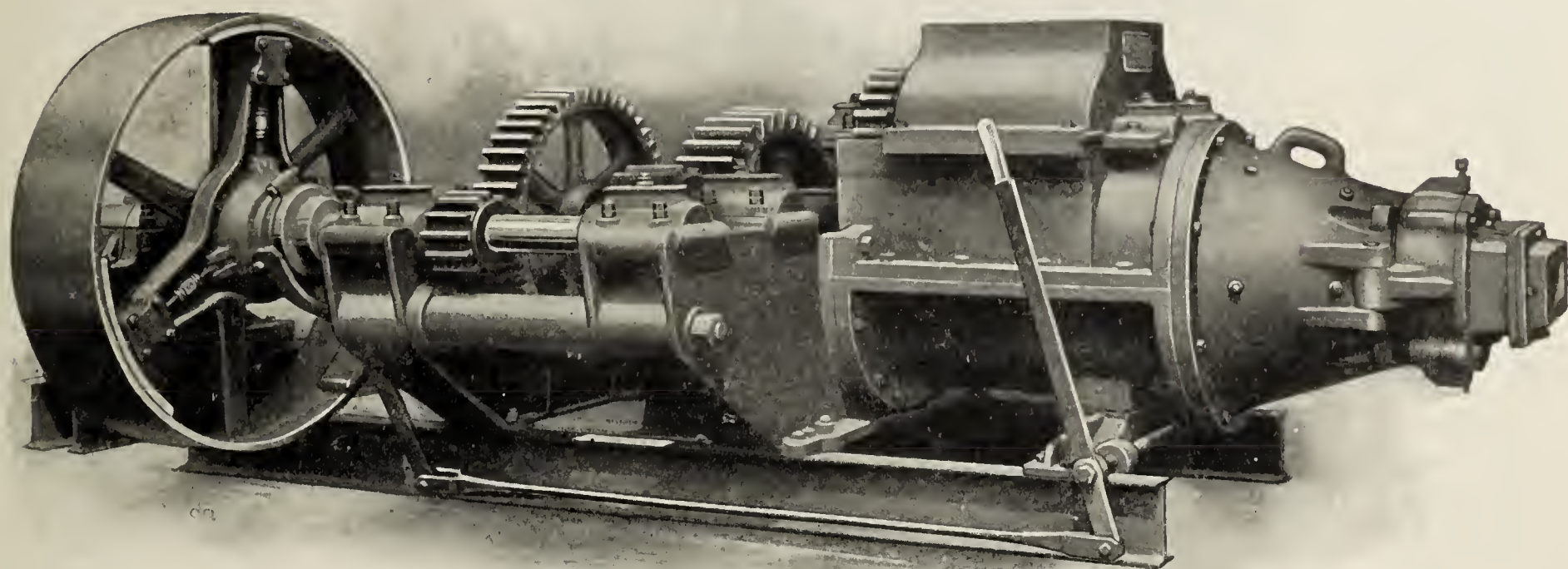
More points of merit than any other repress made.

THE BONNOT COMPANY,

Canton, Ohio, U. S. A.

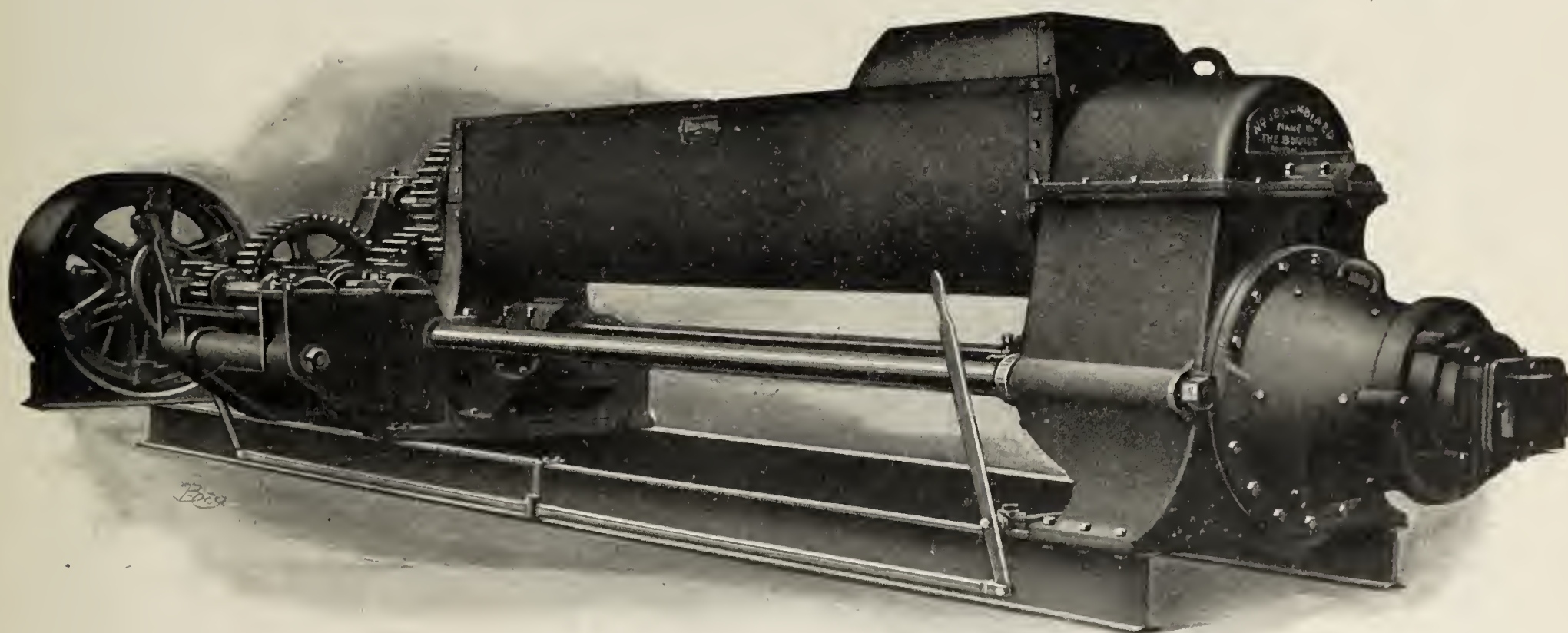
Write for our Circular No. 12, just issued describing the latest designs of brick machinery.

Modern Brick Machinery



No. 10 $\frac{1}{2}$ Auger Brick Machine.

50,000 to 75,000 capacity per day. Steel gearing, all wearing parts accessible. The best machine for those difficult clays.



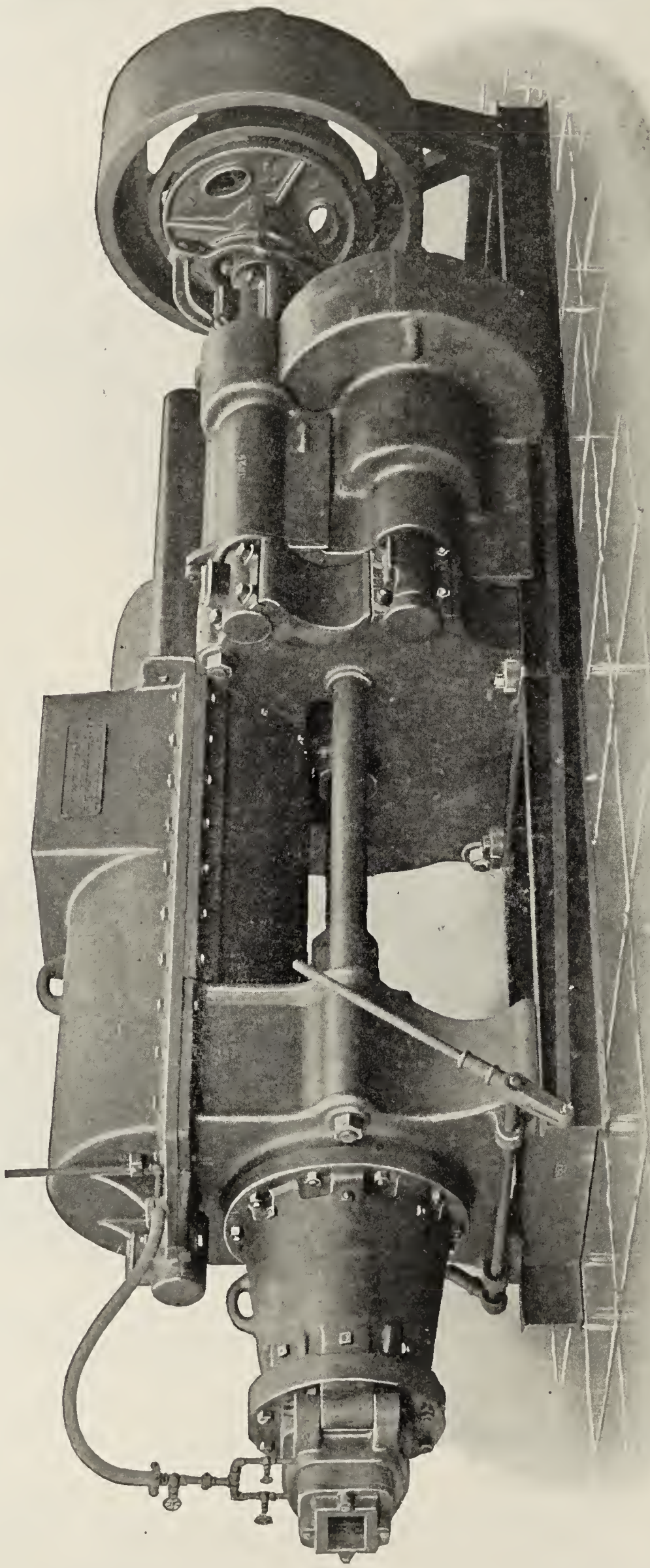
No. 12 Combined Brick Machine and Pug Mill.

All steel gearing and very heavy construction throughout. Main thrust bearing is outside of frame and can be rebabbited without dismantling the machine. Capacity 100,000 to 125,000 per day.

THE BONNOT COMPANY, Canton, Ohio.

To Lessen Your TROUBLES Use Our PIANO WIRE SCREEN.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

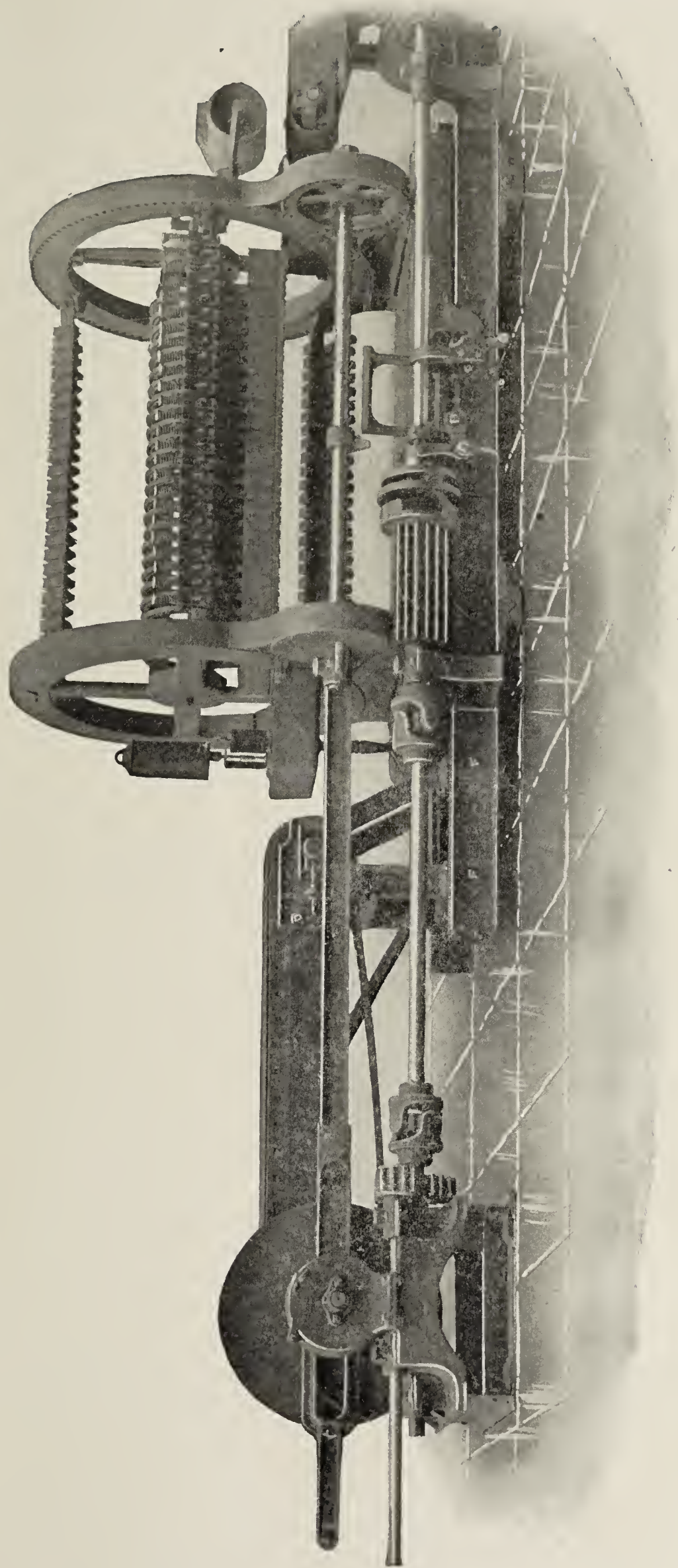
Height from floor to top of hopper, 5 ft. 8 in.

Size of hopper, 26-in. x 26-in. Weight of machine about 26,000 pounds.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

An Improved Rotating Automatic Cutter.



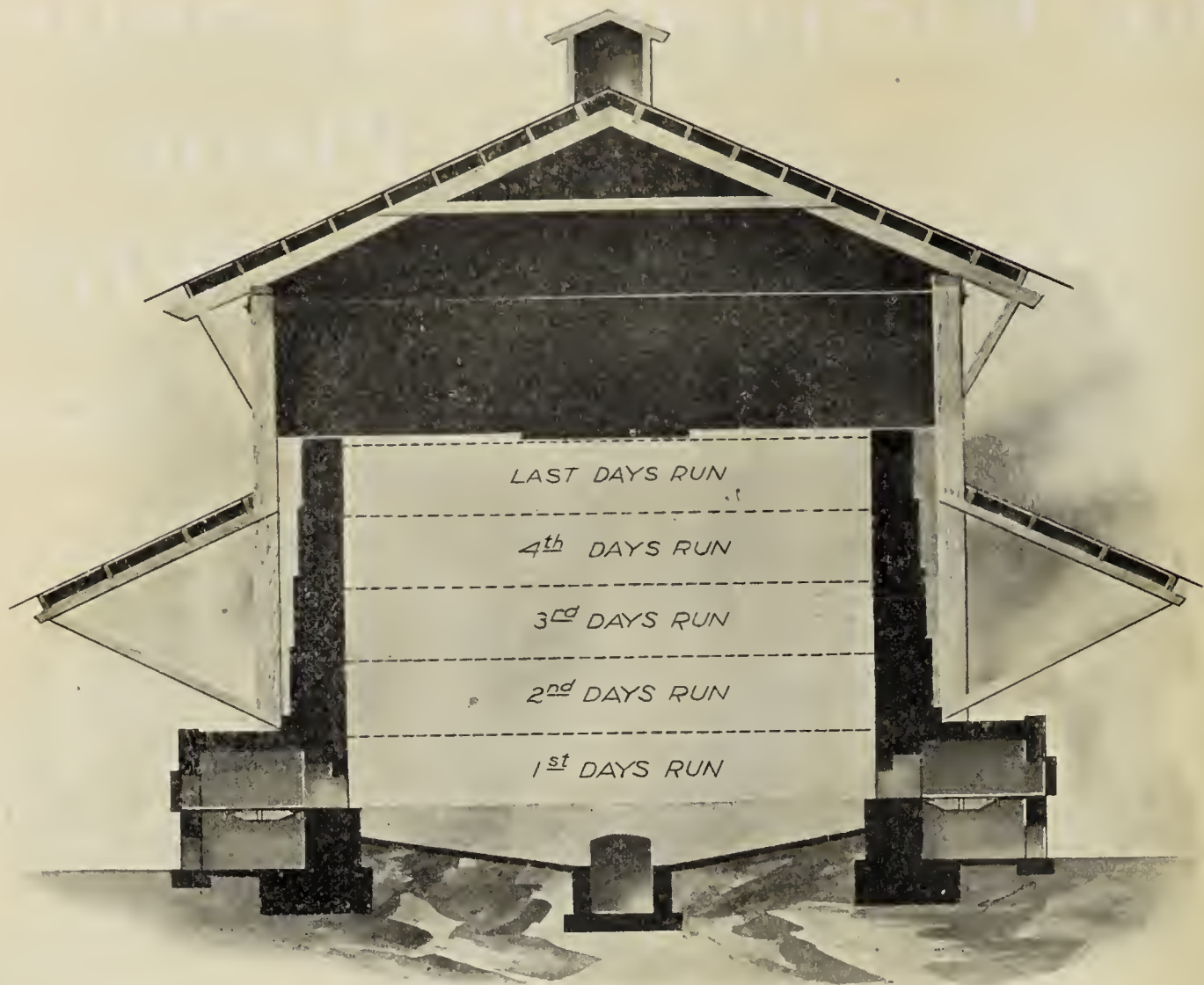
Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.



SECTION OF UP-DRAFT KILN FILLED AND DRIED BY THE

Scott Kiln=Drying System

(Alex A. Scott Patents)

Our new catalogue explains the principles underlying the Scott Kiln-Drying System; illustrates methods of applying it to various types of kiln; discusses its first cost as compared with other systems; shows the saving effected by its installation,—in fact, describes in detail the system and its advantages.

A copy is yours for the asking—Specify Bulletin No. 213C.

American Blower Company

Detroit, Mich.

141 Broadway
New York

Empire Bldg.
Atlanta

Marquette Bldg.
Chicago

The Richardson-Lovejoy Piano Wire Screen



Patent Applied For.

Will screen more clay to a given degree of fineness than ANY perforated metal or woven-wire screen of five times the area.

Guaranteed against breakage. Upkeep insignificant. No attendance.

All wires of the same length.

Each wire separately tensioned and separately removable.

No piano board taper bolts to slip—Each wire tightened by a special hook-bolt that cannot loosen.

A stationary screen with simple device that vibrates the wires and prevents clogging. Sent to any responsible manufacturer on 30 days' trial.

Special circular "SCREENS" to all who are interested.

The Richardson-Lovejoy Engineering Co.

Geological Examination of Properties
Analyses and Tests
Mines and Mining
Plans and Specifications for Plants
Driers, Kilns and Gas Producers
Correction of Faults of Manufacture
Special Mechanical Devices, Molds and Dies
Testing and Controlling Apparatus
Books for Clayworkers

PUBLICATIONS

"Burning Brick in Down Draft Kilns".....	\$1.00
"Kiln Records".....	1.00
"Drying Brick".....	.25
"Scumming and Efflorescence".....	.50
"Brickworks Engineering".....	Free
"Brick Kilns".....	"
"Testing and Controlling Apparatus".....	"

Consulting Engineers and Factory Architects

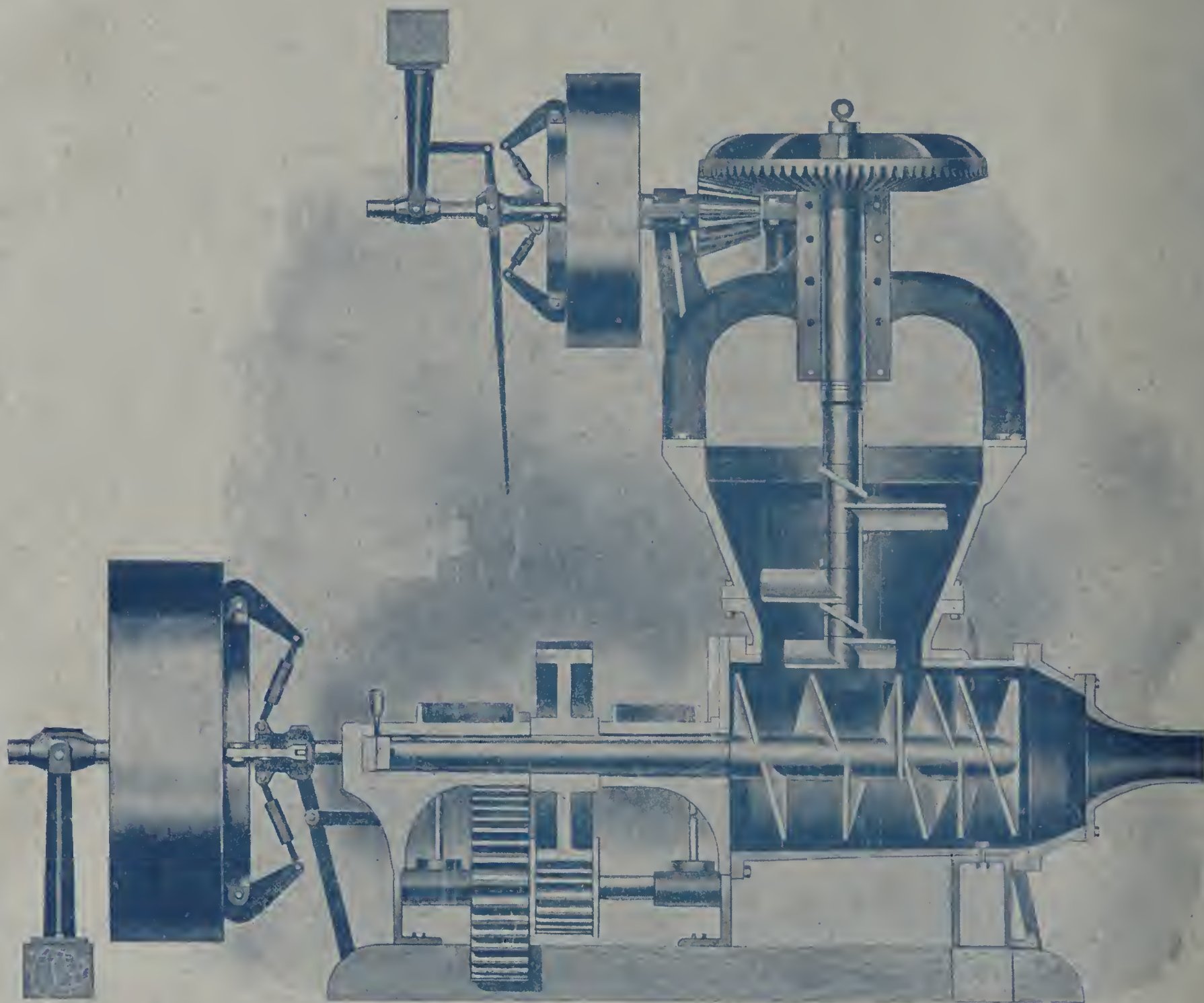
1534 North High St., Columbus, Ohio.

OUR SPECIAL "ELI" BRICK MACHINE

LATEST IMPROVED.

Large Capacity. Runs Easy.

"Has all the merits of any machine and then some."

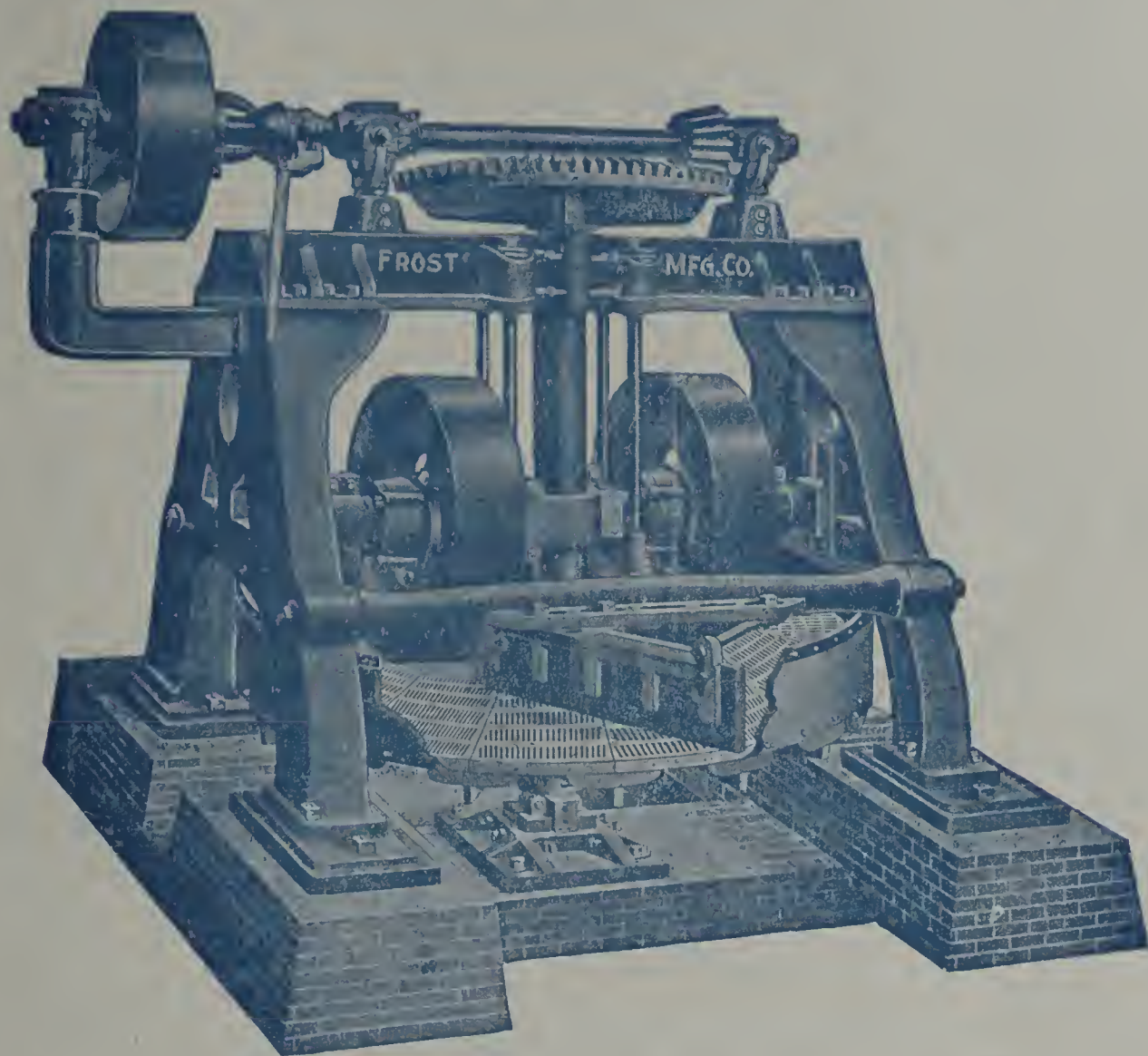


SPECIAL "ELI" BRICK MACHINE

Write for Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,
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When you buy a Pan buy a **FROST** Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

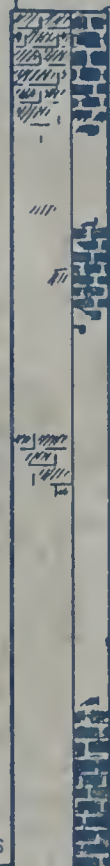
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SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN



which would otherwise be lost, is utilized for drying in the "ABC" Waste Heat Drying System.

With this system you can thoroughly dry bricks at a cost not to exceed five cents per thousand.

Shall we tell you how?

Ask for Catalog No. 159 C.

American Blower Co.
Detroit Mich.

REMEMBER THIS

After having tried one of the contrivances which appeals to you for screening your clay on account of cheapness and small space required, **You** will come to us to solve your **Screening Troubles**. We have outlived a hundred of such repeated attempts, and are at present removing these make believe screens. As soon as the user can get over the shock of having been deceived, **The Perfect Clay Screen** can be adjusted according to requirements. **Can you do this with any other screen?** We Positively Guarantee It, and allow you to be the judge before you pay for it. Dunlap's Rolling Fire Box Door Has Equal Merits.

Write today for information.

Dunlap Mfg. Co.
Bloomington, Ill.

NEARLY COMPLETED



OUR NEW FACTORY

New machinery will be installed. Every detail of car work treated with scientific accuracy. If you have dealt with us in the past, you know that our product is reliable.

Write us for quotation on what you need, Dryer Cars, Dump Buckets, Dump Cars, Piano Wire Screens, Turntables, Trackage, Etc.

We build the Richardson Repress.

The Ohio Ceramic Engineering Co.,
CLEVELAND, OHIO.

THE CLAYWORKER

PUBLISHED MONTHLY BY
T A RANDALL & CO
INDIANAPOLIS..

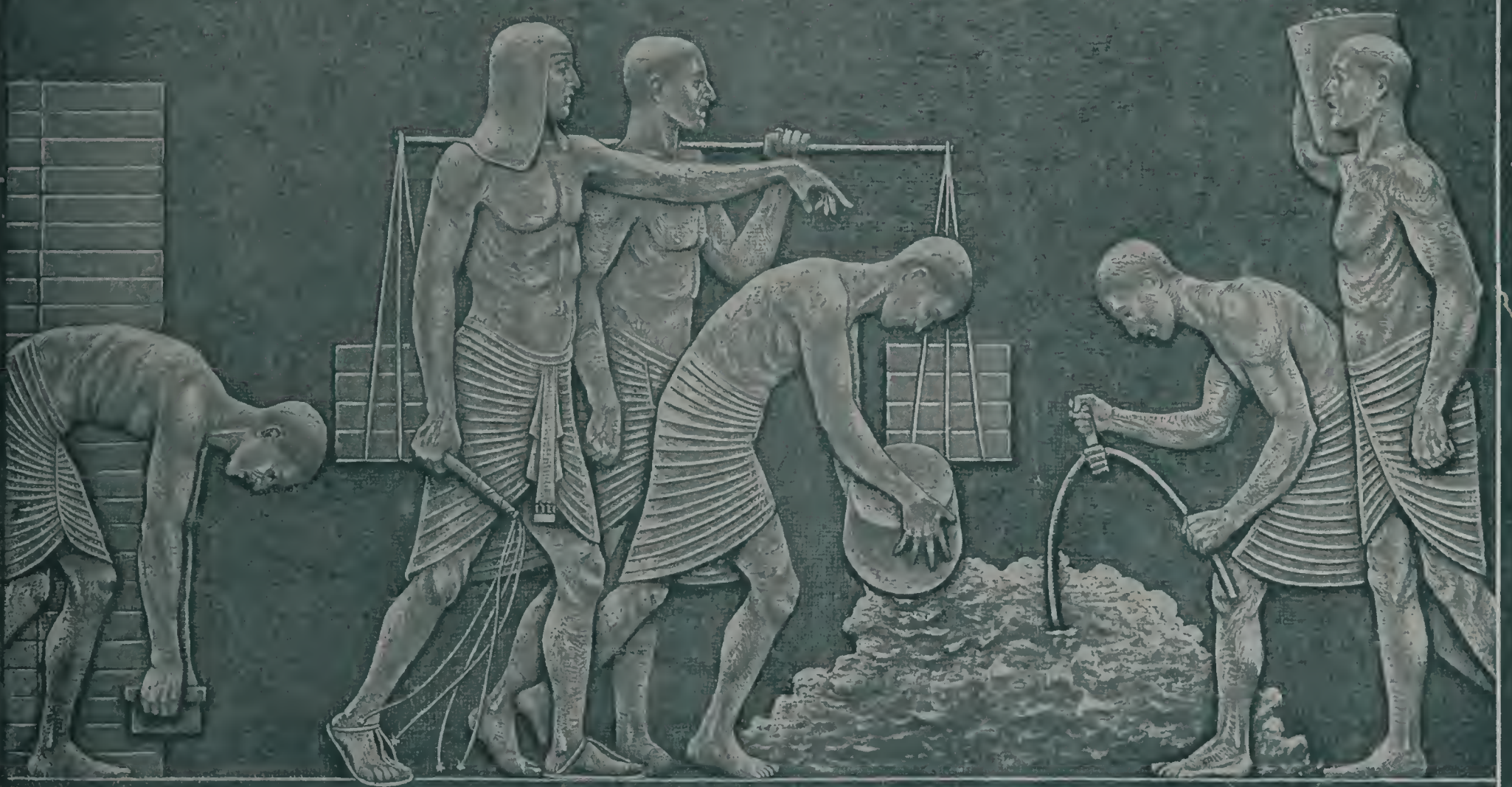


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JUNE, 1907.

Index to Ads, Page 951.



OUR NEW PLANT IN FULL OPERATION

ARTHUR **KOPPEL** COMPANY

WE ARE THE LARGEST MANUFACTURERS
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INDUSTRIAL and PORTABLE

RAILWAYS

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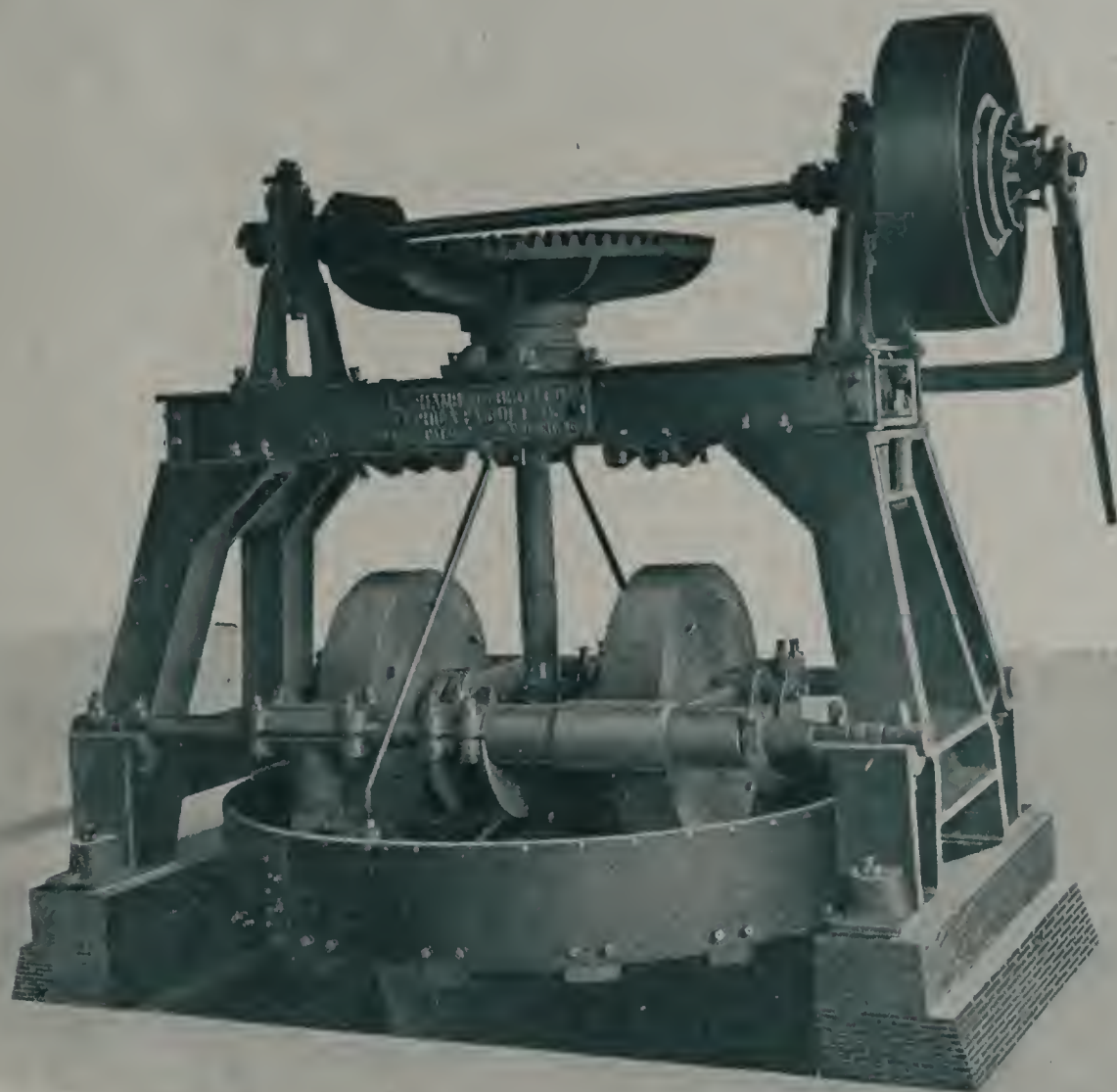
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THE CHAMBERS BRICK MACHINERY.



The Suspended Nine-Ft. Diameter Pan, No. 2.

[Patented Dec. 26, 1893, and Oct. 11, 1898.]

J. W. Sibley, Pres. and Genl. Mgr.

J. A. Menge, Vice-Pres. and Treas.

W. L. Sibley, Sec'y.

SIBLEY-MENGE PRESS BRICK CO.

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Chambers Bros. Co., Philadelphia, Pa.:

Gentlemen—When you ship the pan, please also send us one set of malleable iron screens for our large 9-ft. pan with openings 3-16 in. wide, same as originally furnished with that pan. The original set are still in good shape, but the openings have worn a little too coarse. This pan has been in constant use for 16 months and we have not had to spend one cent on it in repairs as you know.

We are grinding both shale and fire clay. The absence of the troublesome step found with other pans has relieved us of one of the burdens that is most vexations and costly to clayworkers.

With best wishes,

Yours very truly,

SIBLEY-MENGE PRESS BRICK CO.,

Per. Jno. W. Sibley, President.

Capacity—Strength—Materials—Workmanship—Design, all of the best and all are factors in the satisfaction given users of our machinery.

CHAMBERS BROTHERS COMPANY

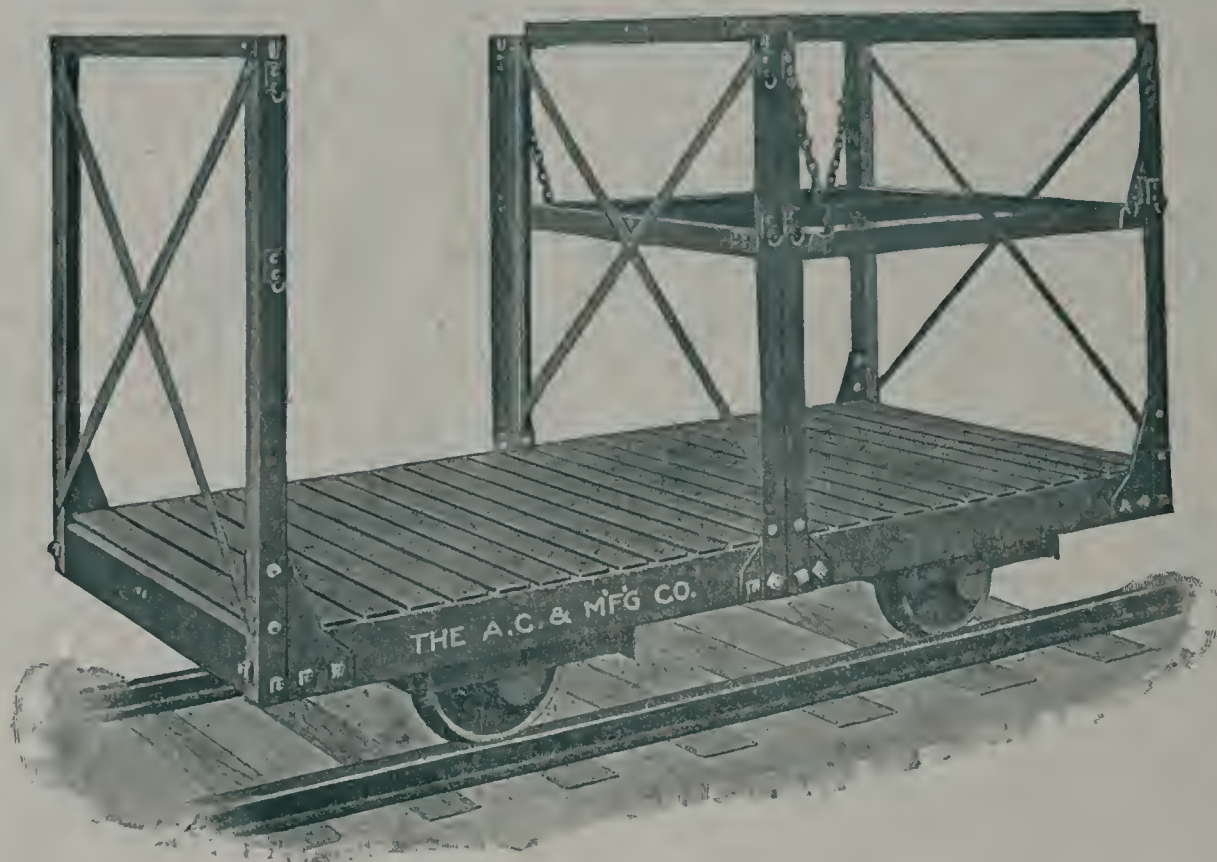
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Chicago Office:

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We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 947.)

G. E. LUCE ENGINEERING CO.,

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Practical Design and Supervision of Brick Plant Construction.

From our long experience in various clayworking fields we are able to offer suggestions which will bring your old plant to its highest efficiency or start your new one a little better than the best.

A careful study of the drawings we exhibited at the St. Louis Convention would convince you OUR PLANTS MAKE BRICK. If you were not there send for copy of one of the most complete Brick Plant drawings ever exhibited.

THE HARRINGTON AND KING PERFORATING CO

PERFORATED METALS

OF EVERY DESCRIPTION

AND

FOR ALL PURPOSES

FOR SCREENS OF ALL KINDS

PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

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YOU'D BE SURPRISED

to find what an increase in your income would result from
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and what would surprise you even more would be the amount of
comfort you would get out of it.

YOU DON'T HAVE TO SIT UP NIGHTS WORRY-
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fact that it is attending to its work while you sleep.

Dry your brick with a Rodgers Dryer, sleep in comfort and
your dream of wealth will soon come true.

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Waste Heat Dryer Specialists,
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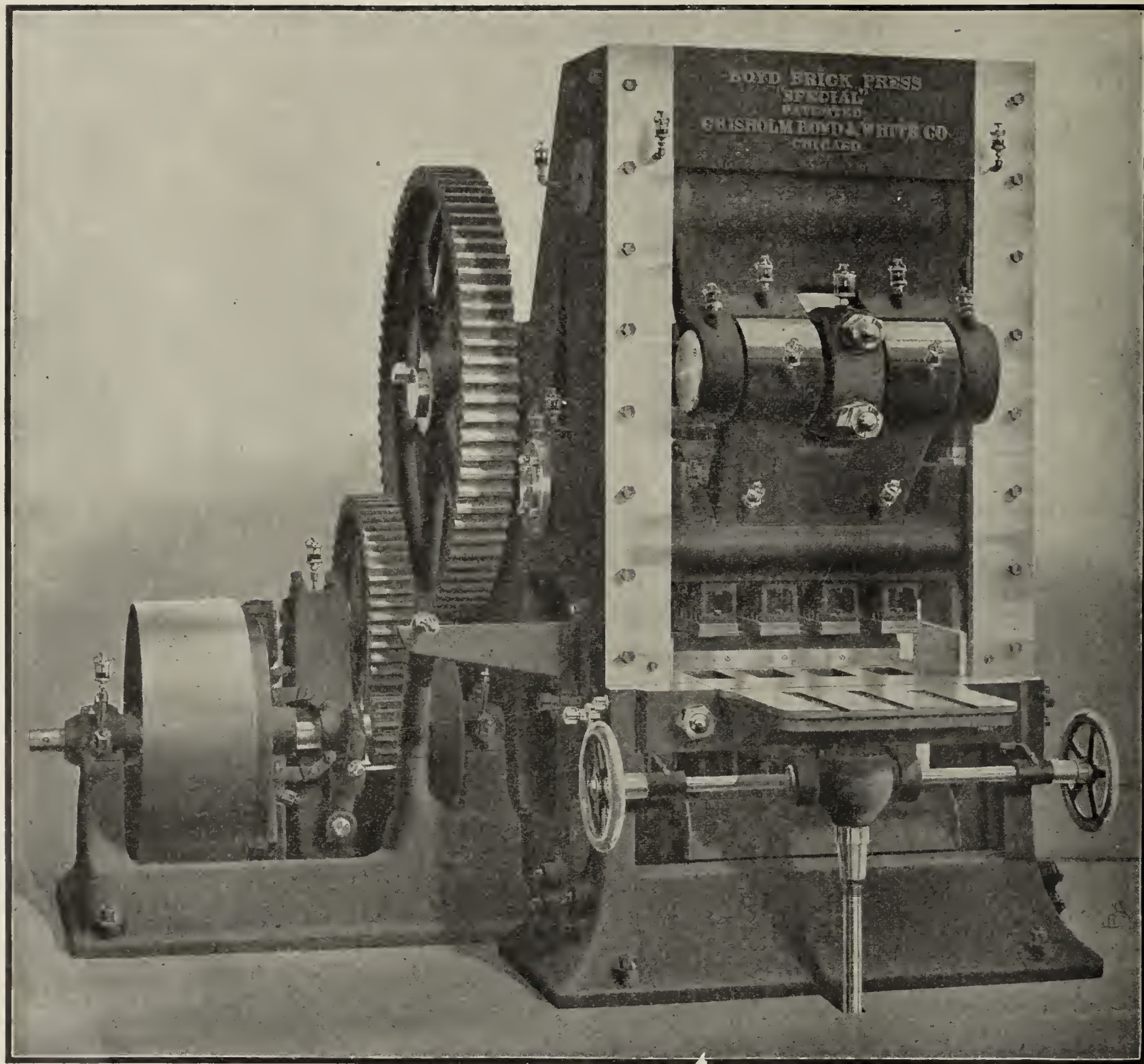
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CHICAGO.



The Boyd Brick Press

Four-Mold "Special."



The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles to the art of brickmaking. Built in two, four and six mold sizes.

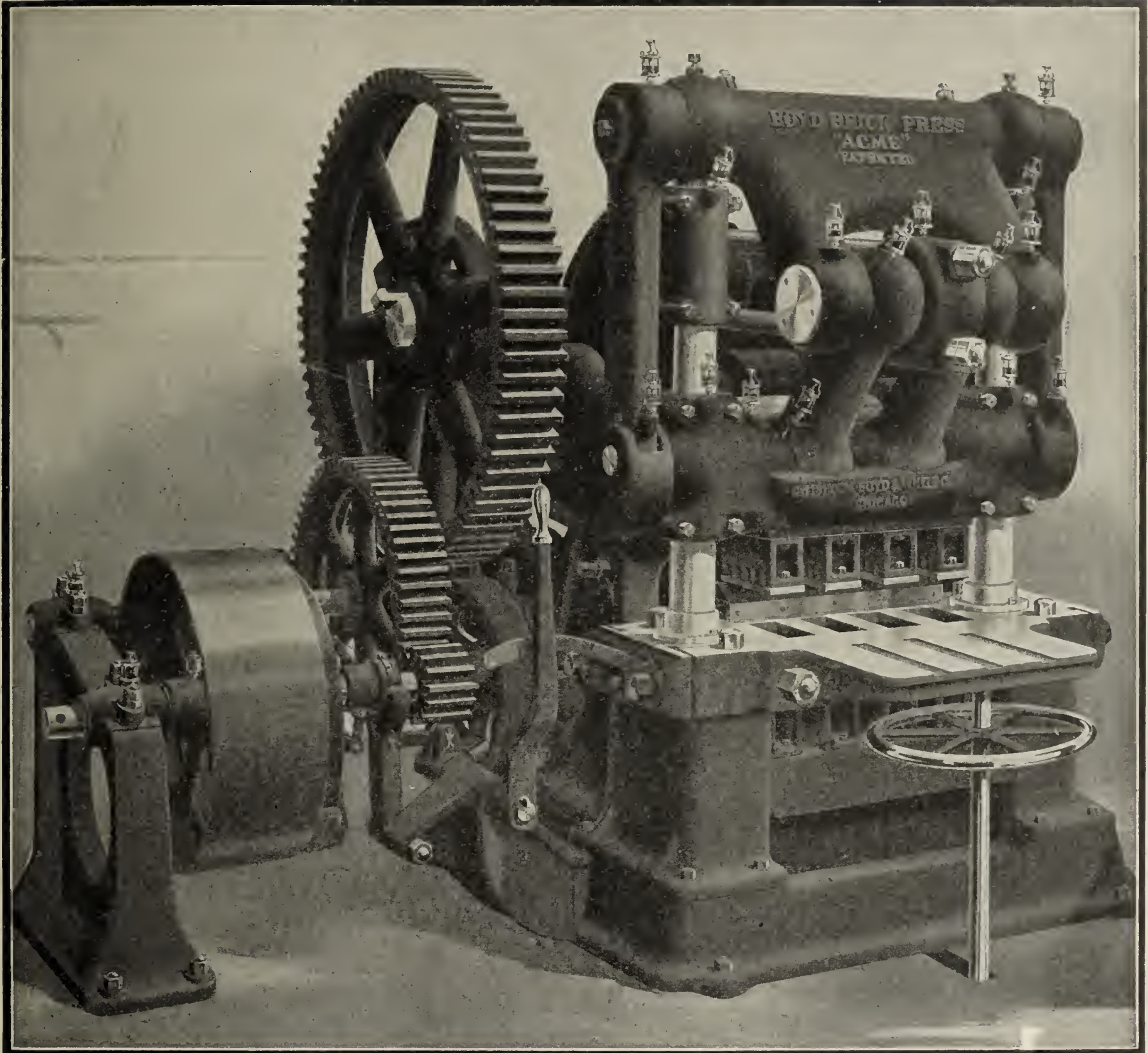
Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Boyd Brick Press

Four-Mold "Acme."



ITS NAME A GUARANTEE.

THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales.

THE BOYD BRICK PRESS was the standard at the start, and is the standard now. Steady progress, merit and improvements have kept it at the front.

ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for general Catalogue No. 15.

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The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

THE ONLY PERFECT BRICK PRESS

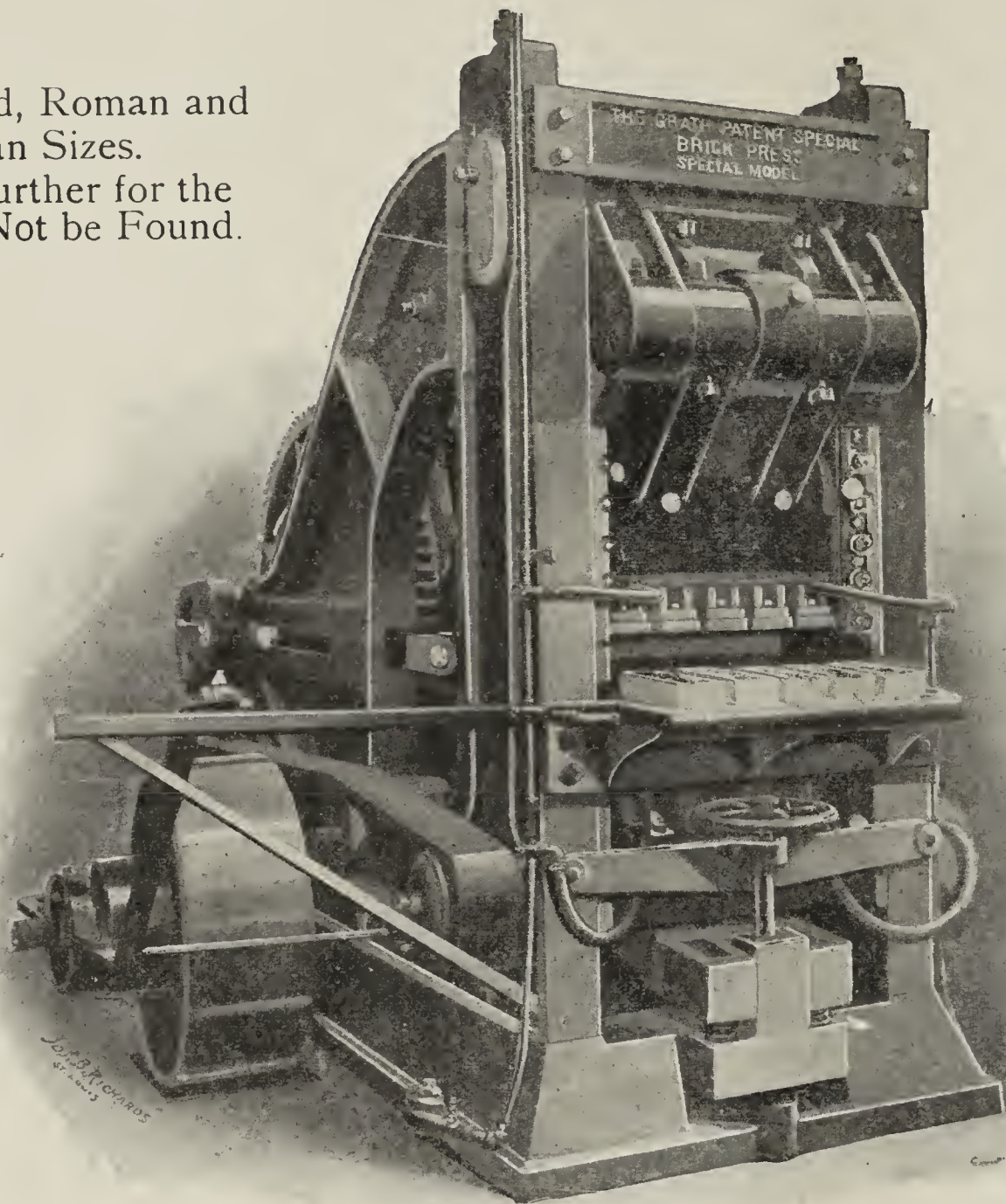
For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

Special Large Model Making Five Standard Size Brick.

For Standard, Roman and
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Seek No Further for the
Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufac-
turer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
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LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

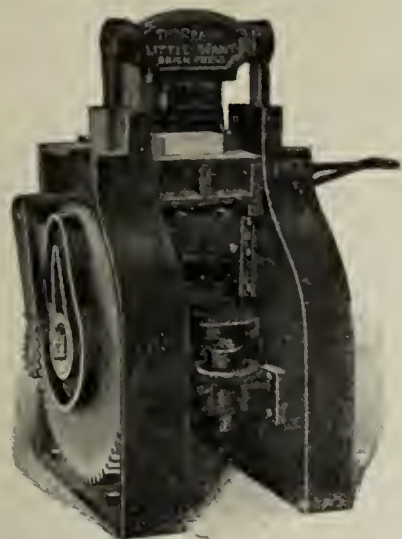
SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not too heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

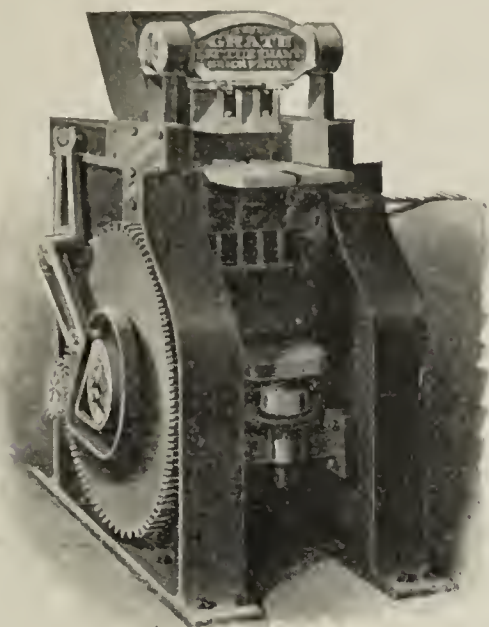
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

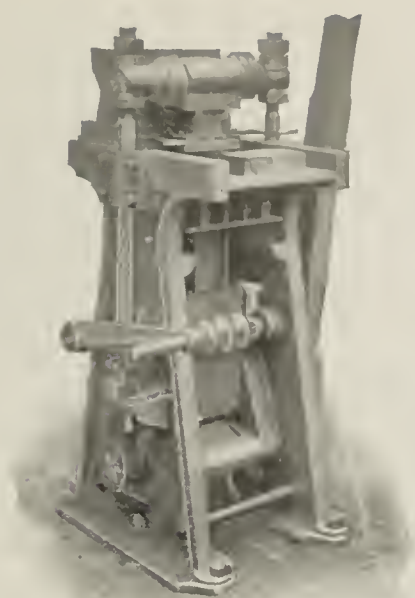
St. Louis, Mo., U. S. A.



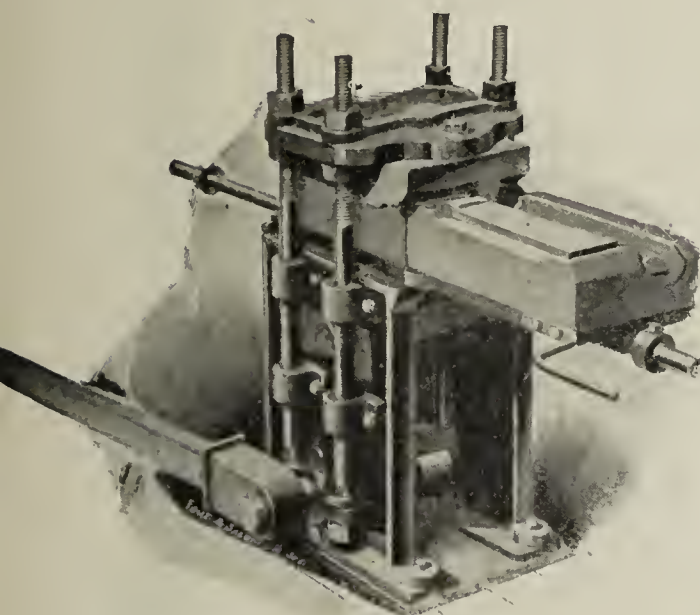
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



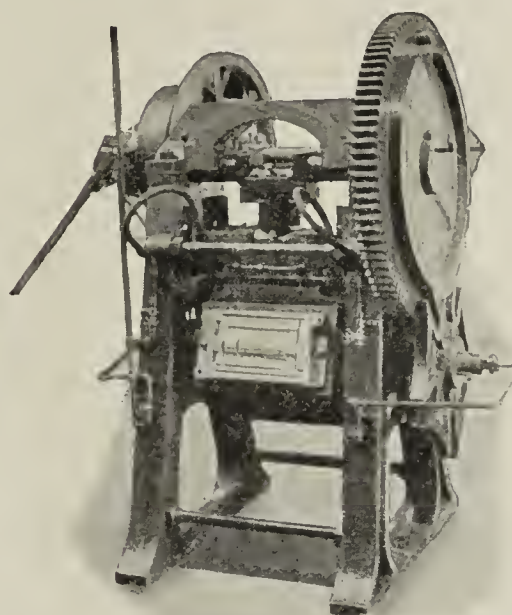
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



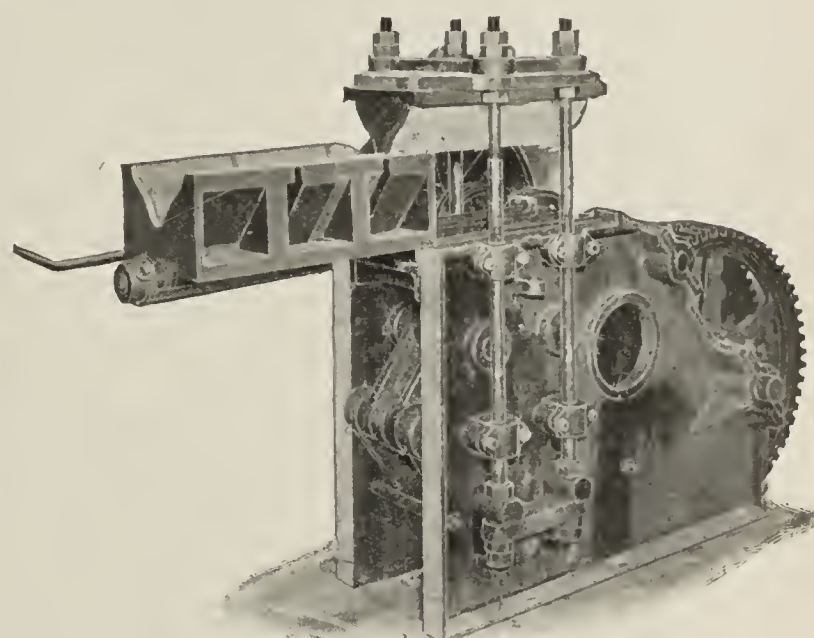
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
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From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



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Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



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Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

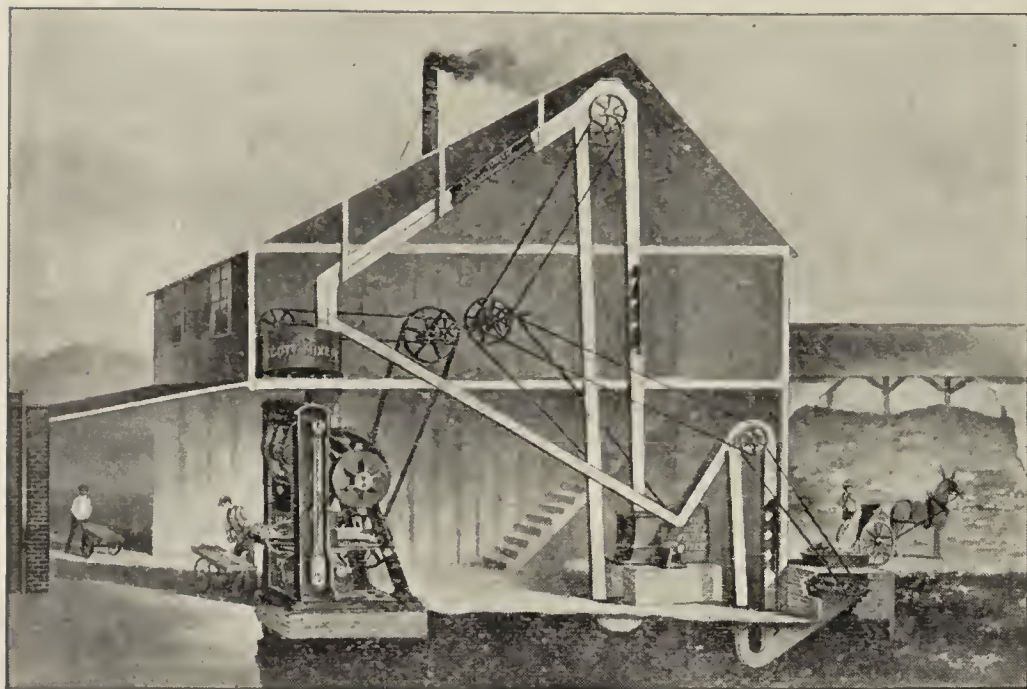
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Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the *ordinary single* down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get *advantage* of all *waste* heat from your burning chamber, which you *lose* and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in *same* manner as the direct, through the furnaces up the bag and down through the ware. *Simple* and *sure* in operation. GUARANTEED.

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Cable Address
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Illinois Supply & Construction Co.,
HOLLAND BLDG., ST. LOUIS, MO.

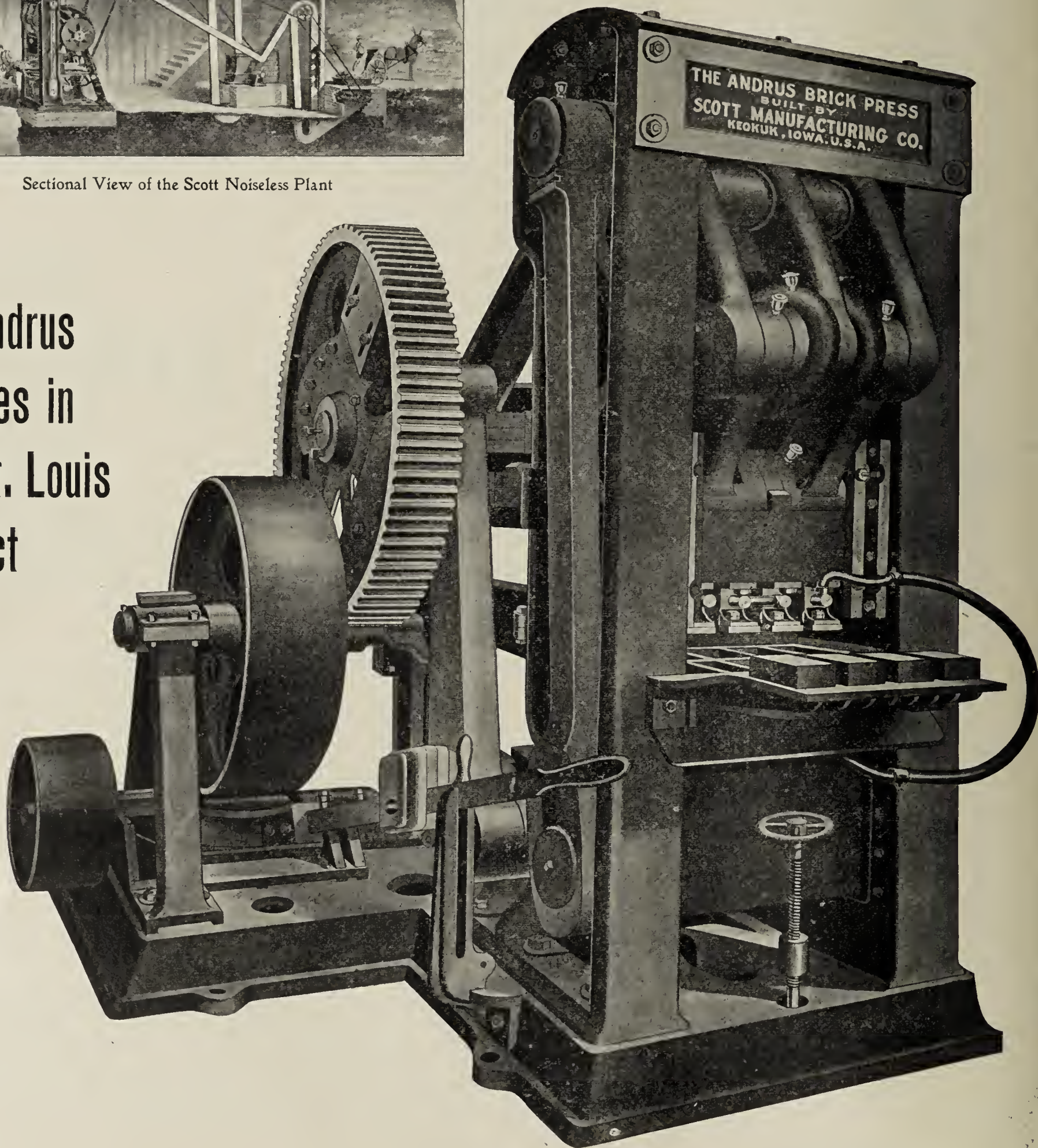
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Bell, Main 235.



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EVERYTHING
FURNISHED
BUT THE BUILDINGS
AND THE MULE

22 Andrus
Presses in
the St. Louis
District



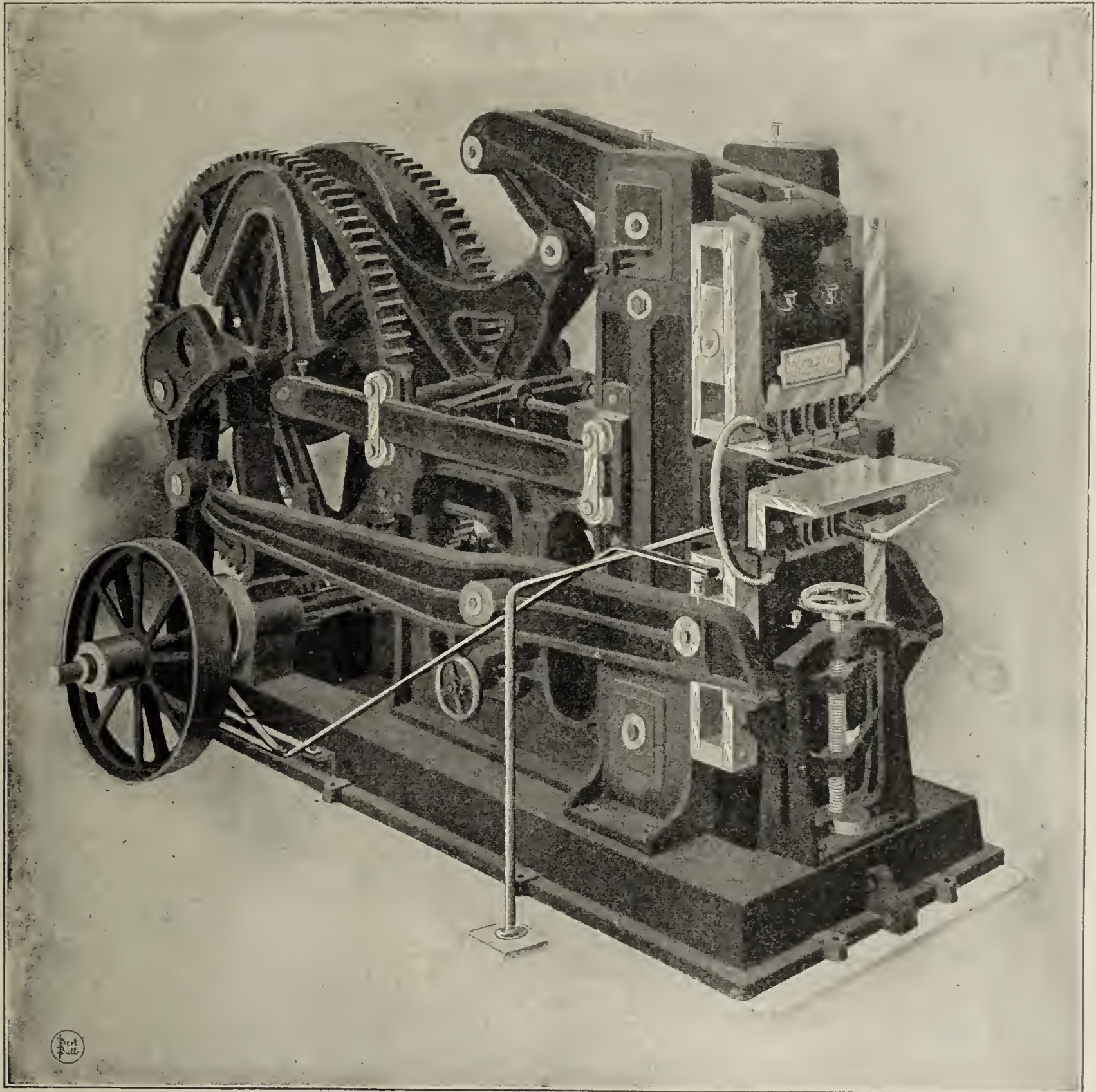
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If you want an up-to-date Dry Press, one that will give you
RESULTS—See this machine in action.

The Fernholtz Brick Machinery Co.,

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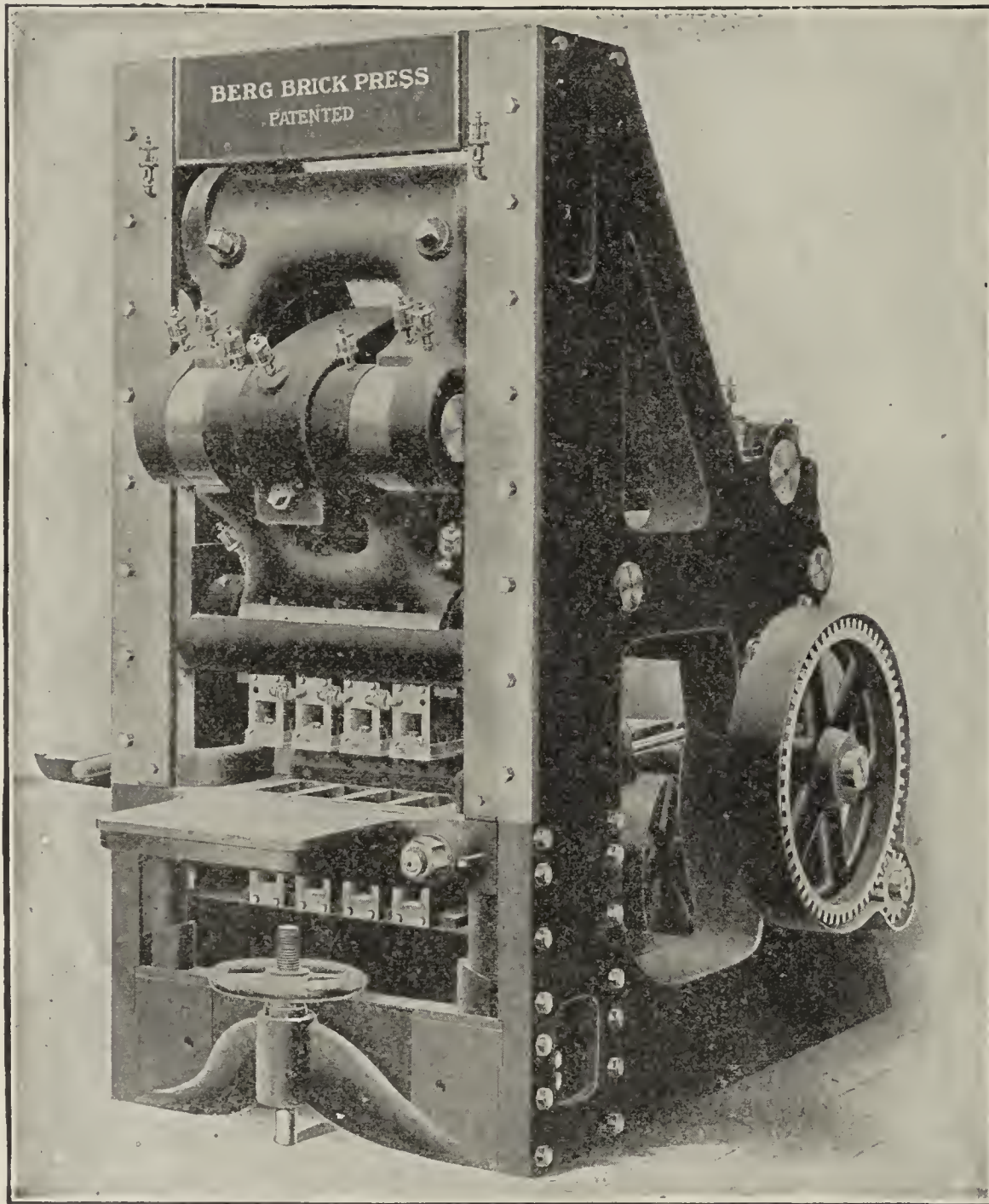
SIMPLICITY
STRENGTH
DURABILITY

ACCESS
TO ALL
PARTS

CREATEST
PRESSURE

BEST
PRODUCT

The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick-
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have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship. Fully Guaranteed* as to its *Success*.

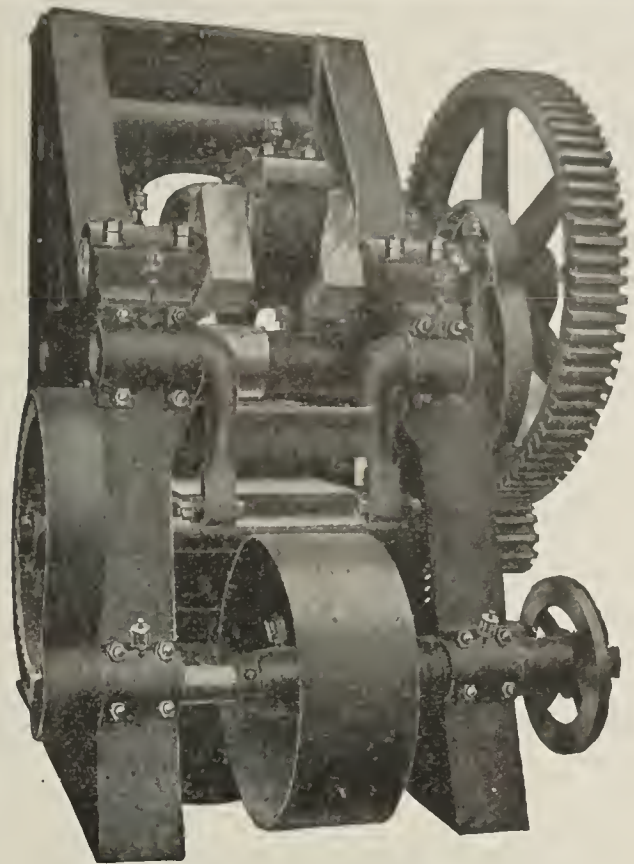
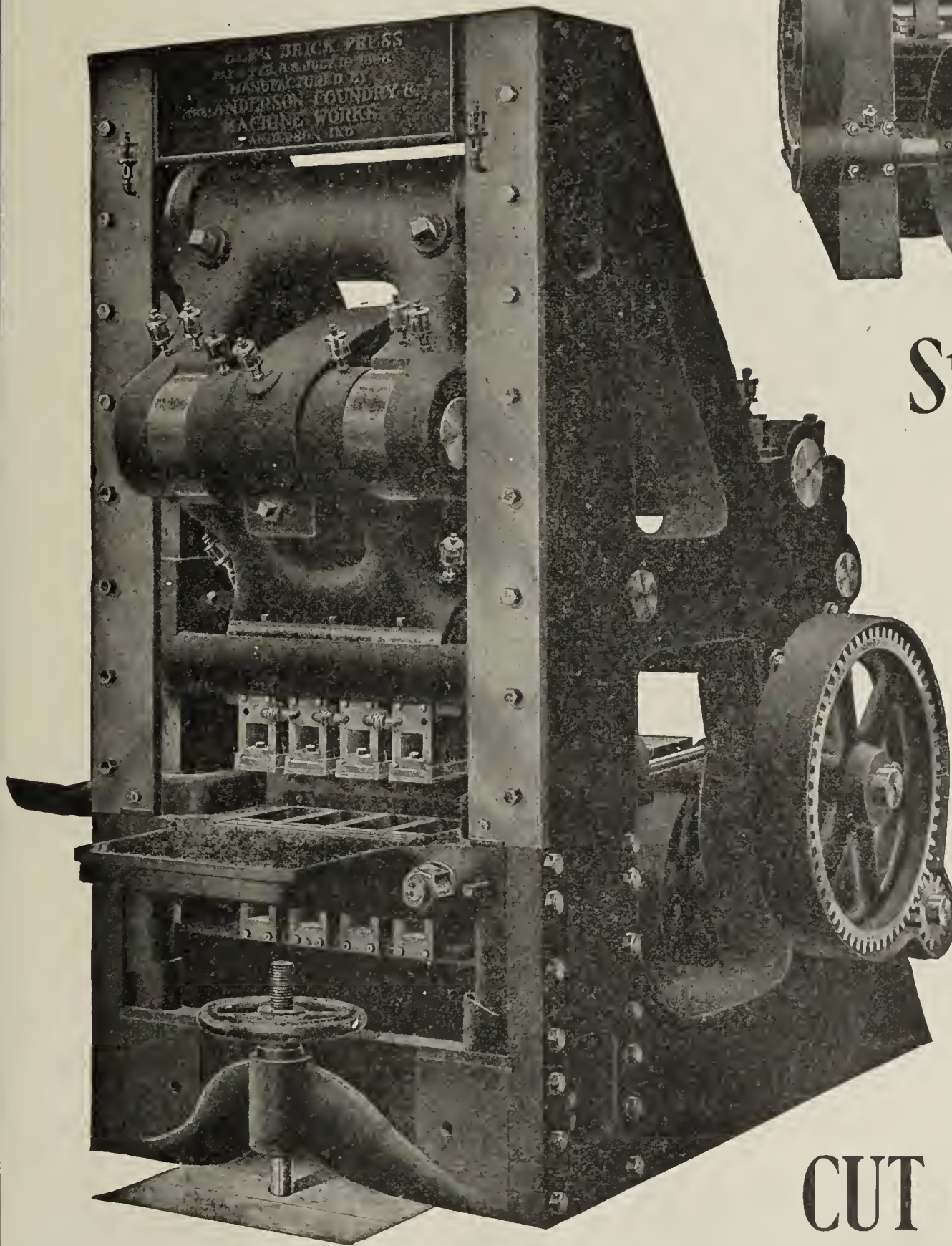
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Manning Chambers, TORONTO, ONT., CAN.

New Model Berg Brick Press



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Still in the
Lead
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One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

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PIECE.

Provided with

CUT GEARING

of either iron or steel, if desired.

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CHICAGO.

Manufactured and Sold by

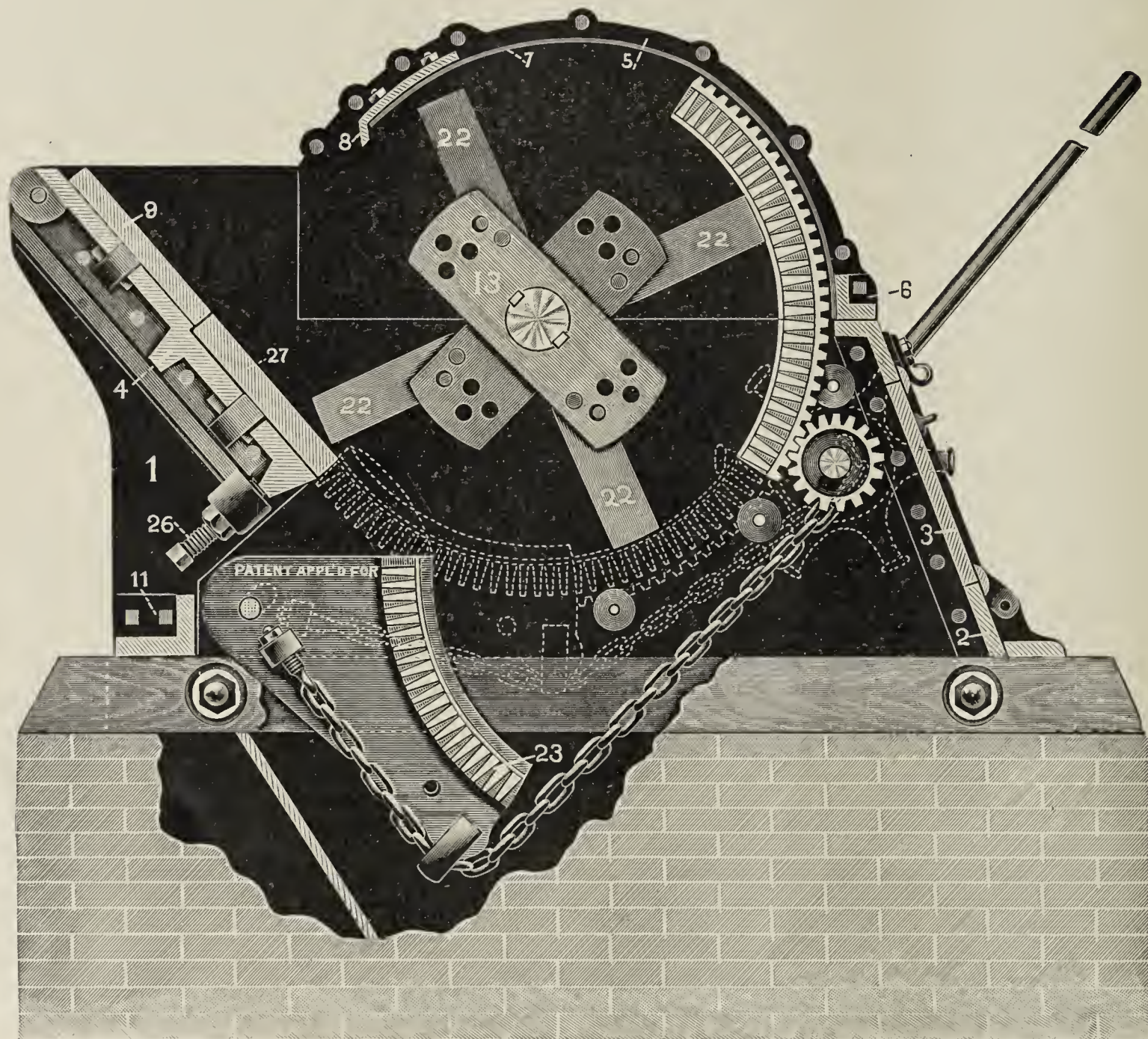
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ANDERSON, IND.

The Williams Up to Date Shale Crusher

WITH DROP BOTTOM CAGE.



Williams Patent Crusher and Pulverizer Co.
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Brick and Block.

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VITRIFIED PAVING BLOCKS, CHOCOLATE-RED
BUILDING BRICK.

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T. B. McAvoy, Pres. and Treas. John C. McAvoy, Sec. & Gen. Man.

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Manufacturers of the Unsurpassed

Danville Paving Block.

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Paving Block
Made

SIX FACTORIES
DAILY OUTPUT
400,000

The Metropolitan Paving
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CANTON, - - OHIO

How to Properly Construct Brick Streets.

Drop us a postal and we will send you free of charge
a complete set of

DIRECTIONS.

TERRE HAUTE VITRIFIED BRICK CO.

Successors to
TERRE HAUTE BRICK AND PIPE CO.,
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MANUFACTURERS OF ALL SHALE

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Manufacturers of the Highest Quality of

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Have been in the business for TWENTY-FOUR
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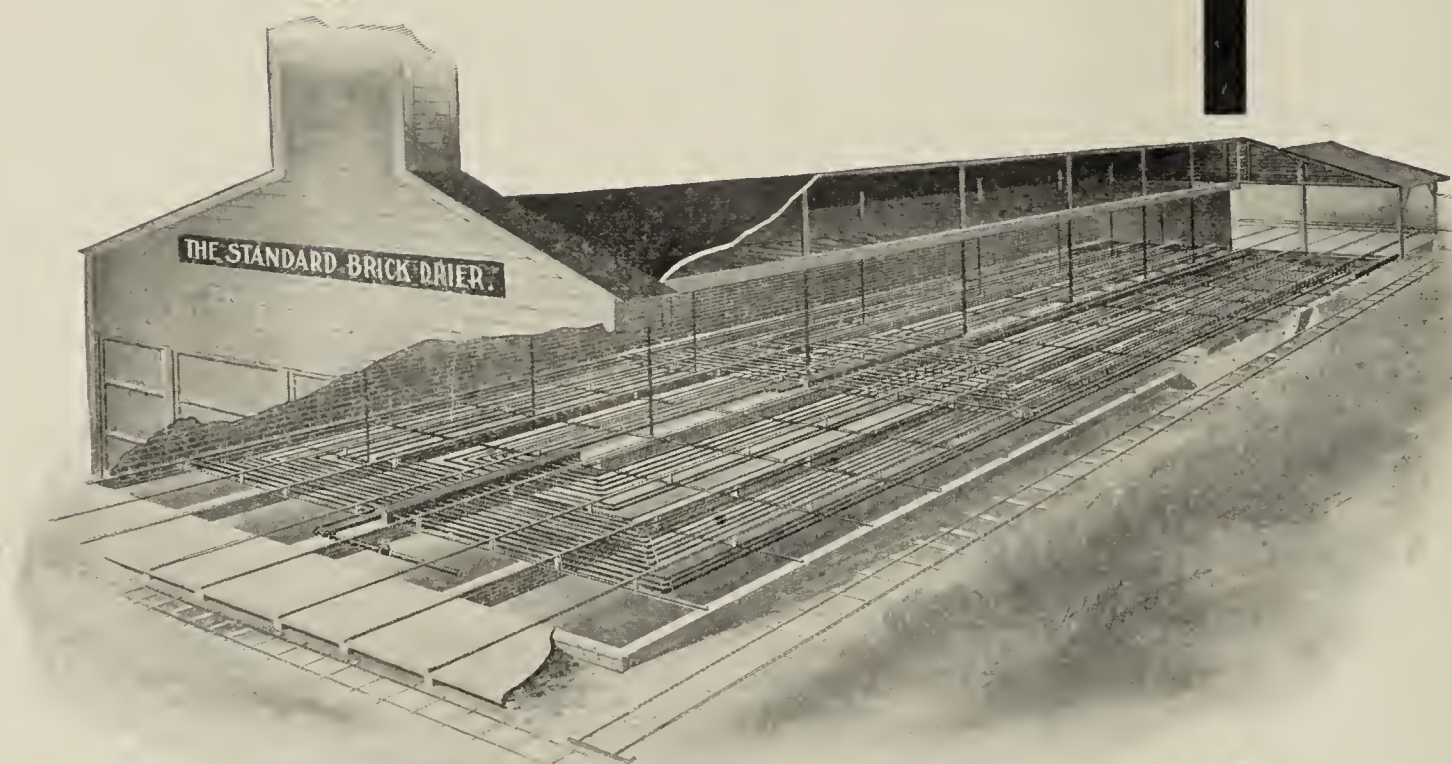
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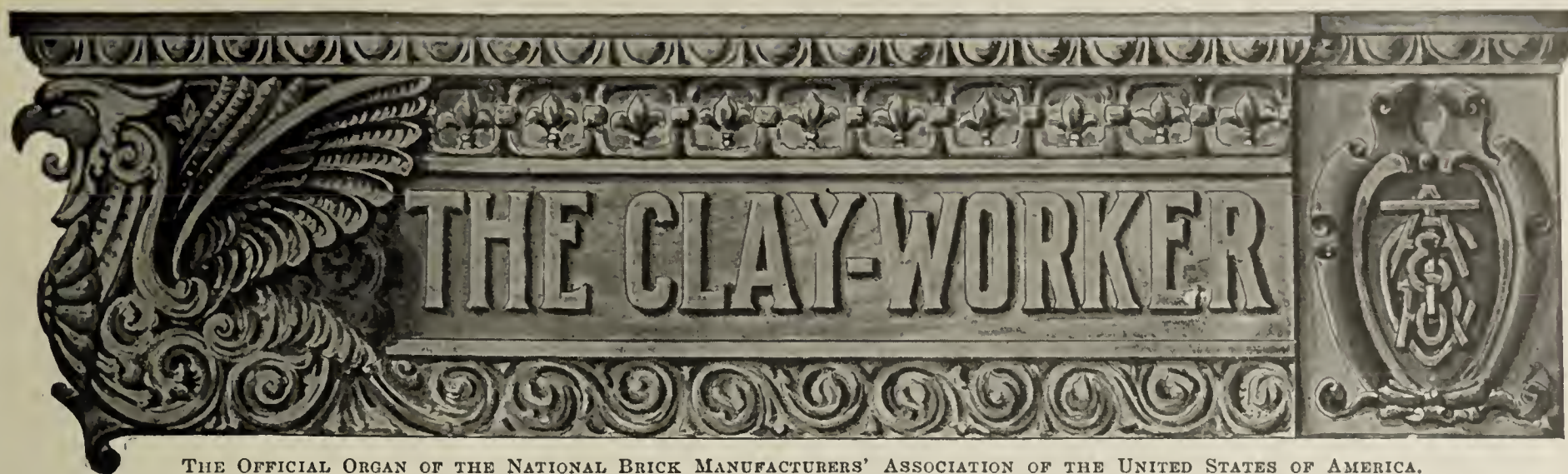
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THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVII.

INDIANAPOLIS, IND., JUNE, 1907.

No. 6.

Written for THE CLAY-WORKER.

CIVIC AWAKENING TO THINGS ARTISTIC AND BEAUTIFUL.

Stanley L. McMichael.

IN EVERY AMERICAN CITY there is noted a movement tending to the recognition of those things artistic and beautiful. Scores of cities which a few years ago gave absolutely no attention to the cultivation of harmony or architectural richness in their civic buildings, are now engaging

not be lost sight of. It is the impetus recently noted in many cities tending towards the improvement of the smaller and more insignificant things such as bridges, small parks, water fronts, grade crossings, and other things which, if not carefully planned, are liable to mar the beauty of a whole section of a city.

It was such a sentiment as this which led William H. Hunt an ex-president of the National Brick Manufacturers' Association and prominent Cleveland brick dealer, to donate to a Cleveland institution a handsome institutional fence. The institution, a settlement known as Hiram House, is in



Entrance to the Hiram House Playground. Built of Brick Donated by the Cleveland Hydraulic Press Brick Co.

the best architects America can afford, making them members of high salaried boards to study out the problems and necessities of each individual municipality.

The same sentiment is seen when cities like Cleveland, Philadelphia, St. Louis and Columbus, appoint boards of engineers and architects to evolve group plans for their public buildings. These are gigantic propositions involving millions of money and years for completion.

Yet back of all this there is another feature which should

the midst of a territory embracing the poorest section of Cleveland. There is absolutely nothing about Hiram house which appeals to the aesthetic taste, although a splendid work is being accomplished there for the children and young people of a neighborhood densely populated with foreigners.

Mr. Hunt, believing this was the place to plant an artistic seed where it would presently find root, grow and bear fruit, conceived the idea of building a beautiful and substantial fence of pressed brick. Other prominent Clevelanders ap-

proved of the plan and came forward to assist in the general movement.

Having in mind the beautiful brick institutional entrance known as Johnstone's gate at Harvard University, Mr. Hunt proceeded with his plans. The result has been a substantial, though artistic, fence and gate, giving a sense of dignity to an institution which has hitherto been merely an incident in the neighborhood.

The new fence is of brick, twelve feet high, two feet thick and ninety feet long and faces on Woodland avenue to the north of the Hiram House play ground. It is constructed of pressed brick given for the purpose by W. H. Hunt, who is manager of the Cleveland Hydraulic Pressed Brick Co.

A big gateway is composed of iron grill work and in the center of each section of the wall are big panels of iron grill work. These were inserted for the artistic effect and also to allow of the circulation of plenty of fresh air through the big play ground. The bricks are set in different positions, the final effect being very attractive.

Associated with Mr. Hunt are several other very prominent Clevelanders. F. F. Prentiss, president of the Cleve-



W. H. Hunt, Cleveland, Ohio.

land Chamber of Commerce and also at the head of the Hiram House work, provided the iron grill, that being somewhat in his line of industry. The fence was designed by Architect Charles S. Schneider, who also superintended its erection.

The placing of this great fence about a section of the grounds is only a part of a general scheme for the improving of the entire institution. Other gentlemen have signified to Mr. Hunt that they are willing to share any additional expense involved in bringing the grounds up to a high standard.

It is proposed to place an attractive lattice fence about the other portions of the grounds, paint the apparatus and then cover the playground with loads of fine white, clean sand, on which the youngsters may play and enjoy themselves. This work will be gone on with this coming summer and when completed will probably be formally dedicated.

Mr. Hunt and his associates are all imbued with a spirit of civic betterment and believe that the time has come when American cities should look to the improvement of their civic beauty.

"This gateway at Hiram House, it is hoped, may serve a number of purposes," said Mr. Hunt, in discussing the circumstances which led to its being placed where it is. "First, it contributes to the dignity and importance of one of the city's most commendable philanthropic enterprises. It gives an artistic touch to a locality of our city which has been heretofore more or less neglected. When completed, Hiram House play ground, with its institutional gateway, will provide an environment for the children of that neighborhood that must surely inspire the young and impressionable mind with a greater love for, and more substantial appreciation of, the things that are beautiful.

"In Europe there is a much keener appreciation of such things as institutional gateways than in this country. Here we are all hard at work and do not give enough attention to the artistic development of our cities. I believe the day is coming, however, when this feature of civic life will receive more attention."

In Cleveland there is a movement to erect a permanent voting booth in each precinct of each ward. The courts have held that temporary booths cannot be placed on the roadways and the suggestion has been made that the election board secure tracts of land and erect small houses on them which will be of a permanent nature.

Mr. Hunt here comes forward with another good suggestion. He proposes that the city hold a great competition among the architects for designs for different houses, which will be in the nature of a civic headquarters for each precinct. The winners of the contest will have a choice of location, while the other designs will be used in other sections. A money limit and certain specifications as to the size and material would be all that the architect would have to give heed to. Mr. Hunt believes that if such a contest was held it would bring forth a flood of architectural ideas which would benefit the city greatly.

Another development of civic life which Mr. Hunt would place under the control of an art commission would be the work of separating of grade crossing. In Cleveland as in other cities, millions are being expended in separating the grades of streets crossing railroads. In one section of Cleveland it is proposed to have a long elevated roadway of steel and concrete. There is the fear that as usual the artistic merit will be sacrificed to the mercenary side. Mr. Hunt would have this question handled very delicately and compel the corporations to desist from marring the landscape with huge ugly trestlework when something more effective can be secured by the expenditure of a little more money and a quantity of artistic judgment.

Mr. Hunt and his associates are busy formulating plans for the creation of a civic art commission which would have supervision over exactly just such work as outlined in this article. It is proposed that improvements in the city parks, the laying out of new sections of the city, the choosing of locations for statues and the approving even of plans for the statues will come within the province of this commission. It is proposed to give the commission certain legislative powers which will make it supreme over the petty influences of politics and official interference.

This art commission may be a section of the Cleveland Chamber of Commerce, a body made up of hundreds of the leading merchants, manufacturers and professional men of Cleveland. With such a backing much real good could be accomplished.

BUCKEYE.

One of the best lubricants to smooth and make easier, lighter and more pleasant the running of any business is courtesy. Not merely a prominent act of courtesy now and then, either, but small courtesies freely applied at every opportunity. And it not only does good, but it is the least expensive of lubricants, and, after very little practice, it becomes a pleasure to make use of it. If you don't believe it, try it for a while.

Written for THE CLAY-WORKER.

COLORS IN BRICK WORK IN NEW YORK CITY.

IT IS INTERESTING to note the change in taste during the past twenty years in the color of brick used in construction work. For more than three-fourths of a century the brick used in constructing buildings in New York City were all of dark and somber colors. Scarcely a light one was utilized in the erection of the largest buildings. The only relief was the light stone trimming about the windows and doors. The same dull, dark and forbidding colors characterized every street upon which much brick construction was going on; and that seemed to be about every street in the city.

Perhaps more brick were used proportionately in New York twenty years ago than are used now. And if one goes back fifty years the proportion of brick was even greater. Practically everything in the older parts of the city was built of brick or wood. Only occasionally a building was of stone. Along Broadway, in the wholesale district, which ex-

development of the most uninteresting and least artistic architecture in the city of New York. Which is a pretty severe criticism, because New York has some serious caricatures of architecture.

The builders of the old-time residences, in what was once Greenwich Village, did better than the constructors of the East Side buildings. They modified the severity of their work with delicate trimmings in many cases, introducing iron facades and iron porticos with excellent effect. Moreover, in some instances they used light colored stone for window and door trimmings, which had the merit of relieving the monotony and making the street upon which these buildings stand less somber than some of the others. But color, as now applied to brick work, was unknown in those days.

The new buildings now being constructed in Manhattan show to what extent the desire for, and the development of, color in brick work has gone since the builders put up the old houses to which reference has been made. The buildings are no longer made of dark brick. In fact, dark brick seem to have gone out of fashion entirely and in their place has been



Artistic Brick Fence and Gateway to the Playground of the "Hiram House," Cleveland, Ohio.

tends from Franklin street northward as far as Fourteenth street, there are some stone buildings, many of them very substantial, and most of them at least fifty years old. They have no modern improvements, excepting such as have been introduced since their erection at the earnest solicitation of tenants, supplemented by threats to move elsewhere if the improvements were not introduced. They serve to indicate, in a general way, something of the modification in the erection of business buildings which began about fifty years ago when wood definitely went out as a business building material in New York.

The buildings on side streets, which were built about that time, consisting principally of flat houses and other dwellings, were mostly of brick. They were generally four or five stories high and usually occupied an entire block. The trimmings were all of dark stone or dark brick. They were painted red on the outside and the streets in which they now stand are models of darkness and gloom. There was a craze for somber effects which made the streets hideous in the

introduced light brick, which range through various shades of buff and gray, all of which add to the artistic appearance of the buildings and increase the pleasant appearance of the streets. The time has passed when an architect thinks it necessary to build a dark building. The rage is for light, not only within the building itself, but about it, and the light material now used in construction absorbs less light and creates less gloom than any style of building which has gone before. The new buildings reflect light from their high sides and in place of the dark streets, which would result if the high structures were made of dark brick, there is plenty of light and the entire street has a cheerful appearance which none of the older buildings imparted.

The colors, while all are light, are so numerous that there is no monotony. Each building is treated with relation to its size, its shape and its height, and each building does its share toward increasing the light in its neighborhood. The result of this is an improvement which can not be emphasized suffi-

ciently. It has changed the entire complexion of some New York streets.

Frequently a new tall building of light brick shoots up from a monotonous mass of low, dark brick structures and everything in its immediate neighborhood feels the influence. There is a cheerfulness in light colors which creates a pleasant feeling among those who do business in the vicinity of these new buildings. It is a matter which has its dollars and cents phase as well as its artistic features. If light bricks will exhale cheerfulness, as they undoubtedly do, builders have begun to see the benefit of using them, and whole streets and neighborhoods have been improved as a result of the change in methods of building and in the use of building material.

Pressed brick has, perhaps, done more to modify the outward appearance of the unsightly New York buildings than any other single agency. It is a long, slow and expensive process to transform stone trimmings into decorative features, but with the advent of pressed brick this feature was easily made a part of the building without incurring greatly

know with all their wealth of architectural knowledge. That has been developed during the past few years.

The use of color, even in broad effects, in the new New York buildings has proved so ornamental and has enhanced the beauty of those buildings so much that it can easily be seen what the effect will be when it is better understood and when students of structural subjects have accomplished the objects for which they are now at work.

The pressed brick of delicate colors which are being used more and more each year have all the elements of durability which made the bricks of the ancient Egyptians so wonderful. They have lasted through all the ages since and have come down to these later years unimpaired. The buildings of which they were made are quite as rigid and the bricks themselves are quite as clear as they were the day they were placed in the walls. Those which were used for inscribing legends of one character or another upon them have the writing as sharp and distinct today as it was the day it was put on. Brick is the easiest worked of all building material and is, withal, the



The Omaha Brick, Paint and Tile Company's Plant.

increased expense. The influence can be seen all through down-town New York. There are many beautiful facades and decorative features which are made of pressed brick, yet none but an expert could tell them from the most expensive stone work.

As the art of molding brick becomes better understood, pressed brick decorations will be more generally used. There are decorative features for buildings not yet understood, which will increase the beauty without adding materially to the cost. The artistic use of color is one of these. Not much is being done with color as yet, excepting in a general way, yet there are possibilities of color decoration which have never been imagined. The Greeks understood coloring and tinting and their structures testify to their artistic use of both. Perhaps there is no warrant for saying that the color will be applied in the same way, but there are possibilities of introducing color in the brick itself which the Greeks did not

most durable yet found. The New York architects who are using it in their tall buildings are following the precedents of the ages.

A CHEERFUL WORKMAN.

A visitor was going through a big pottery works. Standing at one of the benches he saw a workman whose task consisted of polishing piece after piece of pottery with a cloth.

"Don't you ever get tired of the monotony? You do the same thing from morning till night. I should think the constant repetition of the same act would tire you out."

"It doesn't," answered the workman. "I know that it would if I went at it like a drudge. But I don't. I put thought even into such a mean work as this. I keep thinking of the good that the pottery that passes through my hands will do in the world, the good that it will do through its beauty. In thought I visit the houses of the great where my vases find place. Instead of my work being a burden to me it is a pleasure."—Exchange.

Written for THE CLAY-WORKER.

OMAHA'S UP-TO-DATE BRICK AND TILE PLANT.



CITY OF OMAHA, NEB., located as it is, near the geographical center of the United States, possesses many natural advantages that have resulted in the upbuilding of a substantial city containing many important industrial establishments and stands prominent as a distributing point for a vast section of the west and northwest territory. It is particularly during the last few years that Omaha has taken great forward strides and the large number of substantial business structures erected there of late bear testimony to that effect.

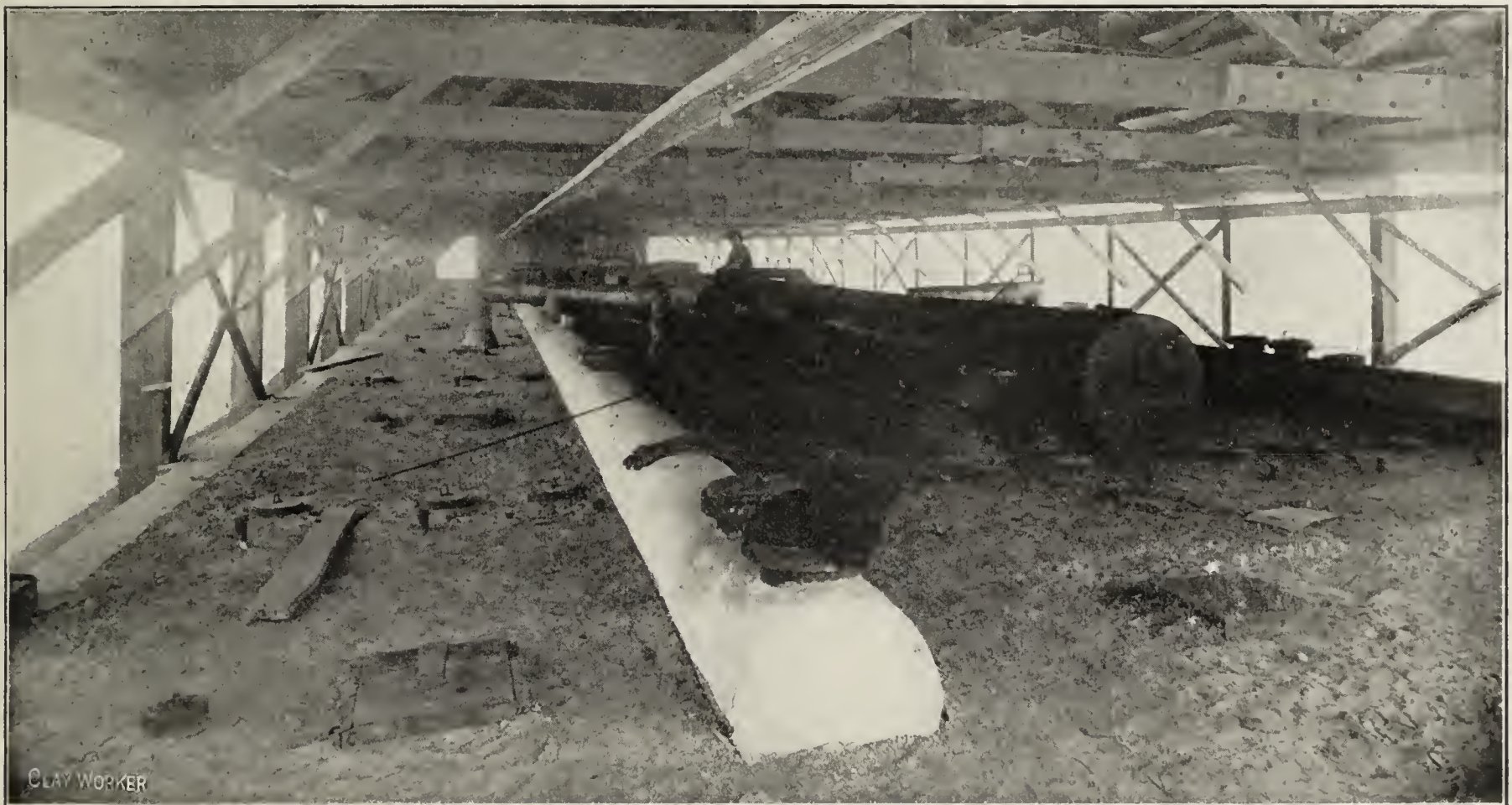
While the location of Omaha is thus favored commercially, nature did not bless it with an abundance of good raw material wherewith to build the city, and those upon whom it has depended to supply it with the most substantial and durable of all building material—burnt clay—have labored under

and Tile Co. about a year ago, with the intent of manufacturing brick, tile, hollow building block, roofing tile and paint from material shipped in from clay mines on the south side of the Platte river, some thirty miles distant.

At the head of this company was Mr. P. E. Iler, a man of great energy and enterprise, who has been interested in many industrial undertakings in Omaha and closely identified with its pioneer days.

Mr. Iler had secured an excellent clay deposit at Louisville, which not only contains a superior quality of red and white shale, particularly suitable for manufacturing hollow ware, but also abounds in a red mineral suitable for manufacture of paint. It is claimed that the grim old Indian warriors were wont to come to this mine and supply themselves with war paint in former years before the city of Omaha was on the map.

As it was found that a more favorable freight rate could be obtained on the raw clay than on the finished product, it was decided to locate the plant in Omaha so that the finished product could be delivered by team direct from the plant.



Top View of the Youngren Continuous Product Gas-Fired Kiln.

decided disadvantages in attempting to manufacture brick from the local clay deposits.

The high bluffs in and around Omaha abound in clay, but of such poor quality that it will not yield a good quality of brick, regardless of what process of manufacturing is employed and this is the only kind of clay available within a distance of thirty miles. It is of a very sandy character, void of the necessary fluxing ingredients, and at the same time it is very difficult to dry on account of the extreme fineness of the sand.

With these obstacles confronting the local brickmakers, Omaha has presented an attractive market for the comparatively cheap products from the brick plants of the Kansas gas belt, and immense quantities of Kansas bricks have been brought into Omaha during the past few years.

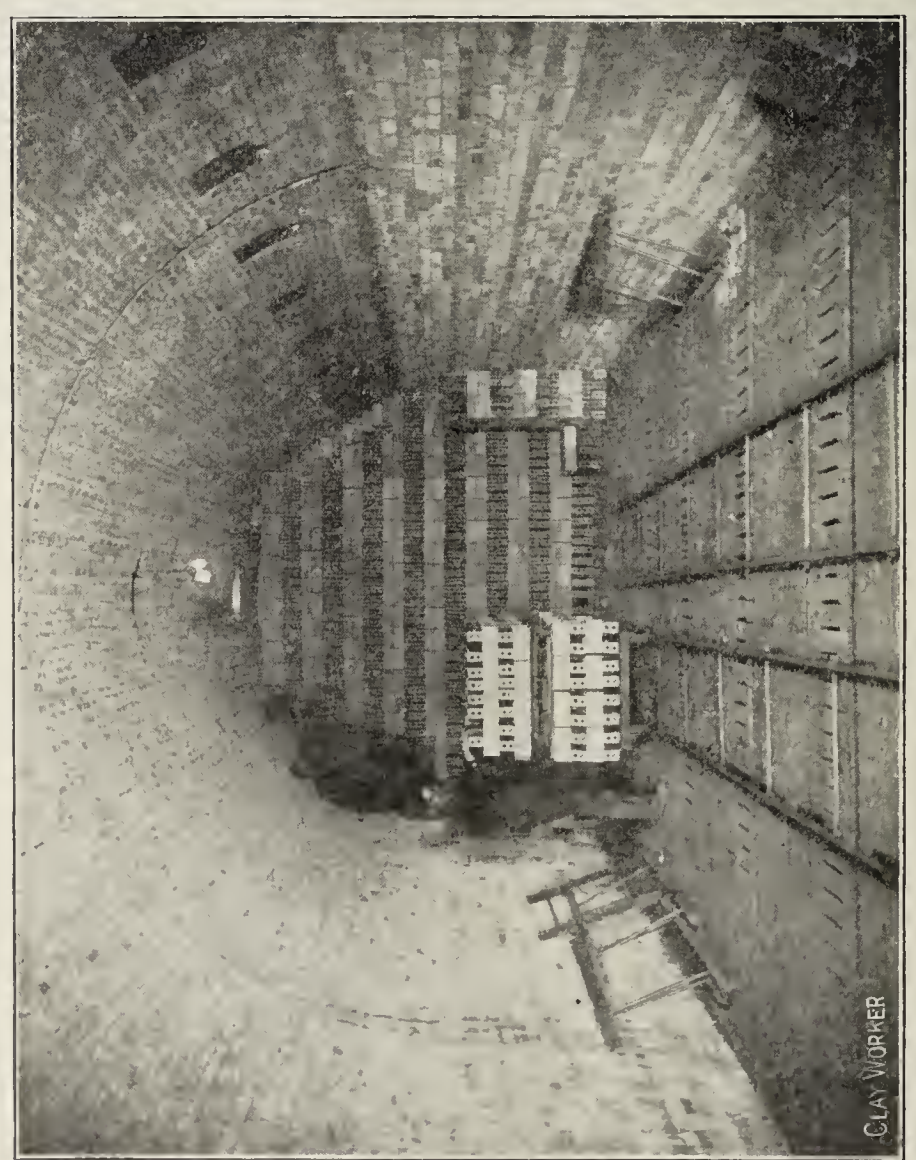
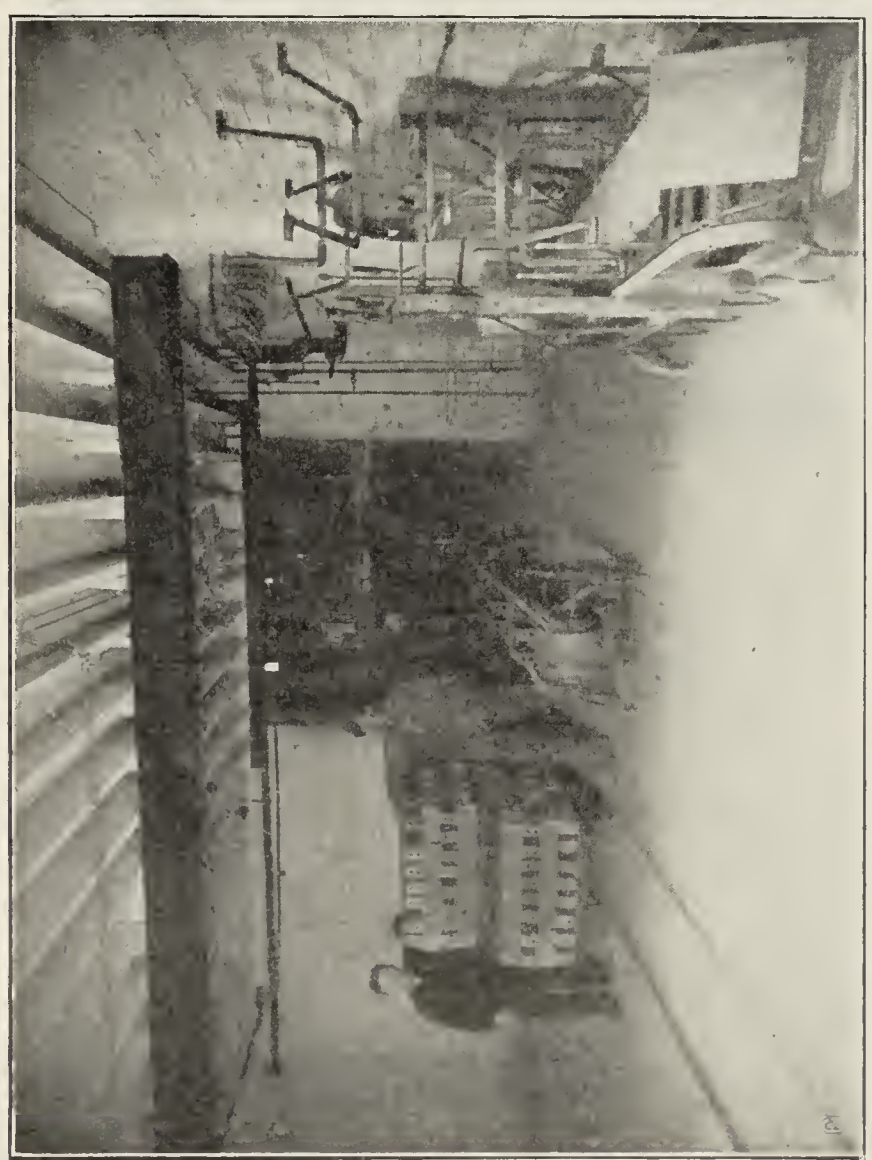
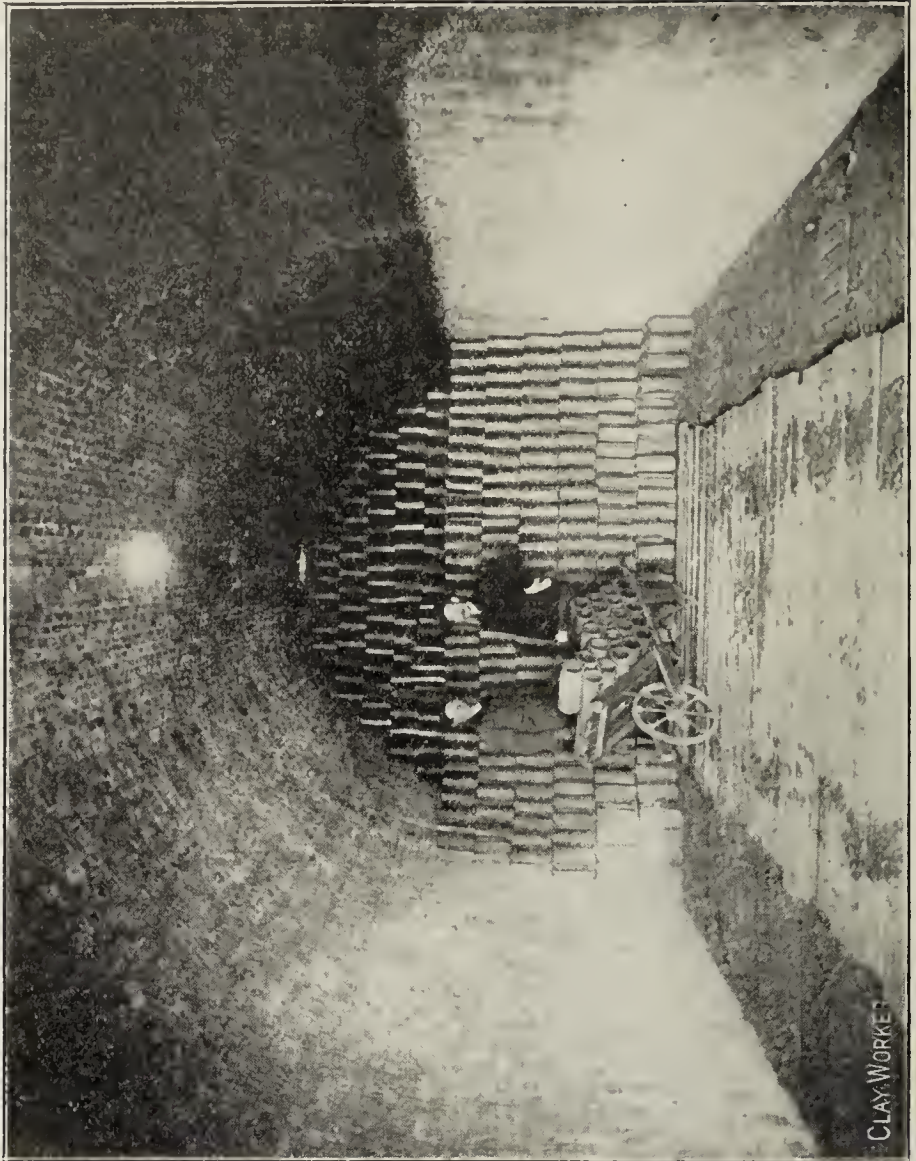
It was for the purpose of warding off this outside competition and to develop home industry by producing a superior quality of brick at a reasonable price that a number of prominent local business men organized the Omaha Brick, Paint

and Tile Co. It was determined at the beginning to build a plant of the most modern and up-to-date character, embodying the most approved machinery and system of burning, and considerable time was spent in experimenting with the clay and selecting the equipment.

Actual construction work was commenced on the plant at Second and Hickory streets, early last spring, and it was completed and ready for operation late in the fall, and while it can not boast of distinction in the matter of size, it is quite unique in some respects, and visiting clay workers will find it worth their while to spend an hour or two inspecting it, and they will be sure to find the latch string on the outside at any and all times.

The main factory building is a substantial brick structure, four stories in height, occupied jointly by the brick department and the paint department.

The clay is brought in by bottom dump railroad cars and dumped into a large hopper under the track, and from there it is elevated into storage bins in the upper part of the build-



VIEWS IN AND ABOUT THE PLANT OF THE OMAHA BRICK, PAINT AND TILE COMPANY.

ing. From the storage bins the clay is brought to a Jeffrey crusher and is then elevated and screened in the usual manner. The ground clay is fed into the pug mill by means of an automatic feeding device that delivers a fixed amount of clay at a uniform rate and this facilitates a uniform tempering in the pug mill. From the pug mill the clay goes into a C. W. Raymond Co.'s combination brick and tile machine, the "Niagara."

After being placed on cars the ware is put through the drying process in a radiated heat dryer of the C. W. Raymond Co.'s pattern, which is being fired with fuel oil.

All the machinery is electrically driven and no steam is used around the plant except for atomizing the oil for the dryer and for heating the building during cold weather.

From the dryer the ware goes to the Youngren producer gas-fired continuous kiln to undergo the final stage of the manufacturing process.

This kiln is quite an interesting affair and deserves more than casual observation, and to one unacquainted with the production and characteristics of producer gas, the process is quite puzzling until one has had it fully explained.

In general arrangement, the kiln is quite different from the ordinary type of continuous kilns, inasmuch as the compartments are all disposed in one single row, with door openings at each end of each compartment. The last of the nine compartments comprising the battery is connected with the first one by means of a return flue so that the operation of the kiln is continuous. This arrangement permits all of the compartments to be filled from one side and emptied from the other.

The gas producer is located at one end of the battery, and as all the coal is used at that place there was no coal or ash piles scattered about the plant, which therefore presents an air of neatness and order not usually found on brick plants.

The burning of the ware is certainly carried out on a scientific basis and the kiln appeared to be doing its part of the work to perfection, judging from the hardness and uniformity of the ware. When operated at its full capacity the kiln will burn forty thousand brick per day and the writer was informed that it accomplishes a saving in fuel of about 67 per cent., as compared with periodic kilns.

Aside from a superior quality of building brick, the company manufactures hollow building blocks of various dimensions, drain tile and roofing tile, and the excellence of the product has created such a demand for it that the management finds itself swamped with orders for the entire output of the plant for months ahead.

As indicated by the name, this company is also manufacturing paint, a considerable portion of the raw material for same being obtained on the company's clay mine at Louisville. The company was fortunate in securing the services of Mr. G. E. Goldner as superintendent of the clay department. Mr. Goldner is a man of wide and mature experience in all the various branches of the clay business, having been identified with several prominent clay establishments in the eastern states prior to taking position with this company.

The office management is in the hands of Mr. H. J. Edwards, a young man of exceptionally keen business ideas, and considering the excellence of its products and substantial support which this company possesses, there can be no doubt about its becoming an important factor in Omaha's building material business.

There are times when we are thrown down into the depths by a conviction that we are not nearly as good and great as we have been thinking we are, but still there is some consolation left in the fact that we are generally much better than some people think we are, and there is some sop to our conscience in the fact that if we did not have some high opinions of ourselves we would not climb up much.

Written for THE CLAY-WORKER.

THE KENTUCKY FIRE CLAY INDUSTRY.

THE PAST YEAR seems to have been favorable for the development of the brick and clay industry in Kentucky, though perhaps the year doesn't mark any more important progress than the years which have gone before. Kentucky, in common with other states in that section of the country, is developing rapidly of late and the growth in construction work is tending toward the development of the brick and clay industry.

In an interview with a gentleman just returned from a business trip through various sections of the State, some interesting information was gleaned regarding the development of this industry and about some of the firms which are doing much work along the line of improving the industry and increasing the output of brick and other clay products.

The Ashland Fire Brick Company was incorporated in 1886 as the Ashland Fire Brick Company, with one plant at Ashland, which was increased in size a number of times. A few years later the plant of the Clinton Fire Brick Company was purchased and the two were consolidated into the Ashland Fire Brick Company. Several years later the plant of the Ironton Fire Brick Company and the Parker and Austin Fire Brick Company were purchased, which gave the company five plants, with a capacity of 15,000,000 fire brick and 6,000,000 vitrified brick for paving. The combination of plants makes this company the largest in the State of Kentucky.

One plant, located about forty miles from Ashland, is in the heart of the famous flint clay fields, which have been described as probably the best refractory clay in America. It is in Carter county and, as yet, no one knows its extent. Apparently it is practically inexhaustible. This clay is used principally in the manufacture of articles which must withstand very high temperatures and one furnace hearth withstood the heat for four years and over, surely a sufficient test of its quality.

The company has an export business with Japan, Australia, Mexico, Canada and Cuba. Its domestic trade is also very large and increasing. The officers of the company are: President, F. E. Hayward; secretary, E. H. Gartrell; treasurer, H. D. Savage.

The Carter county clays, which, as has been stated, are considered among the finest in the world, were first made into clay products by the Olive Hill Fire Brick Company, which erected a small plant for its manufacture in 1895. The company is composed principally of gentlemen from Frostburg, Md., and Cleveland, Ohio, and is under the management of E. S. Hitchins. The plant now in operation cost a quarter of a million dollars to erect and employs 250 men.

It is claimed that in all the fire clay districts so far discovered, excepting the Olive Hill district, a great preponderance of plastic clay has been found mixed with the flint clay. The plastic clay fluxes or vitrifies at a low temperature, while the flint clay can not be vitrified at any temperature used in manufacturing. The result is that the brick is much more refractory in proportion to the quantity of flint clay used. The vein of clay now being mined by the Olive Hill Company is virtually all flint clay. The little bonding clay used must be hauled from other points at great expense. The company has been compelled, therefore, to work out the problem of proportions in keeping down expense and they have been forced to learn how little plastic clay they could use instead of how much, as is the case with most manufacturers.

This company owns 1,900 acres of Olive Hill big vein flint fire clay, 200 acres of clay adjoining the Louisville Fire Clay Brick Company's property, a few miles from Olive Hill, which is nearly all plastic clay; 430 acres of fire clay and coal

lands along the line of the Chesapeake & Ohio and Eastern Kentucky railways, about twenty miles from Olive Hill.

During recent years the plant has been entirely reconstructed until they have about 50,000 square feet of floor room, most of which is hot floor. The brick are all made in daylight and the present capacity is 10,000 per day, which is to be increased as soon as kilns, now in process of construction, are completed.

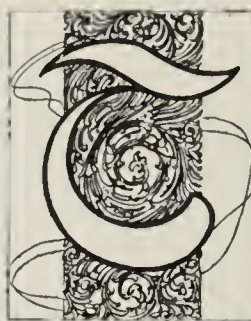
The company has recently completed a large brick shed. It is over 450 feet long and 60 feet wide, and will cover 5,000,000 brick.

A new company organized within the past year is the Louisville Pottery Works, of Louisville, which capitalized at \$100,000. Albert B. Head is the president of the company.

There are, of course, other important plants in Kentucky, but the gentleman who told about these only visited the ones

Written for THE CLAY-WORKER.

THE PHILADELPHIA TRADE SCHOOL.



THE LATEST report of the trade schools opened for the registration of pupils October 8, and the regular work of the fall term began October 15, 1906. The evening elementary schools were in operation, but after mature deliberation, it was deemed best to reduce the number for this year to twenty-nine. A careful study of conditions during the two terms just com-

pleated shows that the number can still be advantageously reduced, and that some other important changes should be made. At the beginning of the winter term, January 2, 1907, it was found that the numbers had considerably decreased in some of the schools. This falling off was so great that one school was closed January 9, another January 30, and another February 4. Four others were closed February 27, and one on March 4. All the others were closed March 13, except four schools, viz.: The Washington, the Meredith, the Mifflin and the Northern Liberties (German-English), which were not closed until March 27. The quality of the work done in these schools during both the fall and winter terms has been generally quite satisfactory. The schools have been regularly visited by the district superintendents, to each of whom certain schools were



Philadelphia Evening Trades School, 12th and Locust Sts. The Building is Nearly Eighty Years Old.

mentioned. They are extremely prosperous and consider that their future is assured.

A HELL ON EARTH.

A press bulletin of the Geological Survey is responsible for the statement that a glimpse of Hades—and what is worse—the smell of it—may be obtained out in Utah, at a place called Sulphurdale, where there are great deposits of sulphur. There are quite a number of people in the world that have strenuously fought Mormonism, who may be able to see something particularly appropriate in the great deposits of the materials of the traditional and Scriptural torment being found in the same State where Mormonism has for years had its stronghold. To others, it may suggest a fitting place for sending wicked and useless politicians. But, in reality, it is simply a plain sulphur business.

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The Class in Carpentry.



The Class in Plumbing.



Pupils Learning Typesetting.



Teaching Electric Wiring, Etc.



Sheet Metal Working.



Blacksmithing and Forging.



The Bricklaying Class, Philadelphia Trade School.

assigned at the beginning of the fall term, and a careful study of the work and conditions has been made. At the opening of the schools in October, a carefully constructed course of study for the evening schools was prepared, and it has proved very satisfactory in its operations.

As a result of careful observation of the conditions during both terms, it has become apparent that certain changes may be made, with advantage, during the next season. There is evidently a demand for evening high schools in some districts. in which certain studies other than those contained in the course for elementary schools shall be taught.

This matter requires careful thought, and in due time a report upon this subject will be presented.

Evening Elementary Schools.

The following statistics show the state of these schools for the term ending December 19, 1906:

	Male	Female	Total
Number enrolled at beginning of term..	3775	2244	6019
Total number enrolled during term....	8332	4601	12933
Average number belonging (Elementary Department)	5174	1923	7097
Average number belonging (Sewing Department)		1313	1313
Total average number belonging.....	5174	3236	8410
Average daily attendance (Elementary Department)	3156	1270	4426
Average daily attendance (Sewing Department)		799	799
Total average daily attendance.....	3156	2069	5225
Total number of teachers employed, including principals			293

The registration lists show the following facts:

	Male	Female	Total
Number of adults registered during term	2824	1068	3892
Number of minors registered during term	5508	3533	9041
Total number registered during term..	8332	4601	12933

Number of colored pupils registered during term	456	461	917
Number of publis of foreign birth registered during term	3917	1748	5665
Total cost for salaries.....	\$19,587.17		
Total cost for supplies.....	5,149.46		
	\$24,736.63		

Cost per pupil, based on average number belonging, \$2.94.

The statistics are as follows for the term beginning January 2, 1907, and ending March 27, 1907:

	Male	Female	Total
Number enrolled at beginning of term..	4956	2888	7844
Total number enrolled during term....	5534	3201	8735
Average number belonging (Elementary Department)	3473	1435	4908
Average number belonging (Sewing Department)		601	601
Total average number belonging.....	3473	2319	5792
Average daily attendance (Elementary Department)	1934	840	2774
Average daily attendance (Sewing Department)		601	601
Total average daily attendance.....	1934	1441	3375
Total number of teachers employed, including principals			252

The registration lists show the following facts:

	Male	Female	Total
Number of adults registered during term	2257	883	3140
Number of minors registered during term	3274	2321	5595
Total number registered during term...	5531	3204	8735
Number of colored pupils registered during term	359	340	699
Number of pupils of foreign birth registered	3081	1373	4454
Total cost for salaries.....	\$17,816.75		
Total cost for supplies.....	1,602.25		
	\$19,419.00		



The Class in Painting at Work.

Cost per pupil based on average number belonging, \$3.35.

The success of the Evening Trades school, established at Twelfth and Locust streets, Philadelphia, made it apparent that a similar school should be organized in the northeastern part of the city. Accordingly on February 24, Evening Trades school No. 2 was opened in the annex of the Northeastern Manual Training school, on Howard street, below Girard avenue, and placed under the charge of Professor John W. Heyer.

Appended are the reports of both of the evening schools. The large registration in both schools makes it evident that there is a pressing popular demand for schools of this character. The nature of the instruction given and the quality of the work accomplished have been most satisfactory.

There is one serious matter, however, affecting both schools, which should receive the most careful attention in order to provide a remedy if possible, and that is the small average daily attendance as compared either with the number of pupils registered or the average number belonging.

In these schools, even more than in the elementary evening schools, the matter of prompt and regular attendance is of the greatest importance. In this matter, the experience in Philadelphia is that of other cities, and various methods have been adopted in order to remedy the evil. In most other cities, it has been found expedient to fix a small charge for admission. Another plan is to require a certain percentage of attendance in order to retain a place in the class.

Wherever either of these plans has been adopted, a noticeable improvement in the average attendance has been noted.

It was interesting from an observer's point of view, to sit at the school not long since, and watch the general air of quiet regulated form that pervaded the entire order of things. But can one wonder at it when one observes further, i. e.,

the beautiful and considerate sympathy and courtesy that is extended toward these pupils. For instance (let me tell tales out of school), two young men of quiet and well-bred mien, asked to have some time off in the afternoon. Mr. Price and Mr. Odenat, with the charitable and sympathetic human nature, and the memory of their own youth, said: "Yes, boys, we appreciate your coming to us and plainly stating that you desire this time off for pleasure. You may be excused." The simple dignity of master and pupil was manifest in this diplomatic broad praise and sympathy of the one, and the quiet response, "Thank you," on the other.

A boy's confidence is so easily gained and guided that one wonders at the ignorance displayed sometimes by the very fathers and mothers of these same boys whose actual worthiness is discovered by utter strangers. The plan adopted by the principal officials is that the boys shall learn and understand that the worst thing they can do is to conceal facts; they are made to feel that the instructors and heads are as deeply interested in each and every one of them as he can be in himself. The schools are, as yet, experiments, but the results already obtained indicate the future perfection of the experiment.

Many of the boys who have left the schools to earn money on their own account, deeming themselves sufficiently proficient, discover afterwards that there are many points to be learned. Then do these boys return, to attend the night school. It seems to be a difficult matter to induce the pupil to remain for the full course, and in some of the schools, even those who have bound themselves to the three years' apprenticeship, are hard to hold. The idea too has been mooted of having the classes three nights in the week instead of five, and undoubtedly the course will be shortened in time.

Well, these are points that the future will decide. It is a great something that much is being done in the present.

The good work is bound to accomplish wonders in the future workmanship and prosperity of the tradesman.

EVENING TRADES SCHOOL No. 1,

Twelfth and Locust Streets,

For the Fall term, which ended December 19, 1906, and the Winter term, which ended April 26, 1907.

Departments.	Number registered during term.		Average number belonging.		Average daily Attendance.		Number on waiting list.	
	Fall term.	Winter term.	Fall term.	Winter term.	Fall term.	Winter term.	Fall term.	Winter term.
Blacksmithing	33	25	13	12	11	7	...	2
Bricklaying	46	53	32	34	22	22	...	24
Carpentry	59	78	28	39	22	24	...	6
Drawing archt'l.....	36	51	23	23	13	14	...	2
Drawing, mechan'l..	68	77	42	24	25	12	...	1
Elec. construction...	152	182	105	115	75	81	...	47
Painting	43	49	27	30	19	26	...	3
Pattern makeing ...	50	52	28	30	23	20	...	2
Plastering	18	24	14	12	11	8	...	..
Plumbing	61	96	48	51	39	35	...	56
Printing	32	48	25	32	22	27	...	47
Sheet metal working	42	68	31	45	27	33	...	9
Pipe fitting	26	34	17	14	9	9	...	2
Total	666	837	438	461	318	318	...	201

EVENING TRADES SCHOOL, No. 2.

Howard Street, Below Girard Avenue.

Report for the Winter term, beginning February 24, 1907, and ending April 12, 1907.

	Number registered during term.	Average number belonging.	Average daily attendance.	No. on waiting list.
Blacksmithing	41	12	8	2
Bricklaying	33	17	11	3
Carpentry	62	24	14	8
Drawing, architectural.....	30	14	8	0
Drawing, mechanical.....	69	37	29	0
Electrical construction.....	143	40	28	73
Painting	23	16	10	0
Pattern making.....	25	16	11	3
Plastering	18	13	9	2
Plumbing	68	26	14	29
Printing.....	There was no class in these three trades. The rooms were not ready and the tools did not come.			
Sheet metal work...	16			
Pipe fitting.....	7			
Total	512	215	142	162

There were twelve teachers employed—one each in all the departments except Electrical Construction and Mechanical Drawing. There were two teachers in each of these departments. There is an instructor elected for the Printing Department and one for the Department of Sheet Metal work. None has been chosen for the Steam Fitting Department.

M. E. LOCKINGTON.

Magnesia Whiteware Body.—According to A. Richard, the bodies used at the present time by the Italian whiteware potteries is composed of 35 to 45 per cent. of clay, 35 to 45 per cent. of dolomite, and 10 to 15 per cent. of sand. It has been found that such whiteware products are lighter than feldspar bodies, and for that reason they are mostly used for exportation. In order to overcome the brittleness part of the dolomite can be substituted for magnesia. The magnesia used comes mostly from Steiermark and from the Grecian Island, Euboa. The body of this new magnesia Italian white ware corresponds to the following formula:



The biscuit burn ranges between Seger Cones 08 and 03, while the glost burn is between Seger Cones 010 and 05. The shrinkage of the body is only 2 to 3 per cent. For glazes the regular lead fritted glazes and also the free lead glazes have found many applications.—Sprechsaal, No. 16, 1907.



A Kiln Wash for Leaking Muffles.—When cracks appear in the muffle kiln, a good wash is made of 40 parts of fire clay, 50 parts of a loamy clay and 10 parts of white lead. The cracks can be made tight by putting this mixture in the cracks and washing the same over with a thin solution of the same mixture.—Sprechsaal, No. 13, 1907.

* * *

International Congress for Clay, Cement and Lime Manufacturers.—The annual convention of the German Association of Clay, Cement and Lime Manufacturers has appointed a committee to make the necessary arrangement to hold in connection with the second exposition for clay, lime and cement in Berlin in 1910, an international congress in the interest of the above named industries.—Tonind. Z. No. 38, 1907.

* * *

A Visit to England.—The German Association of Clay, Cement and Lime Manufacturers has accepted the invitation of the English Institute of Clayworkers to visit England and the International Building Trades Exhibition, which is now being held in London. A party of about thirty members will take part in this trip, which will last all week. In the elaborate program is contemplated a three days' stay in London and three days visiting the different plants. The visit will include the brick and terra cotta plant of Messrs. S. & E. Collier, in Reading; the largest brick yard in England of Mr. John C. Hill, in Peterborough; and the blue brick works of G. Barnett & Sons, in Dudley-Port.—Tonind. Z. No. 35, 1907.

* * *

Continuous Gas Kiln for Burning Fire Bricks.—As the best kiln for using gas for the burning of fire brick is the continuous gas chamber kiln, in this style of kiln it is possible to obtain quick and easy, very high temperatures. For the gas generator any cheap coal can be used, and a practical trial will soon demonstrate which kind of coal is the most suitable for the particular generator in use. From 260 to 360 pounds of coal are consumed to burn 2,200 pounds of fire clay products in a continuous gas chamber kiln, burnt to a heat corresponding to Seger Cone 13. At higher temperatures from Seger Cones 18 to 22, the coal consumption for every 2,200 pounds of fire clay material is between 420 and 520 pounds of coal.—Tonind. Z. No. 36, 1907.

* * *

Specifications for Fire Brick Orders.—The German Association of Fire Brick Manufacturers adopted at their last annual meeting a set of rules which are to be used as guidance to purchasers of fire brick and special fire clay products. These rules will be strictly adhered to by the factories. They are as follows:

1. **Delivery.**—No delivery will be made within three weeks for fire brick and within four weeks for difficult shapes after receiving the order or drawings.
2. **Shortage.**—Shortage will not be allowed, in case goods be held six months beyond first delivery term.
3. **Over Delivery.**—The purchaser agrees to take 2 per cent. over the original order, which over production is necessary for breakage and manufacturing purposes. By small quantities and difficult pieces, all over produced pieces can be delivered when they are invoiced within the delivery period.
4. **Change of Model.**—All changes will be figured extra.
5. **Difference in Size.**—Difference of about 2 per cent. in

the original figures is allowed. By length under 100 millimeters 3 per cent. is permitted.

6. Warping.—A warping of $1\frac{1}{2}$ per cent. of the total length is permitted.

7. Guarantee.—No guarantee is given for fire bricks for smelting furnaces, cupolas and Martin ovens.

8. Umpire.—The laboratory of the Tonindustrie Zeitung will act as umpire in all cases where the chemical and pyrometrical guarantee is in dispute.

9. Contracts.—All contracts are subject to strikes and other causes beyond control.

10. Invoices.—All invoices are made for deliveries within the month and are to be paid in the following month.—Keramische Rundschau, No. 11, 1907.

* * *

The Owner Course at the Ceramic School in Hoehr.—This course is held every winter for the benefit of the owners of the many stoneware potteries which are situated in the close vicinity of Hoehr. The course is divided into two parts, one is for the ordinary stoneware potters, while the other course is for those manufacturers who are producing a better class of ware. The course is held once per week for fifteen weeks, and was taken part in by fifteen potters. The work in which instructions were given applied directly to the daily problems of the manufacturers. A blue underglaze color was perfected for factory use. Further, a body was produced which would have a good vitrified fracture and would be fit for salt glazing. For the manufacturers of the better class of ware, different colored glazes and colors were produced. Director Dr. Berdel hopes that he will be allowed to hold another course next winter, in which he will try to draw the work still closer together, and in that respect get still more support of the manufacturers.—Sprechsaal, No. 11, 1907.

* * *

Austrian Opinion of American Dry Pressed Brick.—We find in the stenographic report of the annual convention of the Austrian Clayworkers' Association, a very interesting discussion over the merits of the dry press. Mr. Schmelzer, who is a manufacturer of brick machines, does not advocate the use of a dry press. In the discussion he stated that he has traveled much in England and has been twice in the United States, but has not found, so far, brick manufactured by the dry press process in either country which could be sold in Austria. In England and America they called it dry press process, but in fact there is nothing dry about it, as they use as high as 15 per cent. moisture to press the brick. The American dry presses are only ordinary knee presses which are entirely unsuited for our materials. It can not be said that brick are burnt hard in America, in fact at many places they are only smoked, while brick as hard burnt as is demanded here, we do not find in America. In the cities which demand hard materials, as Philadelphia, we find only very few dry pressed brick, while formerly Philadelphia was a great center for dry pressed brick. In other places like St. Louis, where the owner and builder does not care what material he uses, we find many dry pressed brick. Such bricks as are used in St. Louis would find no market at all in Germany or Austria. Mr. Hoffman, who was a great admirer of the dry press process, sent one of his men to America to study the dry press process. He installed two presses and he has not been able today to make a first class brick on the same, while his stiff mud brick have never been stopped and are still manufactured today. The Americans make any kind of brick on their machines, and the manufacturing process rests on entirely different principles than by us.

Anybody who buys a house in America cannot complain when, after ten years, the materials prove to be bad. In St. Louis are used face brick which are artificially mixed with sulphate of iron—(we would say the clay is made impure)—in order to produce large black spots on the surface, and such bricks bring a high price. In Austria there is an American made press. It has not been used for years, for the reason that the requirements for our brick are greater than in America and the press can not fulfill these requirements. It was replaced by a Czerny press, which answers our purposes better. Mr. Schmelzer states further that he studied the problem for ten years to construct a dry press which would answer all requirements and that he would be the first to build one if one could be designed. Mr. Eckart, of Cologne,

stated that in Rhineland and Westphalia there are about 200 yards in operation using the dry press process. The bricks are used for backing up brick, and are all manufactured from shale, which is mined as a by-product of the coal mines. Every yard has an output of about 5,000,000 bricks and there is a ready market for them.—Baukeramik, No. 10, 1907.

* * *

The Action of Marble on Kaolin.—Dr. R. Rieke, of the Testing Laboratory of the Royal Berlin Porcelain Manufacture, has made the following tests in regard to the action of marble on kaolin. The behavior of marble under fire has two different phenomenoms. By low temperature we observe an increase in volume, while by high temperature as soon as the lime is completely burnt, we find a decrease in volume or shrinkage. All the combinations of carbonate of lime, marble, limestone, whiting, chalk and others, all show the same action with the difference that the loose grain combination shows a greater difference between the two points of swelling and shrinkage. Cramer has pointed out that this point of change is about cone 1, and we find that in all potteries which are using carbonate of lime for their bodies, the point is about the danger point of burning.

In order to determine the exact relation between carbonate of lime and clay, the pure Zettlitz kaolin was subjected to test with increasing quantities of fine ground marble, representing pure carbonate of lime. The tests started with 1 per cent. and ran as high as 80 per cent., and the results are tabulated below. The first table gives the shrinkage, while the second table indicates the porosity of the mixtures.

SHRINKAGE OF MIXTURES OF ZETTLITZ KAOLIN AND CARBONATE OF LIME.

Percentage contents of marble.	1%	3%	5%	10%	20%	30%	40%	50%	60%	70%	80%
Seger Cone O ₅ ...	2.1	2.0	2.1	3.1	3.3	3.2	2.9	2.6	2.6	1.7	1.2
Seger Cone 2...	3.5	4.1	4.2	4.4	3.4	3.1	2.6	2.4	3.0	1.7	1.0
Seger Cone 5...	8.8	8.0	7.8	5.6	3.2	3.0	3.9	4.7	2.8	1.5	3.7
Seger Cone 8...	9.8	9.2	8.8	7.1	3.0	4.3	9.6	15.0	4.2	4.6	5.9
Seger Cone 10...	10.3	9.8	9.8	8.3	3.2	6.4	a	a	5.7	22.8	8.2
Seger Cone 12...	11.9	11.2	11.1	9.4	3.8	6.6	a	a	6.0	a	9.5
Seger Cone 14...	12.7	12.5	11.0	10.8	7.4	10.0	a	a	17.0	a	10.2

A test start to fuse, could not be measured.

PERCENTAGE POROSITY OF MIXTURES OF ZETTLITZ KAOLIN AND CARBONATE OF LIME.

Percentage contents of marble.	1%	3%	5%	10%	20%	30%	40%	50%	60%	70%
Seger Cone O ₅	29.3	28.4	27.0	24.5	22.2	24.0	26.3	28.3	29.4	30.3
Seger Cone 2.....	25.7	23.4	21.3	19.8	21.1	22.8	25.3	27.3	30.8	42.5
Seger Cone 5.....	12.0	12.2	12.7	15.3	23.1	29.5	27.7	26.8	32.0	45.9
Seger Cone 8.....	8.7	9.7	9.9	11.9	24.6	29.2	14.4	....	33.2	42.0
Seger Cone 10.....	6.5	5.6	4.4	8.5	21.6	23.0	....	....	23.8	10.2
Seger Cone 12.....	4.4	2.4	1.5	3.4	21.0	17.7	....	....	22.6	....
Seger Cone 14.....	2.0	0.3	0.3	0.2	9.1	7.7	....	....	4.1	....

In order to determine the fusibility of the mixtures which did not fuse, special tests were made with the following results:

FUSION POINT OF MIXTURE OF ZETTLITZ KAOLIN AND CARBONATE OF LIME.

Percentage contents of marble.	0%	1%	3%	5%	10%	20%	30%	40%	50%	60%	70%	80%
Fusion point in Cones	35*	35	34*	33	30+	15	15+	8*	7-8	16	12	23-24

* Above. + Nearly.

The conclusions at which Dr. Rieke arrived are that, first: While mixtures with 20 per cent. of magnesia obtain their highest shrinkage, mixtures with 20 per cent. of carbonate of lime only show a very regular shrinkage. The mixtures with the highest per centage of lime shrink very little, due to the behavior of the lime under fire. Second: The porosity of the burnt samples increases with the increase of carbonate of lime, with the exception at the lowest temperatures, at which heat the carbonic acid has not been expelled entirely. Only the mixtures from 1 to 10 per cent. of carbonate of lime show very close and tight bodies with quite a large range before they start to fuse. With higher percentage of carbonate of lime the vitrification and fusing point come very close together. Third: The easiest fusible mixture with the formula $Al_2O_3 \cdot 2SiO_2 \cdot 2CaO$ with about 43.6 per cent. of carbonate of lime fuses by con 7-8. Mixtures with the formulas $Al_2O_3 \cdot 2SiO_2 \cdot CaO$, also $Al_2O_3 \cdot 2SiO_2 \cdot CaO$ and $21(A_2O_3 \cdot 2SiO_2) \cdot CaO$ melt about at the same heat of cone 16.—Sprech Saal, No. 38, 1906.

GREEN BOOK GLOBE TROTTER IN AFRICA.
(Second Paper.)

Geo. E. Holt, of Illinois.

(From the Glass and Pottery World, Chicago.)

DECORATED POTTERY of the better grade is becoming so scarce in Tangier that I had considerable difficulty in getting together enough of it of the right quality to show my readers what it is like. A few years ago it was almost a drug on the market, especially that sort which was used only for decoration, but the price has doubled in the last three or four years, while the cost of transportation has quadrupled. Where it formerly cost a few dollars to have a donkey or camel load of fifty to seventy-five pieces brought from Fez to Tangier, it now costs from ten dollars to twenty dollars.

Practically all of the decorated pottery of native manufacture that is seen in the northern part of Morocco comes from Fez. Saffi, in the southern part, produces a large quantity of it also, but it is very seldom that any of it gets north. In fact, even from Fez, about two hundred miles, a big allowance is made for breakage, and it is probable that out of a case of a hundred Saffi dishes, not five would reach Tangier unbroken. The Moor has a way, as any traveler in the interior will testify, of packing things by force. He will force a lantern into a hole in the panniers, that is big enough for nothing larger than a candle. The discrepancy in sizes seems never to occur to him until his attention is called to the condition of the lantern.

There is but little difference between Fez pottery and Saffi pottery, and that little merely in design. The Fez being the better, that from Saffi may be ignored.

There are two kinds of Fez pottery, glazed and unglazed. The former sort is for use in cooking and eating, etc., while the latter is merely for decoration, or for table use for fruit and nuts and other things which make it unnecessary to wash the plates.

Three excellent examples of Fez unglazed pottery are shown—the three large dishes at the bottom. The one in the center is about fifteen inches in diameter and about two inches deep. The design is in red, yellow, green, blue and black, and is very pretty, though lacking the contrast of the others. The dish at the right has a design outlined in black upon a reddish-brown ground, with which the dish was first coated, and then filled in with blue, yellow and green. Probably the best design of the three is that of the dish at the left of the bottom row. The ground enamel is of a redder tinge than in the others, which brings out the design better. The center figure is of red, green and black, outlined in black; the radiating arms are of red with stripes of yellow, black-bordered, running down the center. The designs in the segments are outlined with a fine black line, and filled in with light blue and light green, dotted with white. The blue and green do not, however, cover more than a third of the red ground. The border around the edge is of blue, crossed with

white. All of these dishes are covered on the back with red enamel. The small dish in the upper row is of the same style as the larger ones.

Were the enamel used, of a good quality, Fez dishes would have a far greater value than they have, but in a few years the colors begin to peel off, although they retain their freshness and then the design is spoiled. The enamel has no luster and is hardly as much enamel as paint.

In the article in the center of the upper row of another photo, we have an example of decorated pottery, that is made in a good many places in Morocco. It is a tamborine—an earthen form over the top of which is stretched a skin—upon which minstrels thrum, and which children use as a toy. The design is, of course, very simple, and is merely painted on. Inasmuch as the tamborine shown in the picture cost only ten cents (and I probably paid two or three prices for it, being a foreigner), a high class of work cannot be expected.

A still cruder class of pottery is shown in the toys for children. They are made of coarse clay, roughly shaped, and striped with various colors. Most of them are sun-dried. The



Pottery Market Near Tangier, Morocco, Africa.

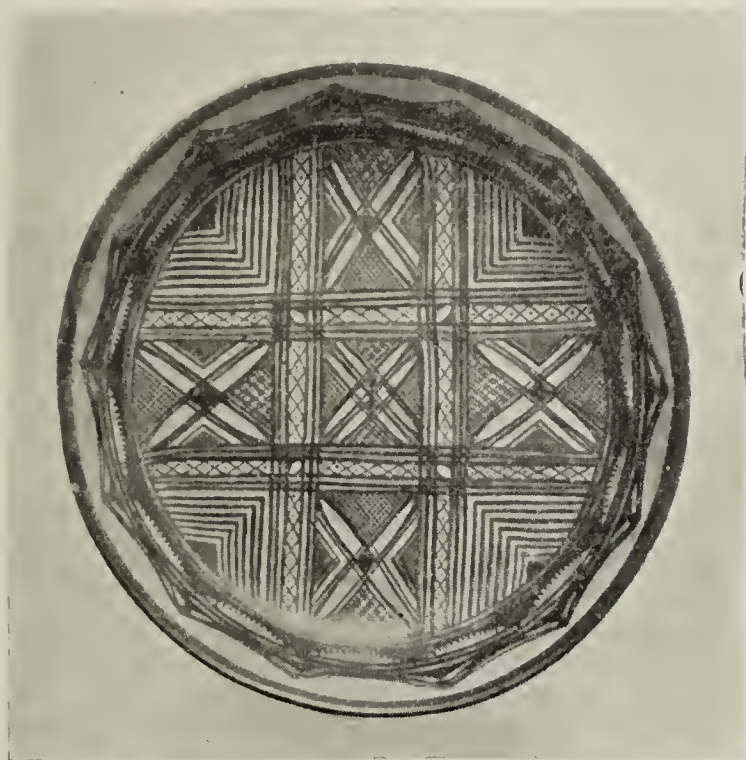
queer shaped toy in the upper right-hand corner is supposed to be a reproduction of the box in which the Moorish bride rides on her wedding night. This box is placed upon the back of a donkey and carried through the streets, escorted by a crowd of friends who sing and pray and have a generally good time. These toys bring about a cent to two cents a piece to the maker.

Here is an unglazed dish from the Rif district—in the Atlas mountains. It is a shallow and of the same variety of clay as those of Fez make, but the design is entirely of black, paint being used instead of enamel, peeling thus being prevented, as the paint soaks into the clay. The design is rather striking and is distinctive of Rif work.

Of glazed pottery, the sugar bowl shown is a good example, and it is also interesting because it has what but little other Fez glazed pottery has—the red spots scattered over it. These spots, which are bright red, are enameled on after the pot, with its design, has been fired. They are the trademarks,

as it were, of two Fez brothers, who were among the best pottery makers, and both of whom died in an epidemic of cholera. The bowl stands about six inches high and is about the same in diameter. Its glaze is good for Morocco, but would be wretched for America. The design is of blue, green and yellow, and is very uneven. Likewise the yellow enamel used has "bubbled" in the firing. Inside the bowl is a little more decoration—a star at the bottom and a border at the edge.

Some very pretty fruit dishes come from Fez, of a finer



A Rif Dish Design in Black.

quality of clay and more accurate and delicate in design, than the sugar-bowl. But like all native work, there is much that is crude, although its very crudeness may be a relief.

All Moroccan pottery, glazed or unglazed, is molded by hand. It is fired in crude ovens, or baked in the sun. As regards price, one may now buy an unglazed dish of average size for from fifty to sixty cents, while the glazed ones are about double that price.

DISCOVERY OF DRESDEN CHINA.

Dresden china, it is said, was discovered through accident. John Frederick Bottcher was a chemist's assistant in Berlin about 1700. At that time all potters were endeavoring to discover a means of making translucent china, but in vain.

Bottcher, having fallen under suspicion of being an alchemist, was obliged to leave Berlin and take refuge in Saxony. Augustus II. was elector of Saxony, and in a hope of finding the secret of the philosopher's stone he placed young Bottcher in a laboratory with orders to carry on his experiments. While working along the lines designated by the elector, Bottcher surprised himself by discovering something akin to Chinese porcelain. He was at once bidden by the king to pursue the quest of making china. He might have continued his endeavors for many years, had not an accident given him the key to the translucent china.

A wealthy iron founder was riding on horseback near Aue in Saxony, when he noticed that his horse lifted its feet with difficulty. On examination he found that the animal's hoofs were filled with a peculiar white adhesive clay. More out of curiosity than anything else, he took some of this clay home with him, and succeeded in making it into a fine white powder. Through chance Bottcher obtained some of this powder and found that it was the long-sought kaolin.

The secret of the translucent china was solved, and the king ordered a china factory to be built, of which Bottcher was the head.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



AY HAS BEEN far from a good building month in this section of the country, the weather being too much of the winter variety, and people who had all their plans for building laid would hold off on account of the gloomy weather; at the same time the building permits issued during the month indicate that there was over 25 per cent. more business started than in the same month of last year. There were 457 permits issued for the month, of which 48 were for brick buildings, and the total value was \$1,280,135, of which \$768,800 was for brick buildings. The total shows an increase of \$369,565 over the corresponding month of last year.

In spite of the above showing some of the brick dealers state that it seems to them like building is off just a little, although none of them would admit that their business was not better than at the same time last year. Others declare that there is a very heavy demand for brick, both in the city and in the country, and their business is only limited by the supply. In support of this statement one dealer showed a letter just received from a plant from which he had been buying in large quantities, notifying him that no more orders would be received at the old prices, and placing an advanced price for future business. This notice came from a Kansas factory, and is only one straw to show the way the wind is blowing. It seems evident that the Kansas brick men are getting plenty of business or they would not be shoving the price up on the Kansas City dealers, for the Kansas City price has always been the last one to advance, owing to the fact that so many factories expect to dispose of their surplus here, and naturally make close prices with local dealers to quickly get rid of whatever they have on hands that they do not want.

In the city the big demand at the present time is for the



Moorish Decorated Pottery.

All samples are from Fez, except the center one in top row. This is a sort of tamborine used both by children and minstrels. A sugar bowl is the only glazed piece.

vitrified brick, for building purposes. This demand has been steadily on the increase since the vitrified brick first began to be used for that purpose, and now dealers declare that they seldom have a call for anything else. Where architects are in charge of jobs there is almost always a specification of the vitrified brick, the fact that they always keep on looking good is the point which attracts so many friends to them.

There is also a growing demand for the vitrified brick in

colors, for trimming, as a good many builders have made the mistake of building a fine vitrified brick house, with fancy brick as trimming, of the pressed variety, and now the trimmings are beginning to look dingy, while the balance of the walls look as fresh as when first built.

Kansas City is steadily increasing in population, and of course it is natural for the dealers to expect a good increase in their business each year, in case the competition has not been increased. At the same time, building operations for several years have been fully up to the expansion in population, possibly a little ahead, and as a result there are a good many empty houses and flats in the city today, especially of the older ones. Without question whenever a quiet season comes to this section of the country, from whatever cause, the building trades will feel it immediately, on account of these conditions, and as a result, builders will probably be watching conditions closely. This may have caused a timidity about starting last month on the part of a good many, as there was a big scare about the loss of the wheat crop, and the loss of the wheat crop would be quite a blow to the prosperity out here, but according to the estimates of men who have the reputation of not missing the crop far each year, there will be a 75,000,000 bushel wheat crop in Kansas this year, and that is not so bad when it is considered that last year was an exceptionally good one and the crop was only about 90,000,000 bushels. Oklahoma is expected to produce a crop of about 15,000,000, or about half a crop, while Texas is now expected to produce about 5,000,000, or a third of a crop. Nebraska has every prospect of a good crop, as has also Missouri and Iowa. There is absolutely nothing to make builders timid now, and the chances are they will be active from this time through the balance of the year.

The new union depot is not yet erected. The fact of the matter is, it seems like the negotiations between the city and the railroad officials are being drawn out for the purpose of delaying the start on this big project, probably owing to the fact that the railroads do not want to begin the work until the financial market becomes more settled, so they will have a better market for their bonds. At the present rate of progress there is a chance that none of the present contracting parties will ever live to see the depot. The city council will hold a special election next September on the question of a new charter, and the date was set that far ahead so the depot arrangements could be made before that time and any necessary change in the charter be incorporated at that time. Possibly all the preliminary matters may be fixed up by then.

The boat line on the Missouri river is soon to be an assured fact. A committee was sent to see what could be done in the way of buying boats all ready for the river traffic, and it was found that one boat could be purchased, and another one could be made in the course of sixty days. The government snag boats have already begun work, and as soon as the river channel is cleared and shore lights are established so the boats can run day and night, there is no reason why a regular boat service cannot be established, and then there is a possibility of a good deal of business being done in the way of barge loads of fancy brick from away up the Ohio river. The river traffic should soon grow to very large proportions, and building material should form a goodly part of it, both going and coming, if the people in the trade are awake to their opportunities.

Much brick paving has been done in the cities of the southwest of late, and a great deal is contemplated. All plants turning out a good paving brick are able to get all the business they can possibly take care of.

This city is now furnished with natural gas, the gas being turned on in the last section the latter part of last month. The gas company and the city dickered for months over the question of a charge for manufacturing purposes, and now there is gas all over the city for lighting purposes, but no

gas for manufacturing purposes. It seems the gas company has the best of it, as usual, for it can refuse to furnish natural gas for manufacturing purposes at any time in case it thinks it needs the gas for lighting, etc. This leeway on the part of the gas company makes it imperative for manufacturers, such as brick plants, to be very sure to have a long time contract for gas before making any changes towards using it as a fuel. It costs money to change a plant to burn gas, and then it does not pay to be put out of business for a while if the gas company wants to turn off the gas for you.

The Eadie Building Supply Company will move about July 1 to its new location, 316 Scarritt building, on the same floor with the Builders Exchange.

T. B. Price, of the Pittsburg Brick Company, is still laid up at Excelsior Springs with the rheumatism.

J. R. Lillis, of the Kansas City Paving Brick and Tile Company, has just returned to the city, after a lengthy trip through the south in search of health. He has been severely ill for several months, but is again taking an active interest in business matters, in spite of the predictions of the doctors to the contrary a few months ago.

The Pittsburg Brick Company will move its general office from the Postal building to 323-24-25 Scarritt building the early part of July.

The Eadie Building Supply Company has secured the contract for furnishing all the brick for the large twelve-story addition to the Baltimore Hotel. This will take 1,500,000 brick, and they are to be vitrified brick. The face brick will be produced by the Standard Brick Company, of Coffeyville, Kansas. The common brick will also be Kansas vitrified, and the piers are even to be built of No. 1 vitrified brick, as the builder, Mr. Corrigan, is a firm believer in a solid foundation, and in brick to make it solid and lasting. The old part of the hotel is built of pressed brick, and it is to be painted to imitate the vitrified brick of the new part. This shows the position being taken by vitrified brick in this city, when such builders will change a large building already built, and instead of using the same brick to make it uniform, will use the vitrified and then by the use of paint, try to keep the balance of the hotel to correspond, it shows how rapidly the sentiment is changing towards vitrified brick.

F. A. PARKER.

HUMOROUS LOGIC.

The judge told the tenor that it would just cost him a tener. Boarders will be pained to hear that the California prune crop is exceptionally large this year.

That Caruso flirtation in the monkey house must have been something awful. We note the monkey has since died.

Look out for big families after this; a German inventor has constructed a flying machine on the principle of the stork.

The Rockefeller family seems to still have its luck in the courts. We see where William has just been awarded damages of 18 cents against a man caught fishing on his premises.

Samuel Gompers says he is "going into politics." This may be taken as a confession on his part that he has not yet been able to break into the game. Others have looked at the matter in this same light.

A dealer was unpacking some pottery the other day, and after carefully examining one piece, set it down with the remark that it was a baby jar. When pressed for a reason for his decision, as it was one of the largest, he pointed to the decoration, which was four storks.

It takes a diplomat to be a soldier. When a private, he must tell more than he knows, and when an officer he must tell much less than he knows, and even by following this rule it seems hard to keep from being courtmartialed.

It requires much skill to obtain free advertising these days. Mark Twain has just suffered the exclusion of one of his books from the public library, and got plenty of advertising space on the front page of the big dailies. Caruso also managed to get a few thousand columns of advertising space that could not have been purchased.

F. A. PARKER.

Written for THE CLAY-WORKER:

THE ECONOMICAL GENERATION AND USE OF STEAM ON BRICKYARDS.

By Theo. Rizer.

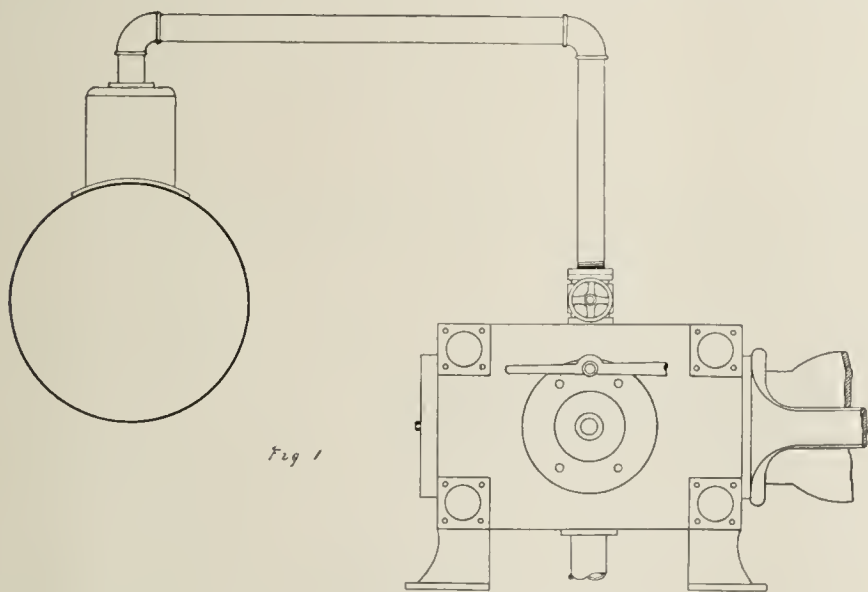
HEAT EFFECTS.



THE THEORETICAL nature of heat and its transmission from place to place through matter space, have been explained in preceding articles, and the next step is to learn something of the effects it produces upon the substances of the material world. The more important of these effects are: 1.

Change of volume or expansion; 2, Change of temperature; and 3, Molecular changes; such as liquefaction and vaporization. Other effects of a chemical and electrical nature occur with some substances, but the aforesaid three are the ones with which fuel users are most vitally concerned.

Expansion, or that property by which matter experiences a change of volume under the influence of heat, seems to be in its entirety more a drawback than an advantage to the brickyard man, since it necessitates his continually making the explanation of the nature of heat, to an increase in the provision for counteracting and preventing its destructive tendencies on his kiln, steam and furnace appliances. The expansion of a body when heated, is due as was pointed out in kinetic energy of its molecules which causes them to react with greater force against one another, partially—or wholly, if sufficient heat is applied—overcoming the force of cohesion and causing the molecules to move farther apart. Should the expansion of the body be hindered in any way, the cumulative molecular action will create a pressure against the obstruct obstacle. Pressures developed in this way will, if the resistance encountered is sufficient, attain enormous values, which would, if not properly guarded against, wreak the ruin



of the most massively proportioned kiln and furnace masonry, snap asunder the heaviest steam piping, or rend the strongest steel boiler plates.

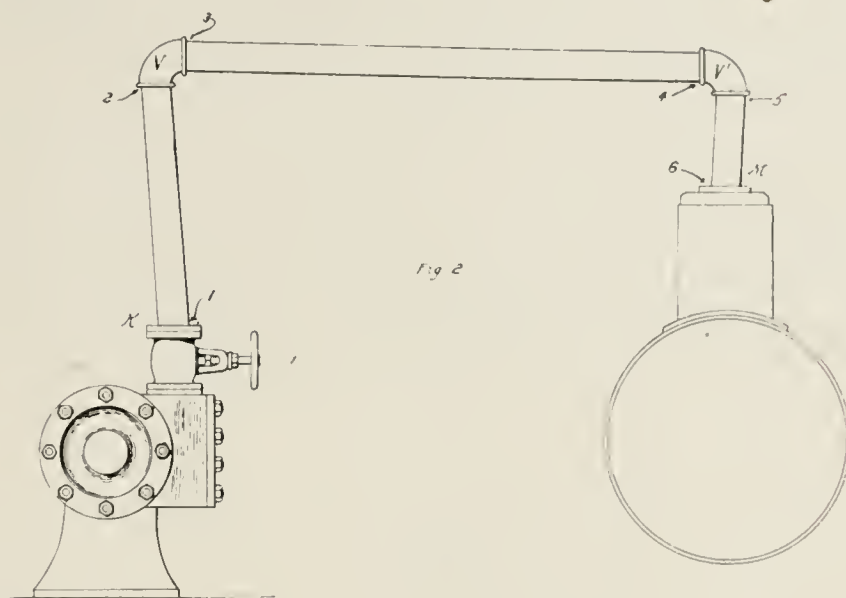
At the kiln end of most brick yards, elaborate provision is made for combating these destructive propensities of expansion, as is evident from the bulky buttresses, ponderous timber bracings and heavy iron bandages of the kiln and furnace walls and arches.

From a consideration of these extensive protective measures against expansion effects at this end of the yard, we are led irresistibly to the conclusion that the brickmaker has got a profound and abiding respect for the indomitable power that crowds his kiln and furnace walls out against their iron bands, with a force that tries their endurance to the uttermost.

But, alas! "From the sublime to the ridiculous, there is

but a step," from extreme care to extreme neglect the way is easy and the distance not far.

On the power plant end of many of these same yards the experienced eye will see much evidence of the truth of this observation. A gross disregard of the evil possibilities of expansion prevails on every hand. It shows itself in the layout of the steam piping; it is conspicuous in the manner of caring for and operating the steam boiler; it may be discerned in the generally shiftless condition of tools and appliances; and it is apparent from the cracked and crumbling boiler walls. Most of the engineers of these yards appear to regard the steam boiler merely as an inert, lifeless thing, no more worthy of careful attention than a tankful of cold water. Some of these engineers are especially disregarding of the laws of safe conduct of steam apparatus, and it usually takes a personal experience of a serious mishap or two, to awaken



in their minds a proper realization of the danger to life and property involved in a misapplication of the material and forces under their supervision. The energy contained in the steam and water of a boiler, under high pressure, is equal in its capacity for destruction to an equal weight of gunpowder, and the restraining bonds of this mighty power, that, rightly managed is of such inestimable value in the service of man, must be looked after with a care and a vigilance that never relaxes. A very common and extremely reprehensible boiler room practice is the throwing open of the furnace and the smoke box, or flue cap, doors for the purpose of checking the draft when the steam pressure is high and when the boiler itself is fairly quivering under the intensity of the repressed energy within, thus permitting the cold air without to rush in and impinge against the hot flues and boiler plates, adding to the already enormous steam pressure, the almost irresistible force of unequal expansion and contraction strains. Such strains, even if they do no worse, start flues and joints to leaking and set up warping and bending actions, which weaken the plates greatly and may eventually cause their rupture. Leaks around flue heading and at riveted joints, are especially deleterious to the life of the boiler, as the moisture unites with the flue gases and soot, forming corrosive agents which attack iron with great avidity, and unless quickly arrested by the stopping of the leak, will soon render the boiler unsafe for operation. Sometimes sediment will gradually work into and close these leaks, if the practice of subjecting the boiler to rapid and wide temperature changes is discontinued; but more often it will be necessary to recalk the riveted joints and re-expand the tube in the sheet. Tubes, however, are more or less injured by re-expanding, and if the process is repeated many times, it will, in a very short time, become necessary to replace them with new ones.

Another practice that is productive of much injury to boilers, is the habit of blowing them out when the steam pressure is high, for the purpose of cleaning them and then admitting cold water in on the hot plates. The contact of the

cold water with the heated boiler shell sets up strains that are similar in every way to those which cause the shivering of a hot lamp chimney when exposed to a cold draft of air, of the fracture of a glass tumbler into which cold water has suddenly been poured. In the case of the boiler plate, however, the elasticity of the metal usually prevents immediate disaster, but, if the sudden expansion and contraction strains are often repeated, the plate gradually weakens and finally yields through fatigue. For this reason, boilers should never be emptied of their contents when under high pressure.

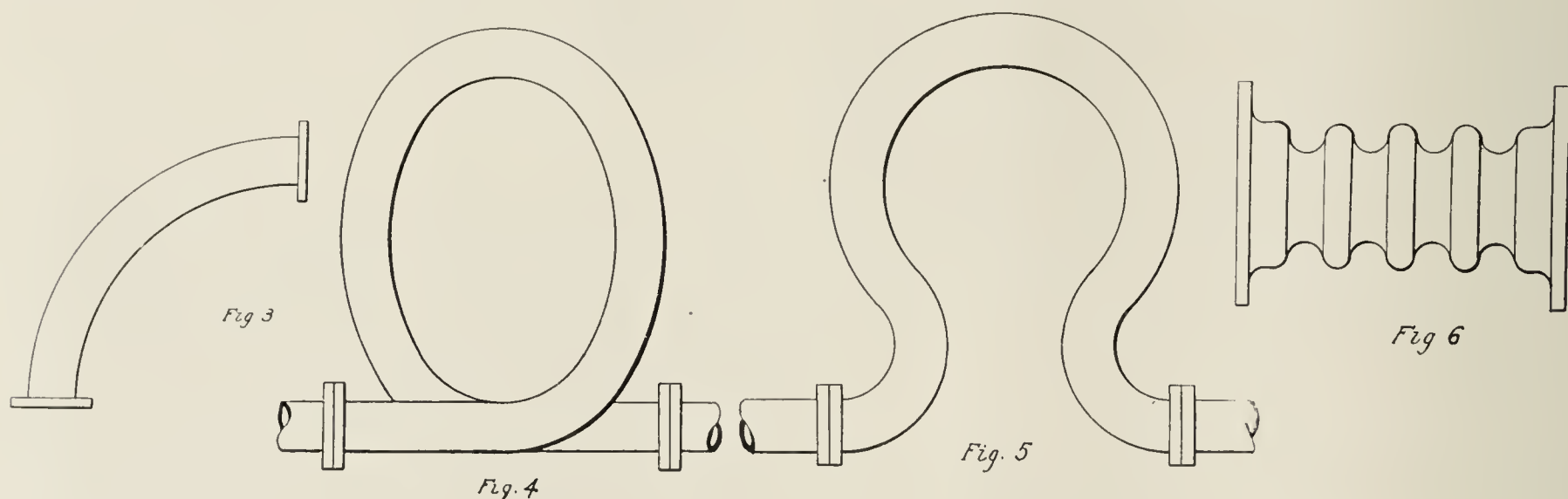
When it is desired to empty a boiler, the best engineers recommend that it should be allowed to cool down through a period of not less than twelve hours; and it should not be emptied then if the steam gauge shows a pressure existing within the boiler greater than 1 or 2 pounds above the atmosphere pressure. After emptying, the gradual cooling of the boiler should continue until the temperature of the plates has become reduced sufficiently to be borne by the bare hand before the cold water for washing out is admitted.

Steel is especially susceptible to fatigue from the strains set up by sudden and wide temperature variations, so that modern boilers, being made of this material, require unremitting and intelligent care to prevent their latent but rapid deterioration from this cause. Iron boilers are much more rugged in this respect; but possess less tensile strength; besides, the method necessarily pursued in manufacturing the plates makes them less homogeneous and more apt to possess

are subjected to severe distortional strains, which may and frequently do, cause them to break. Even though breakage does not occur it is extremely likely that the joints will leak at the points 1, 2, 3, 4, 5 and 6, from the fact that the bending actions set up in the piping prevents the threads from maintaining a steam tight contact at these points, no matter how securely the joint may be screwed up. Point 1, that is, the joint made by screwing the vertical pipe into the flange at the engine, is especially incorrigible in this respect, as the pipe B is usually short relative to A; consequently, it must accommodate itself to greater expansion changes proportional to its length. The result is an exceedingly severe bending action at Point 1.

Frequently, a 90 degree bend of the type shown in Fig. 3, is introduced in the pipe line instead of an elbow, under the impression that the flexibility of such a bend will be sufficient to take the necessary care of the expansion of the line. However, these bends are less flexible than is generally imagined, numerous tests having shown that it requires less force to break the cast iron flange fittings than to spring the bend.

Bends of the types shown in Figs. 4 and 5 are excellent for relieving the joints of a great deal of the stress where elongation of the line from expansion does not exceed 2 or 3 inches. They are particularly useful in horizontal pipe lines of moderate weight and length, where they may be placed with the loop in any position above the horizontal, in order



flaws than in the case of the steel boiler, so that on the whole, with proper care and management, the latter will prove the higher grade appliance.

In the matter of piping equipment, the steam plant attests still further to the lack of appreciation in many cases of the danger lurking in neglected expansion stresses. While, as a rule, the bursting of a steam pipe is not apt to be attended with such frightful consequences as the bursting of the boiler, still many men have been scalded to death from this cause. Moreover, the rush of the steam and water to escape from the suddenly rent pipe, has frequently caused the explosion of the boiler itself.

A common fault in piping arrangements is that shown in Fig. 1, which illustrates one way of connecting up the main steam pipe between the engine and boiler. This arrangement appears to be the accepted method on the smaller steam plants; and, as will be seen from the sketch, no provision whatever is made for expansion, with the result that when the pipe is heated up, the outer end of the horizontal pipe A is forced upward by the expansion of the vertical pipe B, while the upper end of B is pressed outward by the expansion of A. The piping thus assumes a strained position shown somewhat exaggerated in Fig. 2.

A consideration of the figure will quickly render it apparent that ells V and V1 and the flange couplings at K and M,

that the condensation may not be trapped. It is also possible to use them in other positions, but their lowest points must be provided with draining facilities, in order to prevent the accumulation of a deleterious quantity of water of condensation. By making such bends of copper, their flexibility is considerably increased, but this metal has hardly sufficient tensile strength to render its use safe with modern high steam pressures; therefore, it should be used only where the steam pressure is low, as in exhaust lines, low pressure steam heating, etc.

Another type of expansion joint that is useful in many cases is shown in Fig. 6. It is usually, however, made of copper, and is therefore available only where the pressures are low.

An emergency expansion joint, termed the swing joint, is that shown in Fig. 7.

When expansion of the horizontal pipe A takes place, the ell Q will turn slightly on the thread at K and still maintain a steam tight joint without any considerable distortional strains to the piping or fittings. The nipple C, however, must be long in comparison with the expansion, since the longer this connection the greater the amount of expansion the joint is capable of caring for without injurious straining of the piping. It would also be well to locate swing joints of this type at the distant ends of both A and B; especially if they are of

any considerable length, as the flexibility of the system is thereby appreciably increased.

Where pipe lines are long and heavy, however, it is best to provide them with expansion joints of the type shown in Fig. 8. This is a true expansion joint, and as will be seen, consists fundamentally of a pipe P, free to slide or telescope within another and provided with a stuffing-box and gland G, to prevent the steam within from leaking through the joint. This type of expansion joint relieves the pipe line of all distortional strains due to its own expansion, and will give excellent results in practice; but care must be taken to adjust the joint so that the part P has sufficient play to permit the free expansion of the pipe and yet not enough to cause its disengagement from the packing contained in the stuffing-box, when the line contracts. For this reason, it is well to calculate before hand the amount of expansion (or contraction) that is liable to occur in a proposed pipe line, and then an expansion point of an ample range of movement may be installed.

In the following table is given the expansion (or con-

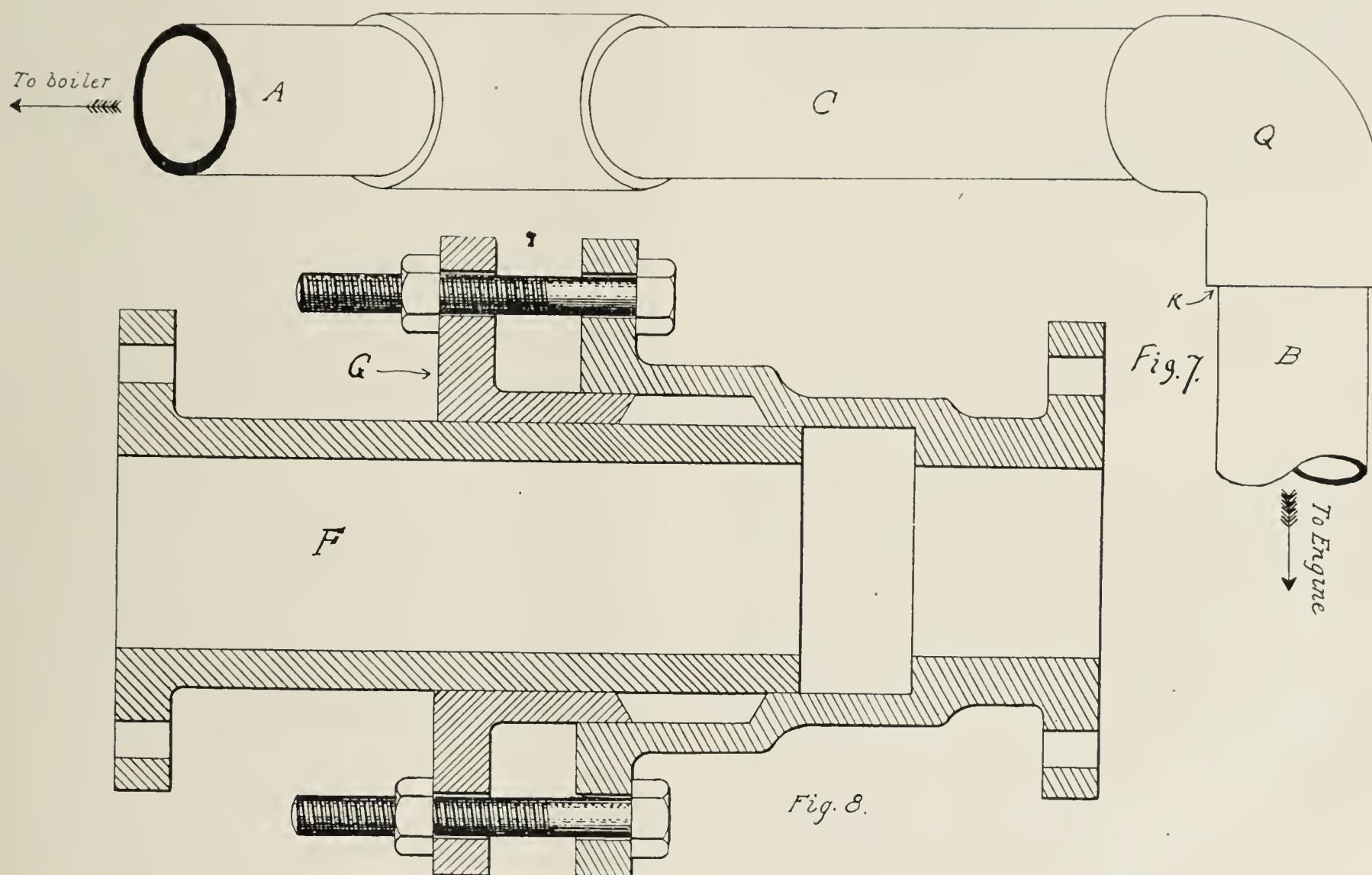
traction) of an inch length of various substances for a change in temperature of one degree Fahrenheit. From a steam table we find that the temperature of steam at 80 pounds gauge pressure is about 324 degrees Fahr. Hence the temperature of the pipe will increase $30+324=354$ degrees. From the table we find the linear expansion of each inch of wrought iron pipe for each degree increase of temperature is .00000686 inches. Then since the pipe line is 100 feet = 1200 inches in length, its total expansion will be $.00000686 \times 354 \times 1200 = 2.91$, or nearly 3 inches.

A HOUSEHOLD NECESSITY.

No household is complete without a pet grandfather, especially if there is a baby to be ruined and an air of cheerfulness to be kept up.

Secure for your purposes a grandfather with a lack of morals, a jovial disposition and about a million dollars. Let him roam at large wherever he will.

It does not matter much whether he is a grandfather on



traction) of an inch length of various substances for a change in temperature of one degree Fahrenheit.

The economic generation and use of steam, etc.

SUBSTANCE.	EXPANSION.
Cast iron.....	.00000617
Wrought iron.....	.00000686
Copper	.00000955
Steel	.00000599
Brass	.00001037
Silver	.00000690
Zinc	.00001634
Tin	.00001410
Mercury	.00003334
Alcohol	.00019259

To illustrate the use of this table. Suppose we have a pipe line 100 feet long in which we wish to carry a steam pressure of 80 pounds per square inch. Suppose also that we are putting up this line in the dead of winter, say, somewhere up in Saskatchewan, where the atmospheric temperature is

your wife's side or on yours. If he is on your wife's side you will secretly dislike him; if he is on your side, she will. But you will both let him be on account of the million.

Never permit grandpa to be out of the nursery when baby is in it. Then, when anything is broken, you can blame him, and "pull his leg" for a new one.

Babies and grandpas always go well together. They are both the same age. It is well to bear this in mind. Keep a savings bank for both of them. And leave them both in charge of grandpa. When they are full, carefully remove the interiors and begin all over again.

It is not necessary to provide more than one grandpa, no matter how many children you may have. Two grandpas in one house often leads to an internecine war.

When you go out with your wife, always leave grandpa in charge of the baby. It is not necessary to tell him to mind. He will, anyway, as a matter of course.

When one baby outgrows grandpa, secure another immediately. Remember that grandpa must be amused and that he is amply able to pay for it.—Tom Masson in the May Delineator.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.



VOLUME OF BUILDING under way or planned in Cleveland for the present year is very great. It is safe to say that 75 per cent. of the fireproof structures are being built entirely of brick, while quantities of brick are being used for facing purposes in others.

A handsome new seven story hotel building is being erected at E. 105th street and Euclid avenue, for the Euclid Doan Realty Company, at a cost of \$100,000. It is of steel and pressed brick. It will be fireproof throughout and will contain over 40,000 square feet of space.

Announcement has been made that the Columbia Gas Company, owning both gas companies in Cleveland by recent absorption, will erect a sixteen story skyscraper on a down town lot being negotiated for at the present time. It will be of white porcelain brick so that it can be washed when dirty. There will be a four story tower over the original sixteen stories, which is as high as the building code in Cleveland permits buildings to shoot skyward. The structure will cost \$1,000,000, according to estimates of engineers who are preparing the plans for it.

The Cleveland Plumbing Supply Company is building a \$50,000 pressed brick building on Superior avenue just east of East Ninth street, where it recently acquired a valuable lease. It will be ready for occupancy in October.

A. A. Pope, who owns property of value on Euclid avenue near East Fourteenth street, is having the structures torn down preparatory to erecting a sixteen story brick skyscraper. It will take a year or more to build it. Just west of Mr. Pope's building the Webb C. Ball Company is having its three story brick building increased to seven stories, on the front of which a white porcelain brick will be used throughout, so it may be washed down when dirty. These are only a few of the buildings planned or under way, but tend to show that the situation in Cleveland is very reassuring. During the month of May 180 permits, aggregating in value \$1,310,048, were issued in Cleveland. This is about equal to the record of a year ago.

Another change is announced by Manager William H. Hunt, of the Cleveland Hydraulic Pressed Brick Company, which controls Ohio and neighboring states in the big recent consolidation. R. L. Queisser, who until five years ago lived in Cleveland and who has been manager of the Zanesville Hydraulic Pressed Brick Company, is to become manager of sales at Cleveland, as the Zanesville business is to be directed from this office. Superintendent T. W. Clarke, however, will continue in charge of the Zanesville plant.

J. O. Sharpe, who was brought to Cleveland from Wells-ville, Ohio, is to cover eastern Ohio for the Cleveland company and in addition four other salesmen will work from the Cleveland office under Mr. Queisser's direction. While in Zanesville, the latter organized the Chamber of Commerce and became its first president. He was also president of the Builders' Exchange of Zanesville. The new position has been especially created for Mr. Queisser.

William H. Hunt, of the Cleveland Hydraulic Pressed Brick Company and a former president of the National Brick Makers' Association, has been chosen by the Cleveland Builders' Exchange to investigate the operation of the Philadelphia trades schools, now being conducted under the auspices of the public schools of the Quaker city. Instruction is free to pupils and nearly all of the practical trades are taught there. There is a movement on foot to have the system introduced into Cleveland.

At the annual meeting of the Ohio Bricklayers' and Masons' Association during the past month, a Cleveland man, Hugh Blair, was chosen president of the organization. George Harper, of Columbus, is vice-president, and Henry F. Kloth, of Lorain, is secretary-treasurer. The convention next year will be held in Canton.

The demand for paving brick still continues keen. The Collinwood-Deckman-Duty Company, of this city, has been

awarded a small contract for 6,400 yards at Chardon, Ohio, and are busy filling orders on big contracts at Detroit and elsewhere.

The Newburg Brick and Clay Company during the month cinched a contract for 1,000,000 shale brick for paving and building purposes in Cleveland. The company turned down an order for 1,500,000 shale brick because its product is all sold out for this season. Frederick Green, of the concern, says that the past month has broken all records with that company and that business was never better.

The Dover Fire Brick Company, with kilns at Strasburg, Ohio, reports a very active season. The steel business being good the demand for fire brick is very brisk. The Stowe-Fuller Company and the Dover Company are the only two manufacturers maintaining offices in Cleveland, though the products of many other plants are disposed of here through other agents. The Dover Company recently enlarged its plant by adding two new large kilns.

"Every street in Cleveland must be paved," is the announcement which has gone out from the city's health officer. The health officer maintains that sanitary measures of other kinds are all right, but that more can be gained by clean brick streets such as the city is gradually acquiring than through any other means. He says that there will always be danger from disease while dirt streets remain within the city's limits.

A number of brick companies operating in Newburg are seriously considering the advisability of joining forces in fighting appropriation proceedings which have been started by a new railroad, the Lake Erie & Pittsburgh's branch from Youngstown to Newburg, which passes over some of the most valuable clay deposits in this section. The companies affected are the Newburg Clay Company, the Metropolitan Company, the Ohio Clay Company and the Cleveland Brick Company. Farm land has brought as high as \$500 an acre, but the clay dealers believe that their property is of much greater value and unless given a fair price will make a bitter fight in the courts.

The demand for the hollow tile brick, such as is turned out in large quantities by the Ohio Clay Company, continues good and large quantities are being used, particularly in the larger buildings where steel construction is extensively used. They are lighter for the aerial work and under tests show as good a textile strength as the solid variety.

Common brick still continue to sell well, although the weather of the past three months had probably affected the common brick dealers more keenly than any other branch of the trade. All of the plants, however, are turning out a supply for the anticipated rush later in the season.

Artists pick brick every time as the proper and effective material from which to secure results. The principal of the local art school has suggested that five new brick studios be erected to the east of the present building—a brick one—at a cost of about \$10,000. Two of these studios would be for the use of modeling class, and the others for sculpture work, arts and crafts and animal painting. It is likely that the studios will be erected during the coming season. They will be low and of attractive design.

John Wagner & Son, a contracting firm which built a section of the big brick intercepting sewer, is in dispute with the city over an amount to be paid for its work. The city admits that it owes Wagner \$8,000, but the firm claims \$15,000 in addition to this amount. As the city would not agree to pay the smaller sum and leave the other for settlement the Wagners will sue for the full amount.

That the brick business is a healthy one is indicated by the death at Warrensville, near Cleveland, of James Crane, Sr., at the advanced age of 105 years. Crane has lived near here for fifty-seven years and was employed in one of the brick plants as a brick molder. For many years he walked seven miles to his work in the morning and returned the same distance at night. He was born on the Isle of Man in 1802 and leaves four sons living, ranging in age from forty-five to sixty. His wife died a year ago at the age of 89 years.

A number of important paving bids have been awarded during the past month. Bids ranged from 15 to 17½ cents per square foot. Among the successful bidders were: Roehl Bros., 279,050 square yards; the Standard Paving Company, 244,350 yards; Baldwin Bros. & Graham, 298,500 yards; Cleveland Trinidad Company, 652,600 yards; G. B. Herring & Son, 146,700 yards; M. E. Kavanaugh, 303,500 yards; Northern Ohio Paving and Construction Company, 376,550 yards; J. F. Brennan, 188,600 yards; R. P. Burnett, 54,000 yards; Thomas B. Husband, 18,800 yards. All of these contracts are for brick pavements. Only four streets in several hundred are being paved with stone and only three with asphalt. BUCKEYE.

Written for THE CLAY-WORKER.

THE CLAY TILE AND ITS IMITATIONS.



CLAY TILE is beyond all doubt the best of all known coverings for floor and wall. Its artistic possibilities range from the plain white rectangular tile to the most highly colored and elaborate mosaic and faience work. Its hygienic properties are unsurpassed, as tiles are so hard that they cannot absorb dirt or moisture, even in the joints between them, which are filled with hard cement; and as they are very easy to keep clean. Its durability is vouched for by the existence today of tiles still in excellent preservation which were baked six thousand years ago in Babylon and Egypt. As the clay tile is born of the hottest of fires its fireproof qualities are undoubted. As the original cost of the clay tile is not great, and as it lasts practically for ever, it is beyond all question the most economical covering for floor and wall, of all buildings which are built for anything more than the most temporary use.

Realizing the artistic and structural merits of the clay tile the public has begun to demand its use in many places, such as bathrooms, kitchens, corridors of public buildings,

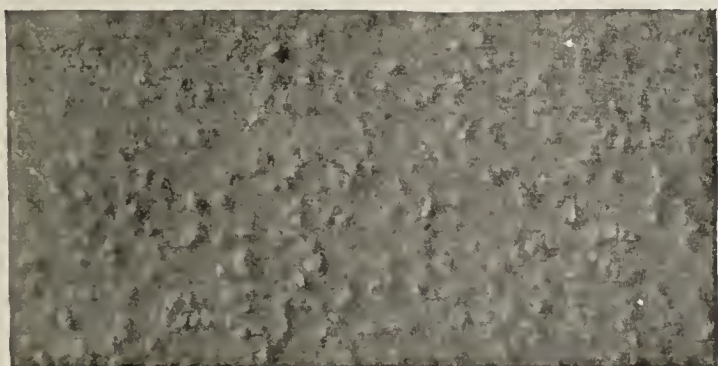
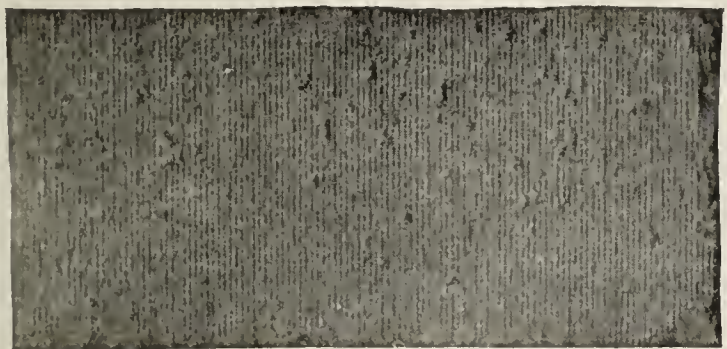


Figure 1.

vestibules, hospitals, dairies and railway stations. In response to this public demand for tiling, there has sprung up a host of imitation tiles in every kind of material: wall paper marked like tiles, embossed papier mache wall coverings, sheet metal covered with enamel lined in the form of tile, glass cut into shapes resembling tile, and rubber handled in the same manner. All of these imitations are advertised extensively under the form and name of tile, and there is still a large portion of the public who are not yet familiar through actual experience with the temporary and deceptive character of these so-called tiles. For thousands of years tiles have been made of clay, and of no other material; the modern paper, tin, glass and rubber substitutes are sailing under false colors. Each of these materials has its proper and useful place in building and in the other arts, but the floor and wall tile must be a baked clay product.

The cheapest imitation of the clay tile, is the wall paper with a tile design. Against this rather grotesque imitation there is not much to say except that as soon as these "clay tile" begin to wear and peel off, the entire wall covering,

which was intended to be decorative, borders on the ridiculous. The same thing may be said of embossed papier mache, with this exception, however, that although its wear is not longer than that of ordinary wall paper, its cost is considerably greater. It looks well to the untrained eye for a short time, but as soon as it begins to get shabby, the discovery of its deceptive appearance makes it ludicrous.

Sheet metal, such as tin and zinc, covered with enamel and lined or painted with the usual well known tile designs and enamel colors, are frequently used for wall coverings. These sheets of tin or zinc are then tacked or pasted on the wall, and for a short time the purchaser imagines he has something which "looks like tile" and is "equally as good." His satis-

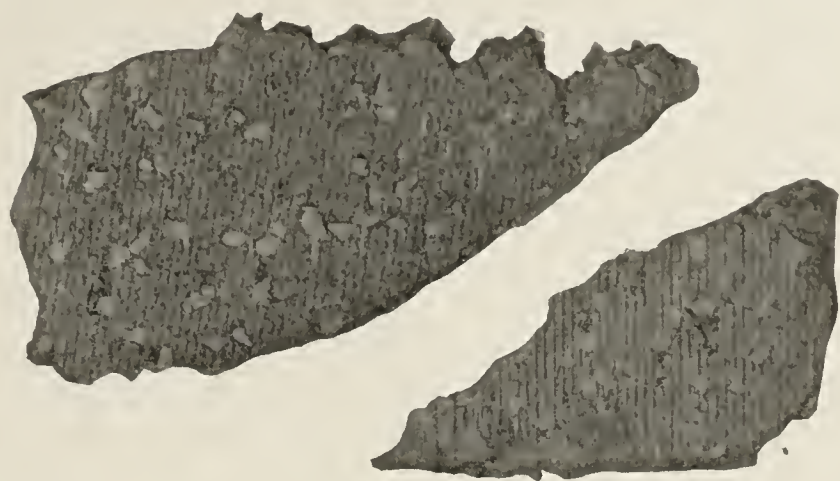
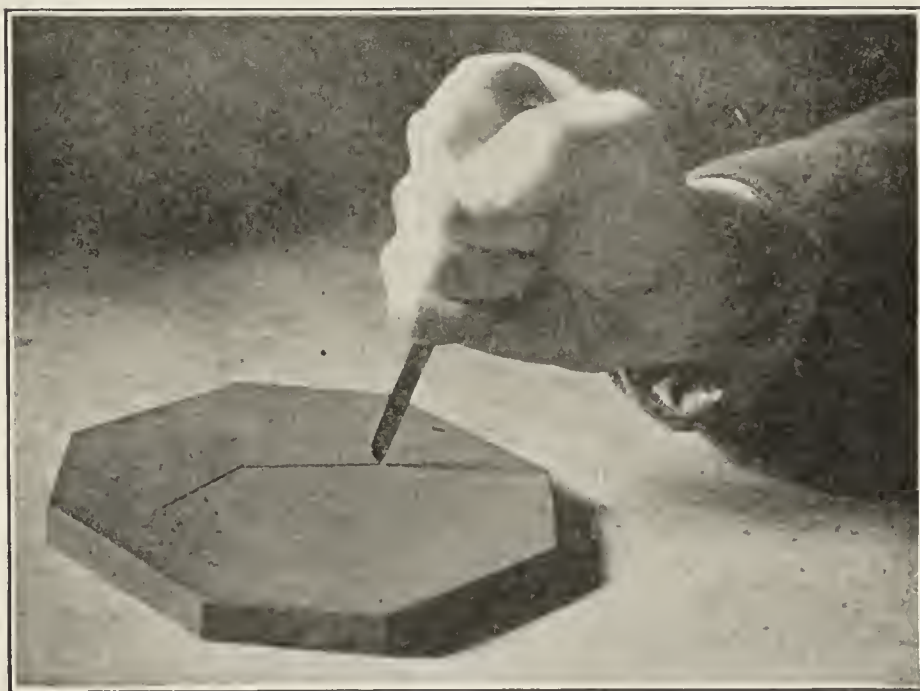


Figure 2.

faction is short lived, however, because after a few weeks he discovers, what the dealer already knew, that oil, paint and varnish will not adhere properly to zinc or other metals which are easily corroded, and that his recently purchased "paint" tiles are peeling off and becoming strewn around the floor. This is a very frequent sight in the cheaper lunch rooms



Steel Blade Marking Clay Tile Like Lead Pencil.

throughout the country. The restaurant keeper knows that tiled walls look neat and clean and will draw trade. But he makes the great mistake of running into the common extravagance of buying at a slightly lower price an infinitely inferior article. It would have been better for him to have purchased the ordinary tile figured wall paper, for unless it was torn by a knock or blow, it would last much longer than the painted tiles on sheet metal. Paper or sheet metal substitutes for tile are extravagant and soon look absurd.

The glass tile or opalite is, of course, more durable than its paper or enamel rivals, but among its serious disadvantages is the fact that it is positively dangerous. These opalite tiles are

cut out of large sheets of glass to the size of ordinary tiles and they frequently present a sharp edge, which becomes positively dangerous, especially in bath-rooms and swimming pools, wherever one tile projects to the slightest degree beyond the others. The back of the opalite tile has small pieces of glass called anchor bits with which it is fastened to the cement or mortar. Changes of temperature in the room in which these tiles are placed, frequently cause them to crack and fall from the wall, especially as the anchor bits which hold them in place are very insecure. Figure No. 1 illustrates the back of an opalite tile before and after these little anchor bits have fallen off. Figure No. 2 shows portions of cement from which these tiles have fallen. The anchor bits remaining in the mortar are plainly visible. The next illustration shows a ceiling tiled with opalite, from which several of the pieces of glass have fallen to the floor. Needless to say that a ceiling from which large pieces of sharp glass are likely to fall at any moment is rather a dangerous form of interior decoration. Another serious disadvantage of the opalite tile is that the streaks and undulations so frequent in common cut glass and the mirror-like reflections of all glass, give the wall covered with them a cheap look in comparison with the soft mellow surface of the glazed tile. The frequent cracking of the opalite tile is also shown by an accompanying illustration. Glass is one of the most useful materials known to man. Its use in many portions of the house is absolutely essential. But as a tile, it is a lamentable failure, from a constructive, from an economical and an artistic standpoint.

By a diligent system of advertising, the manufacturers of the latest imitation of tiles—that made of rubber—are trying to force their product upon the public. Rubber is in many respects an excellent floor covering. It is impervious to moisture, and in some respects pleasant to walk upon. When reasonably pure, it is also very durable. Its successful use in the tires of modern vehicles prove this. But the rubber tile in order to be a successful competitor of the tile proper, has imitated its form and color, and thus abandoned most of the good qualities of rubber proper as a floor covering. Rubber, properly vulcanized, is brownish black in color. In order to imitate white, blue, red, green and the other lighter colors of the tile, it is necessary to mix it with large quantities of inert mineral pigments, which weaken its qualities in direct proportion to the amount used. About 90 per cent. of white paint must be mixed with the natural deep brownish black rubber in order to make a white rubber tile. In other words, the white rubber tile contains about 10 per cent. real rubber. To test the wear of these tiles, break one in half and draw one corner across a piece of paper. You will notice that it makes a mark like a piece of colored chalk, and if you look at the corner you will see that even the soft paper has worn it away. On the other hand, if you take a sharp steel blade and draw it with all your force along the surface of a baked clay tile, you will see that it merely makes a mark like a lead pencil, and you will find that this mark can be easily rubbed off with a piece of damp cloth.

The joints between the rubber tiles are, of course, not filled with cement and therefore absorb dirt and moisture readily. This moisture enters the wood below and the rubber covering prevents it from evaporating.

Everyone has noticed how a small crack in a rubber shoe admits almost as much water as a large hole, because in stepping upon damp spots the slit spreads and the movement of the rubber in treading sucks in the moisture. In just this manner, the jointing between the tiles sucks up the dampness. Thus, while large sheets of rubber covering a floor would keep it dry and clean, the rubber tiling keeps it constantly damp and soon causes the wood to decay. The rubber tile is therefore very unsanitary, in addition to being perishable. Another valid criticism of rubber as a floor covering is that in a hot room or in hot weather its odor is rather sickening. Like the

glass, tin, zinc or paper imitation, the rubber can compete with the real tile only through the aid of an extensive advertising campaign, in which its virtues are heralded to the American public, who are unfortunately as yet, more or less ignorant on the subject of the real clay tile.

The only tile which has the right to be placed in the same category with the clay tile is that of marble. Without meaning to class marble among the materials from which the imitation tiles are made, it might be well for this article to set forth some of the relative properties of clay and marble as a floor covering. Unlike clay, marble is somewhat porous, and as such can absorb dirt and moisture. Unlike baked clay,



Glass Tiles Fallen from Ceiling.

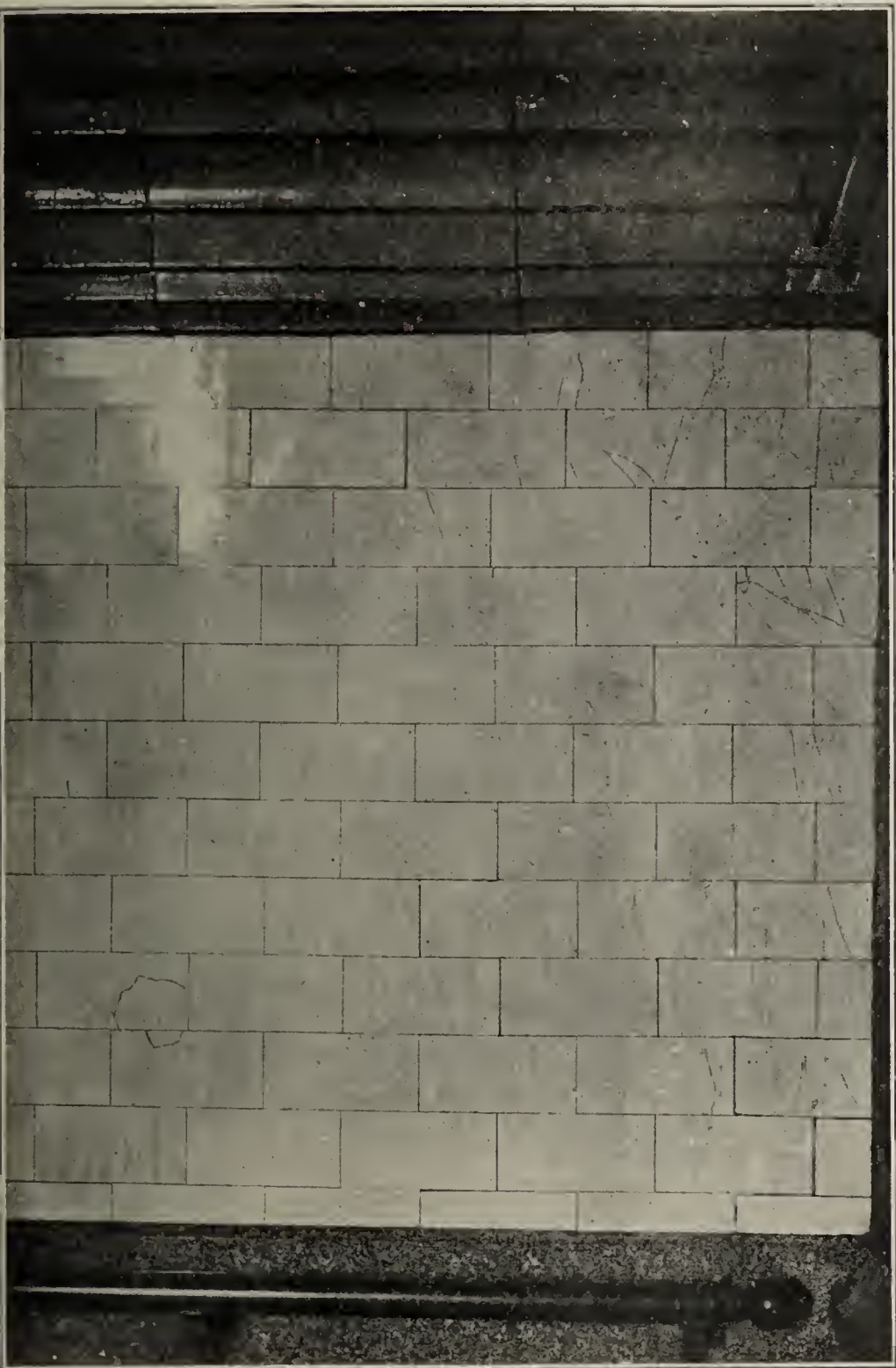
marble can be scratched by steel and all marble floors subject to frequent use soon become much worn by the nails of the shoe. Glance at almost any marble stairway and you will see how the stone is worn away by the action of the shoes, yet if there happens to be tiling at the top or bottom of the stairs you will see that the tiles do not show the slightest evidence of wear. Marble is a beautiful stone but it is too soft for floors.

The baked clay tile is the ideal covering for floor, and wall, from the artistic, the constructive and the economical standpoint. As soon as the American public comes generally to realize this fact the manufacturers of fictitious tile will have to seek other occupations.

Written for THE CLAY-WORKER.

A NEW PRESSED BRICK PLANT IN CALIFORNIA.

THE CALIFORNIA PRESSED BRICK COMPANY, which was recently incorporated under the laws of the state of California, with the main office at Niles, has planned for the erection of a modern brick manufacturing plant of large capacity in the Niles Canyon. Orders for the machinery have been placed with the Raymond Brick Machine Company, and no time will be lost in installing the same at the manufacturing site, which is located midway between the parallel tracks of the Western Pacific Railway and the Southern



Cracks in Glass Tile.

Pacific. Jackson Dennis, the president of the new concern, is also president of the Niles State Bank and of the Sutter Creek Bank. J. J. Rutledge, vice-president, is a Nevada mine owner with an office at 1172 Broadway, Oakland, Cal. Paul Furstl, cashier of the First National Bank of San Jose, is also a director in the company.

A fifty-three-acre tract of clay land in the Niles canyon has been acquired by the company, and spur tracks from the Western Pacific and Southern Pacific roads will be put in. According to the estimates, the plant which is to be installed for the manufacture of from 35,000 to 40,000 red pressed brick per day will cost \$125,000. Some common brick will also be

made. It is estimated the annual production will be about \$11,000,000 brick. These at \$12.50 per thousand, f. o. b. cars, San Francisco, would cost the California Pressed Brick Company \$137,500. The sale price of such brick, f. o. b. cars, San Francisco, is as follows: 9,000,000 brick, best quality, at \$40 per thousand, \$360,000; 2,000,000 brick, inferior grades, at \$15 per thousand, \$30,000; total cost, \$390,000. Deducting the cost of production leaves an annual net profit of \$252,500. A modern plant for the manufacture of common brick will be erected and equipped within three months at a cost of \$50,000. It will have a capacity of 100,000 brick per day. A daily profit of \$1,000 a day from this plant is estimated and the proposed pressed brick plant is to be paid for out of these earnings. The 100,000 brick will be worth \$1,500, f. o. b. cars San Francisco, and the cost of production and delivery is estimated at \$500 a day. On forty-two acres of the company's land the clay has an average depth of twenty feet. At an output of 100,000 brick per day, these deposits would last for thirty years.

J. Wilkins, manager of the 'Frisco Construction Company, who has inspected samples of brick made from this company's clay banks near Niles, has offered to contract for the entire output of the new plant at the rate of 100,000 brick daily for five years, at \$15 per thousand, f. o. b. cars San Francisco. The Fidelity Lime and Cement Works has also offered to give a bond to take the entire output for five years at the rate of 100,000 brick daily, paying \$15 per thousand for common and \$40 per thousand for pressed brick.

CLAYS OF CENTRAL GEORGIA.

THE OCCURRENCE of white clays in central Georgia has been known for many years, but the quality and extent of the deposits and their availability for use as basis of large industries are being but slowly recognized.

The clay area extends from northeast to southwest entirely across the State, along what is called the "Fall Line"—where the streams of the region tumble from the uplands to the coastal plain. In width it ranges from a strip only a few miles wide between Macon and Columbus to a zone about thirty miles wide in a north-south direction just west of Macon and near Fort Valley.

The clays vary from the purest, softest, flourlike kaolin to the hardest, refractory, flint fire clay, and the beds are from 6 to 35 feet thick. The kaolins are adapted for use in the manufacture of porcelain, sanitary ware, encaustic tiling, etc., and the fire clays are suitable for high grade fire brick and other uses.

In order to point out the extent, quality and accessibility of these Georgia clays, descriptions of many localities at which they occur and analyses of the products of various mines are included in a paper in the United States Geological Survey's "Contributions to Economic Geology, 1906" (Bulletin No. 315). Copies of this report are ready for distribution. The paper, prepared by Mr. Otto Veatch, is intended to be suggestive merely and is neither exhaustive nor final.

The only industries in this region that now utilize these clays are two plants which manufacture fire brick and a small pottery recently established at Augusta, Ga., for the manufacture of porcelain. Clay mining is carried on at several places, and the product is shipped to fire brick and terra cotta manufacturers, to Ohio and New Jersey potteries, and to northern paper mills. About 25,000 tons are mined and shipped annually. No washing plants are installed at any of the mines, the clay being shipped in the crude state. The installation of washing plants and steam shovels will materially increase the profits made in mining these clays. The enormous profits that may accrue from other forms of mining are not to be expected in the clay industry, but by economical management and by properly handling the material a reasonable return on an investment can be obtained.

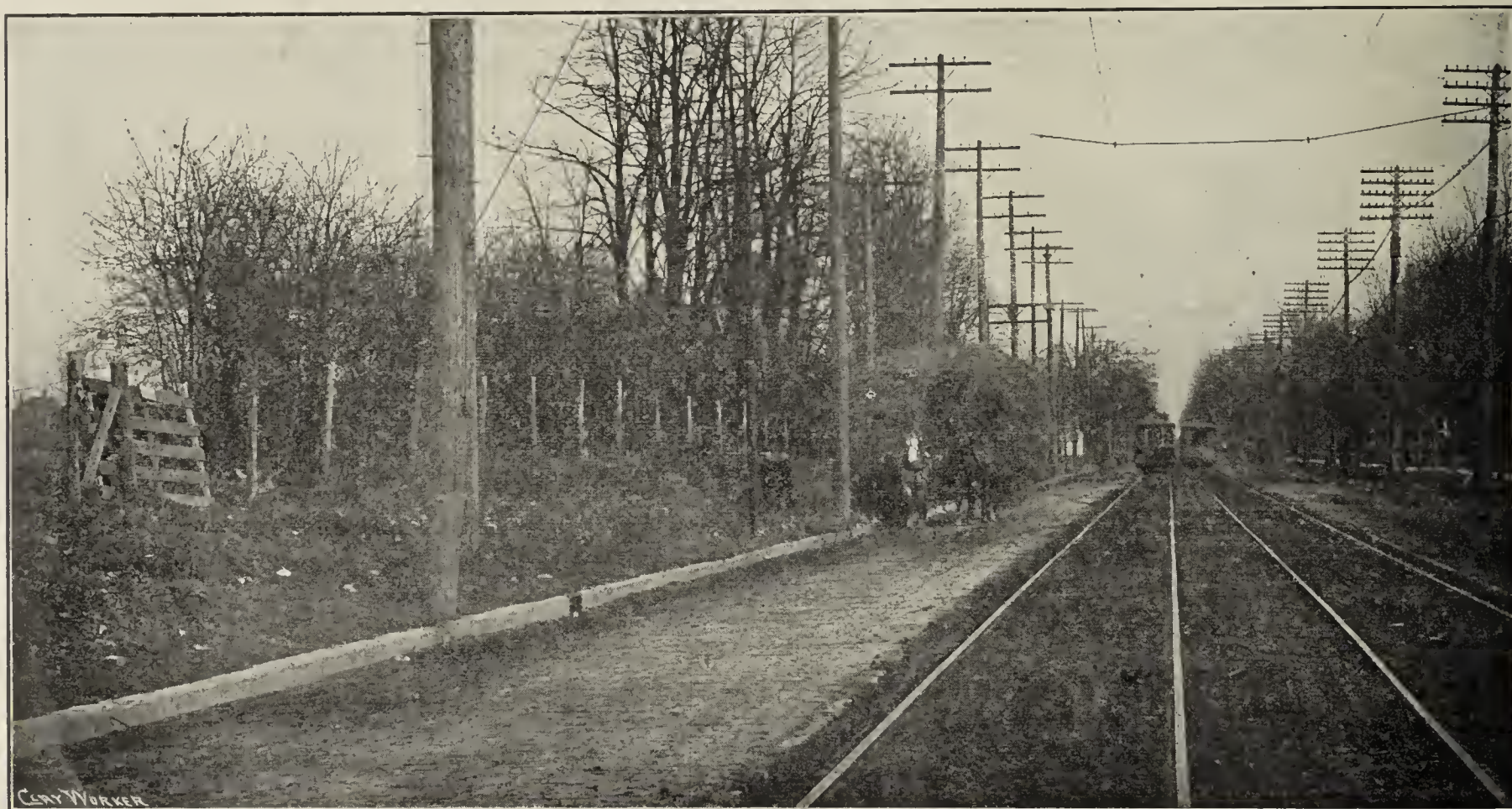
Written for THE CLAY-WORKER:

BRICK PAVED COUNTRY ROADS.

Suggestions as Government Aid.

I WAS PLEASED to read in THE CLAY-WORKER that the N. B. M. A. touched mildly on this great and most important subject. I hope they will keep up a continuous fire until they win the battle, and we see the public highways of this country improved. We see the great improvements on our railways, rivers, harbors, canals, navy and many other great improvements every year, when hundreds of millions of dollars are spent annually, and yet how much money is spent annually on our country roads? This government forked up the money to buy the Philippine Islands, to build the Panama Canal, to free the Cubans, and many other things not half so helpful and beneficial to our own people as good roads. We need good roads; we must have good roads, and they will finally come if we fight for them. I think this government could not spend money in a better way than by improving

of freight could be handled by teams. The next question would be what kind of material to use in paving country roads? To start with, the very best is cheapest. Buy the best paving material known today and pave each year with it, just as far as the money would go, then in time, when the work is completed, we will have good, permanent and durable roads. I do not believe in squandering such an appropriation on the shovel and hoe gang, going about filling up one hole, only to make two worse ones; with one man sitting in the shade bossing two men. No, there is just where the trouble is today; the money now being spent in this section of the country on our country roads is practically wasted. No grade to the roads, no ditches, culverts or any means of keeping the roads dry, just simply go along in dry weather and say the roads are dry and all right, and in wet weather they are too wet to work. The supervisors meet and make their monthly report, handing in a big bill for work done, simply for driving along and shutting their eyes when they come to a bad place in the road, in need of repairs. This way of doing will never improve our country roads; talking about



A Twenty-Foot Brick Paved Country Road Laid on Each Side of Trolley Line. This is a God-Send to the Farmer as it Permits Heavy Hauling During All Seasons of the Year.

the public highways. If this government would appropriate \$50,000,000 annually for good roads, say for ten years, it would be one of the greatest blessings that ever befell the American people. It would not be one of the best, but THE best investment that could possibly be made with the people's money. Say our government would appropriate \$1,000,000 annually for each state until they paved every foot of country road in this country, what would it mean? It would treble the value of property, it would double the output of the farms, the saving on teams, wagons and harness, and saving, in time, would ten times pay the interest on the investment. The money is the people's money. The people send men to Congress and the Senate to say how this money shall be spent; then why not give them to understand that we want \$50,000,000 a year of this for our country roads? I believe this government owes this money to its taxpayers for the improvement of their roadways. This would be one of the easiest ways of bringing the corporations to terms on freight rates, for, with well-paved country roads, an enormous amount

it will not do it; first get the money, then get experienced men to do the paving, under a heavy bond; have all material inspected by men who understand the business, and see to it that there is no graft pinned on it. Now as to the material, I would recommend vitrified brick and nothing else. I believe this is the most durable paving material made today. Easily laid and easily repaired. If care is taken in selecting the brick, I believe they will last one hundred years on our country roads, and on some of our country roads where traffic is light, I believe they will last one hundred and fifty years. If vitrified brick, made twenty years ago, have stood up under the heavy traffic of the city of Cleveland, how long would they last on our country roads? I venture to say ten times as long. Then compare the quality of our best vitrified brick of today with the ones of twenty years ago. There is no use talking about the kind of paving material for country roads, vitrified brick is the material. Some may say I have an axe to grind. To this I would say I am not in the paving brick business, and never was. I am simply speaking of the durability of

a paving material, which I have thoroughly investigated, made a study of and know what I am talking about. I have a number of samples in my office of vitrified brick, of which I have seen streets that were laid from ten to twenty years—good streets, better streets at fifteen years than many I have seen of other material, only three years old. A brick paved country road, twenty feet wide, would afford more driving room than our present mud roads would if they were fifty feet wide. Make the roads twenty feet wide and this will afford plenty of room and require very little material to pave it. Picture in your mind every country road in this country paved with vitrified brick; if this were the case I think our railroads could then convert a great many of their passenger coaches into freight cars and relieve the congestion along the line of a car famine. This would shorten the distance in an "auto" between Cleveland and Chicago or New York and Boston, or any other city in this country, and we would not have to depend on the corporations to cart us around over the country at the risk of our lives. I would like to see THE CLAY-WORKER push the country road paving proposition with all its force. I would also like to see every subscriber to THE CLAY-WORKER express his views through its columns, even if he only had a few words to say or an idea to advance. Agitate the matter; get it worked up to such a pitch that the people will demand better country roads. Send a delegation to Washington headed by Theodore A. Randall, and I think there would be something doing.

H. L. JACOBS.

Suffolk, Va., March 25, 1907.

A DESIRABLE ADDITION TO BUILDING LAW.

We have often wondered, says the Western Builder, at the extreme economy which causes owners of new buildings (and architects may be derelict as well) to chop the fine pressed brick used on the street face of the building sharply off at the corners and to erect solid side walls of common brick, rough and entirely out of harmony with the handsome colored brick used in front. It does not appear to make much difference whether the building is put up in a neighborhood where it is likely to stand by itself for years to come, or whether it sides on an alley where a neighboring building will never join it. Sometimes the face brick are extended back three or four feet which helps matters only a little. The only way in which an enjoyable view of such a building may be had is to stand exactly in front of it at all times, which is a difficult and tedious thing to do. A better way is to slip an ordinance through a city council requesting owners to carry their face brick back at least fifteen feet on either side. Allowing for the building next door shutting off the extreme rear walls, this will give a fairly satisfactory view to the passer-by, and thereby enhance the beauty of the municipality.

'FRISCO SYSTEM'S NEW BOOK.

We have recently received from the Industrial Department of the Rock Island-'Frisco Lines, a 160-page book called "Opportunities," which is calculated to be of great service to any manufacturer or business man in search of another location.

This book contains a concise write-up of each town and city along the 13,500 miles of railroad embraced in the Rock Island, 'Frisco and Chicago & Eastern Illinois Lines, and in parallel columns on the same page with the description of the community, is given a list of the existing openings for business houses, factories, mills and industries of all kinds.

Many new towns and cities have sprung into life along the large number of newly-constructed lines of the Rock Island-'Frisco, and particularly in these communities numerous fine openings exist.

Any brick, tile, sewer pipe or pottery manufacturer interested in changing his location can secure a copy by addressing M. Schuller, Industrial Commissioner, Rock Island-'Frisco Lines, St. Louis, Mo.

A NEW APPLICATION.

The accompanying illustration presents to our readers what might be termed a new application. While all have full knowledge of the merits of the Perfect Clay Screen, we have now to offer an entirely new feature of what is called a piano wire plate. This plate is 19 x 36 inches, and fits the Perfect Clay Screen exactly as does the perforated metal plate, and any number can be used in connection with a sufficient number of the perforated plates to make up a full set.

The crowning feature of the advantage is this: The wires being short, do not require the high tension, and are less liable to break and spread apart. Another feature of this plate is this, if a user desires the plates without the frame and mechanical parts, four of these plates equal the area of most screens of this kind now on the market. A decided advantage in using this plate, we find that if a wire should break, the plate can be removed instantly and another plate inserted in its place while the broken one is repaired without loss of time.

The Dunlap Mfg. Company, of Bloomington, Ill., are the



The Improved Perfect Clay Screen.

well known manufacturers of the Perfect Clay Screen and this new plate, and will be pleased to give any further information desired.

A NEW PENNSYLVANIA BRICK PLANT.

AT LUMBER CITY, PA., a fine modern brick plant has been started by George S Good & Co., who are well known in the brick business throughout the entire state. As was reported some time ago in these columns, a fine grade of both hard and soft clay was discovered some months ago, and in the immediate vicinity a large vein of fine Pittsburg steam coal was also discovered, making the question of fuel an easy one to handle. It was even then decided to organize a company, and erect a large modern plant, which was recently done, and the plant is now well under way. Two large brick buildings, each 150 by 300 feet, and two stories in height, have been started, as well as an office building, and several more will be started as soon as the first part of the plant is in operation. The hot floors will each be 150 by 200 feet, and two wet pans and one dry pan will be installed, which will give the works a capacity of over 80,000 brick per day. All machinery will be of the most improved pattern, and installed with the intention of acquiring the greatest output with the greatest saving of labor. The company will own and operate a complete steam and electric power plant, which will also furnish light to the houses in which the men employed at the plant will live, and in convenience, as well as usefulness, everything will be model. The brick plant will be completed by the middle of August, and 200 men will be employed immediately. As soon as this portion of the plant is in operation, work will be started on another plant in the same group, which will be used exclusively for the manufacture of sewer pipe of all sizes. The buildings for this portion of the works will be about the same size as those for the manufacture of brick, and will employ about the same number of men. Charles Austin is the resident manager for George S. Good & Co., and is in charge of all of the affairs of the company at this point. He was formerly in charge of the Patton works of the same owners.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



THE LOCAL BUILDING situation has been somewhat depressed during the past month, compared with what it would have been without the unfortunate strikes in the lines of manufacturing, building and street car operation. A great deal of building construction is going on at a fair rate of speed, considering the conditions that prevail. Several millions of dollars worth of projected buildings are being held up by the owners who wish to see which way the fight between labor and capital will be settled before deciding to proceed with construction.

There is still a great demand for brick and structural terra cotta, but prices are somewhat softened by the conditions of uncertainty as to future building operations caused by the strike. The freight situation on the railroads may have improved a trifle, but it is still a tedious and uncertain task to get brick moved by rail from the brick yards within a radius of 100 miles from the city.

The Sacramento Transportation Company has some large orders on hand for brick made in patent kilns. It has a large number of brick burned at its Sacramento plant and is shipping as fast as possible. The sandstone cutters are still out on strike and there is little doing in the way of constructing stone facing for buildings.

Notwithstanding the increasing depression in other departments of industry there is still a growing interest in brick and clay manufacturing propositions and much inquiry for clay deposits of high grade. A number of new companies have been incorporated and several new plants will be installed as soon as arrangements are completed for securing machinery, etc.

The Ione Fire Brick Company has been incorporated in San Francisco with a capital stock of \$50,000, shares \$100 each, by G. X. Wendling, H. Nathan, G. W. Postelthwaite, F. R. Turton, C. Hidecker and J. Fisenbach. The same capitalists are interested in the California Brick and Pottery Company, with a fine plant at Glen Ellen.

C. J. Dunton, formerly in the brick business at Point Richmond, but of late engaged in the same line of work in various towns along the Carquin Straits, is planning to install a brick plant at Martinex, Cal.

The Great Western Brick Company has been incorporated with a capital stock of \$50,000, by H. E. Zabel, C. P. Smith and W. Wollesen; place of business, San Francisco.

The Pacific Clay Company, composed of Oakland capitalists, will build a big firebrick and tile manufacturing plant on the bay shore just north of Vallejo. The company has been incorporated for \$200,000, with all of the stock subscribed. It will give employment to about fifty men at the start. Machinery has been ordered and an effort will be made to open the plant within two months. F. W. Beardslee, of the Realty Syndicate, is interested in this project. The plant will adjoin the Hyfire Brick Company's plant.

Actual work will be commenced on the factory of the Stockton Fire and Enamel Brick Company, at Stockton, Cal., in a few days. The company filed articles of incorporation over a month ago, naming M. J. Gardner, C. M. Jackson, T. A. Nelson, E. W. S. Woods and Cyrus Moreing, Sr., as directors for the first year, and Geo. S. Wheatly, manager.

The Carquinez Brick and Tile Company has started up its fine new shale brick plant at Eckley, Contra Costa County, Cal. This is fully equipped with machinery of the latest type. Shipments can be made both by rail and water to San Francisco and to interior points.

There has been a big demand in San Francisco and vicinity for glazed terra cotta square ducts for telephone and electric light conduits. The Home Telephone Company, of Ala-

meda county, has put down a large quantity in Oakland and vicinity. The management of the Home Telephone Company of San Francisco state that they will lay many miles of conduits soon, and that they will at once begin excavating for foundations for two telephone exchange buildings. It is now laying several miles of Steiger terra cotta conduits. It is understood that a great deal of the conduits that have been laid by the Home Telephone Company elsewhere were manufactured at Elsinore, in Southern California. A dealer says that it is unlikely that any manufacturers in Northern California will supply conduits at the prices that the management say they have been paying in the past. The new City Electric Company, of San Francisco, which has laid a number of miles of terra cotta ducts for its electric lighting mains, has been delayed somewhat recently owing to the temporary inability of the Steiger Terra Cotta and Pottery Works to fill orders promptly. It is understood that the breaking of one of the company's kilns was the cause of the shortage in production, but the defect will be repaired as soon as possible. The company has plenty of orders on hand.

M. A. Murphy, manager of the Carnegie Brick and Pottery Company, reports that there has been no slacking up of business at the company's plant, and it is still a question of getting cars enough to ship materials and machinery in, and brick, tiles, pottery, etc., out. The march of improvements at the plant near Tesla is steadily going on and the number of kilns is still being increased. It will take some time to catch up with orders, even if the building situation in San Francisco does not improve.

N. Clark & Sons, who have a large pottery in operation in East Oakland, Cal., have been defendants in a suit brought by residents of the property adjoining their plant on the grounds that the fumes from the kilns had caused great discomfort to human beings and sickness and death to poultry and animals. The tall chimneys of the plant were broken off by the earthquake last year, and it is alleged that the failure to rebuild the chimneys has permitted the noxious gases given off in the process of burning pottery to permeate the lower levels of the atmosphere and work injury. The trial jury disagreed and the case resulted in a draw.

Smith, Emery & Co., inspecting, testing and chemical engineers, who have been located in temporary quarters in Oakland, Cal., since the San Francisco fire, have just returned to this city. Their San Francisco offices and laboratories are now located on the corner of Howard and Hawthorne streets, between Second and Third streets, in a two-story and basement building especially designed for Smith, Emery & Co. The building covers a lot 42x80 feet. The equipment includes the largest and most complete plant for the testing of clays and experimental manufacture of brick ever installed in the west. The first floor is divided into receiving and general offices, consultation rooms and large physical laboratories, where the machinery and apparatus for testing brick, iron and steel, stone, cement, chains, ropes, wood, asphalt, etc., are installed.

The basement contains the cement laboratory, assay furnaces, stone-working machinery, rotary cement kiln, continuous lime kiln, brick and melting furnaces, stone working rattler, crushing and grinding room, compressed air and steam plant, and all dusty and noisy machinery.

The second floor is divided into industrial, water, food bacteriological and toxicological and iron and steel laboratories, drafting room, dark room, library and weighing room. A third floor will be added in the near future.

The great demand for clay properties and the number of new brick, terra cotta and pottery plants projected on the coast makes a testing plant of this character a prime necessity. Smith, Emery & Co.'s laboratories have grown in a few years from a small beginning to a capacity that is almost unlimited.

SUNSET.

It is better to make a mistake than to never make anything.



HOW TO DRAIN.

THE FIRST POINT in draining a given area of land, is to determine the fall. If the slope of the land permits of the laying of all the drains in one direction, a single outlet may be sufficient for a field of fifteen or twenty acres, but for this area three or four main drains would be required. If the entire area of land permits the drains to be laid in one direction from head to mouth in parallel lines; each drain having its outlet into an open ditch or stream, or they may be entered into a large tile drain of sufficient capacity to receive and carry the water of all the drains. The latter system is preferred for the reason that if the work is well done no trouble will be experienced in the maintaining or keeping the outlet of the water free from obstructions. An open outlet—if not riprapped with stone or otherwise secured permanently, will need frequent attention to keep it open to give the water a free flow. If the drains are cut across the slope so as to lessen the fall, the land lying on the lower side of the drain will not be well drained, while that lying above the line of the drain will in the course of a few years, be drained deeper than the line of the drain, for the reason that back against the hill or slope the depth will be gradually increased—the water in the earth seeking the least possible fall in making its way through the earth to enter the drain.

It is better practice where the fall is not too great to run the drains directly up the slope so as to drain the soil and sub-soil to near the same depth on both sides—or deeper than the drain itself.

After the drains have been laid the land should be laid flat, or as nearly so as possible, and cultivated deeply, in order to assist in developing the drainage. One foot in two hundred feet will ordinarily afford good drainage, except in very close retentive clay soils, when more fall is preferred. Stone drains require more fall than tile drains, the friction to be overcome by the water being greater in the former.

Deep drains are longer in beginning to flow, but if the soil is porous the surface soil will be relieved of the excess of water sooner and nearer a uniform depth, so that the cultivation of crops may go on—while they drain a greater bulk of the soil, and to a greater width on each side of the drain. If the soil is very retentive and runs together easily, then the drains laid at a less distance apart and not so deep will give good satisfaction, but an open pervious soil should have deeper drains at wider intervals.

If a sufficient outlet can be secured, drains should not be less than three feet deep from the surface, to which the roots of wheat will penetrate, and deeper if the drainage is deeper, but the roots of most farm crops penetrate to a greater depth if the water line is lowered by deeper drainage—and when they reach the line of saturation they cease to penetrate farther. The writer has traced the roots of wheat five and one-half feet deep. Mr. Bailey Denton has placed on record that he has traced the root of wheat nine feet deep. Clover roots have been found in drains four feet deep.

The excessive distance between drains resorted to by land owners in years gone by to save expense is being succeeded by better work—by laying the drains at a less distance apart. An experienced drainage engineer says that on strong clay lands the distance between drains should generally be from

six to eight times the depth, on lighter soils from eight to ten times the depth.

Drains should always be cut as narrow as possible, the bottom being just wide enough to receive the tile. The length and depth of the drains and their distance apart indicate the size of tile that should be used, but level land requires larger tile than where the fall is greater.

Larger tile is being used than formerly—three-inch is the smallest size manufactured now and but few of this size; four-inch being generally preferred, as the smallest size to be used, the latter giving better satisfaction for the minor drains. Tile should be large enough to carry the maximum flow of water. The efficiency of drains depends upon the character of the work done in digging the ditch and laying the tile, other conditions being equal.

WHAT TILE DRAINAGE DOES.

The late John H. Klippart condenses the advantages of tile drainage under the following twelve heads:

1. Drainage removes stagnant water from the surface of the soil.
2. It removes surplus water from under the surface.
3. It lengthens the seasons.
4. It deepens the soil.
5. It warms the soil.
6. It equalizes the temperature of the soil during the season of growth.
7. It carries down soluble substances to the roots of plants.
8. It prevents "heaving out" or "freezing out."
9. It prevents injury from drouth.
10. It improves the quality and increases the quantity of the crop.
11. It increases the good effect of manures.
12. It prevents rust in wheat and rot in potatoes.

TILE OR SUB-IRRIGATION.

THE IRRIGATION problem, which is being solved by the government and individual enterprise, has many drawbacks and discouraging features. The immense amount of money required to demonstrate the practicability of irrigation in one locality and the impracticability in another locality is leading a few wideawake men, together with the government engineers, to try sub-irrigation—the conduct of the water under the surface in pipes or tile drains. This method of irrigation is coming into favor in some localities where it has been tried.

It is claimed by those who are directly interested in the work of irrigation that there is many times the amount of water being used in the surface irrigation of the land that would be actually necessary to promote the growth of vegetation if it was possible to economize the distribution of it, and in some way prevent its rapid evaporation in the dry atmosphere of the arid west.

B. W. Rice, in a late issue of "The Irrigation Age," says: "Let us pipe our land. Run no water on the surface for any crop. Put it all in tiles or pipes under the surface. The Idaho acre can be tiled for \$60, and is therefore in far better condition than our present system will ever put it.

"Seven thousand feet of two-inch pipe will put a tile every six feet, and one gallon of water inserted into the soil through a tiling is worth fifty spread out over the surface. With the tiling system in vogue, we will not annihilate the present good preparation of the surface of the field. We will let it remain as it is, and usually there is a foot of splendid soil on top. The tiling machine will pass through the soil at regular distances and plant the tiling, allowing the soil to fall back where it was originally. Twelve hundred gallons of water will fill the tiling for one acre of land, and this quantity of

water thus inserted, will equal three waterings on the surface, to say nothing of the expedition it will create over the present plan of running the water over the soil. With the tiling system at work we can keep the four-inch mulch, and thus once more make a saving over the present crude system of conserving moisture.

"The labor of wetting a farm under tiles will not be one-tenth of that of the surface ditch business of today. The tile system of irrigation will intensify farming."

If tile irrigation comes into general use like tile under-drainage is practical in some of the states, such as Ohio, Indiana, Illinois and Iowa, it would intensify the business of manufacturing drain tile. The use of drain tile for irrigation purposes is not altogether a new thing. The government has experimented along this line in an effort to reclaim alkali lands that had been surface irrigated for several years, until the alkali salts have been deposited at the surface by the capillary action of the soil and sub-soil, rendering much of the land unfit for agricultural uses. The sub-irrigation, with occasional rainfall, and an earth mulch, has aided much in bettering soil conditions. Sub-irrigation from the beginning of bringing the land into cultivation, would serve to keep the soil free of alkali deposits on the surface.

We are informed that good farming lands can be had very low in Idaho and other arid states—which, if well sub-irrigated would be very valuable; and would probably command a hundred dollars per acre if so improved. It is not presumed, however, that any great number of land owners will all at once become enthusiasts for sub-irrigation; to the contrary it is probable that a knowledge of the real benefits to be had from this method of furnishing the needed moisture will grow slowly, so that our tile manufacturers will have ample time to get ready for the coming demand for sub-irrigation tile.

But we do not doubt that much of the land that is now treated with surface irrigation would be much better adapted to agricultural uses if sub-irrigated. We are fully convinced that one-fourth part of the water required for surface irrigation would prove more advantageous to growing crops, and at the same time maintain better soil conditions.

Think of it, however, what a rush there would be in the tile trade if all the land that could be treated by sub-irrigation profitably should be so treated in the near future, and what a demand there would be for tile laying "mole ditches."

WHY BRICK BUILDINGS ARE BEST.

Stability, the most important feature of any building, especially one used for business purposes, is not absolutely certain with cement. It is certain with brick. A properly constructed brick building may be torn down, but can not be shaken down. How many brick buildings did you ever know to collapse? Brick buildings do not collapse. They are as stable as the everlasting hills. Another important feature of brick is its permanency. Bricks made so long ago that their origin is lost in the maze of antiquity are constantly being dug up on the sites of ancient cities as sound and clean as the day they were burned. Brick will not burn. Good brick will not crack, as stone does, and brick will not decay like wood. All these are important elements and deserve careful consideration. Permanency, stability and beauty are three most important considerations in the construction of any building. Another thing is cost. But in this ought to be included cost of maintenance as well as first cost of construction, and it costs much less to keep up a brick building than it does one of wood or other perishable materials, and therefore the cost of a brick building, extending over a series of years, is less, all things considered, than any other building that can be built. More and more these facts are recognized. More and more builders are seeking out the material which most nearly combines in proper proportions these features, and more and more brick is found to be the one material which includes these features. The result is obvious in every city and town in the country.

THE BUHRER CONTINUOUS KILN SYSTEM.

In rebuilding brick and lime works and erecting new plants to enable the owners to meet the demands of their customers on the same terms as better equipped rival establishments, Jacob Buhrer, inventor of the Buhrer system of continuous kilns for brick, tile and lime, advocates the importance of close attention to apparent trifles which in themselves are large factors in frequent failures.

Mr. Buhrer believes the draft should be closely watched, the slight width of the channels often being the cause of all the evil. The heating mechanism is very often found to be defective and a skilled workman would see that the fuels give a proper flow, that the chimney draft gives the correct depression and when needed has the height increased to obtain a good draft. The force of draught, the length of the material for burning before the fire, length of fire, that of the cooling surface at back and the easy circulation of air into compartments are coefficients of real importance in the working of a kiln. In the Buhrer kiln, invented by Jacob Buhrer, of Constance, Germany and Emmishofen, Switzerland, the fire is spread over sixteen to twenty-two rows; or a distance of from 20 to 25 meters and the same length behind for cooling. Owing to the length of the mass of brick there is a greater friction, necessitating a stronger draft. The Buhrer short kiln has proven very successful and has given the exceptional results of 12,000,000 to 14,000,000 brick per year, with pure color, clear ring and very little waste. The inventor of this kiln has made a study of draft conditions and realizes how detrimental to the proper workings of the kiln are the sudden variations from changes of temperature.

For the regulation of the draft he employs a fan in conjunction with the stack and in so doing obtains a scientific working of the kiln, economizes coal, increases production 50 to 60 per cent. and makes the product of a finer color. It is claimed for the Buhrer system that its kilns have been brought to perfection by continued improvements made during fifty years of experience and that the system can be adopted without great expense or new construction.

An establishment built on the Buhrer principle, having a kiln tunnel 1.80 meters wide, 2.20 meters high and 95 meters in length, and an artificial dryer comprising twenty chambers, 6.35 meters long, 2 meters wide and 2.4 meters high, the draft controlled by a fan utilizing 10 h. p. and running night and day, produces 10,000,000 annually. With good clay there is very little breakage in the dryer or the kiln and the tile produced are of fine quality. Another establishment using the Buhrer system with two kilns and two corresponding dryers, produces 29,000,000 to 30,000,000. The first kiln has a tunnel 2.7 meters wide, 2.3 meters high and 149 meters long. The dryers have 32 chambers with two decks above for open air drying. The second has a channel 2.2 meters wide, 2.2 meters high and a total length of 139 meters.

The Buhrer system claims that these kilns in which the section of the tunnel is relatively small can, owing to the great length, regular or greater depression, profitably burn the most varied products. The method of work in the advancement of the fires gives excellent burning, as all the heat produced by the fuel is utilized without variation of depression or loss of coal, due to draft in the chimney. The radiation of heat is completely utilized, being conveyed to the dryers, where it supplies from 60 to 80 per cent. of the requisite heat for the drying. The dryers are so built that drying can be effected in each chamber separately, or in two or more simultaneously. They can be placed parallel to the kiln or so as to prolong the axis of the kiln.

Mr. Jacob Buhrer began his work in the clayworking world when but a lad of ten years, being then employed on his father's brickyard. This was in 1838. Twenty years later he established the Jacob Buhrer Technical Bureau, which is now in its forty-seventh year. We refer the readers of the CLAY-WORKER to his ad on page 970 of this issue. For more complete information in regard to the benefits of the Buhrer system, the construction and working of the kilns and dryers, etc., the readers should correspond with Mr. Jacob Buhrer direct, who will be pleased to give any information desired.



HARNESSING CURIOSITY.

WE HAD BEEN discussing the report of the clayworkers' meeting, and especially the paper by Mr. Fitzpatrick on "Burned Clay as the Universal Building Material," particularly that part of it making an appeal for more attention to the subject of color in clay products, when old "Historical Hubbard," the night watchman, joined the group. That wasn't his name, but he got it like every peculiar character around the works gets his nickname, because of his leaning toward historical and classic subjects, and his general frayed-out appearance when he first came among us, leading one of the boys to say he looked like Mother Hubbard's worser half. So by the time he became a settled fixture among us he was known so well as "Historical Hubbard" that whatever other name he may have had was entirely lost sight of.

"Speaking of colors," said he, "brings to mind sad memories of better days, and it is especially sad since it was a variety of colors in brick that was the undoing of one of the greatest plans I ever formulated—one that would have made me prominent had it not miscarried; but you see where I am now, can guess, may be, what happened to me, and when I tell you it was color in brick that caused it you will be ready to sympathize with me.

"It is really not a story of color," he continued, judging from our looks that we wanted the whole story, and responding to the mute appeal which we all gave him, "it is more a story of an attempt to harness the element of curiosity in mankind and make it serve a good purpose, an attempt which would have carried out if this question of color had not come in and led to dissension. I was the originator of the scheme, and that is why I got hurt by it, for as you will observe by the time you are as old as I am, when a man plans for the good of a community, and his plans miscarry, he is degraded in the eye of that community, notwithstanding the fact that he does not injure them in any way and leaves them as well off as they were. It is the raising of hopes and letting them fall again that causes the trouble, and when a man raises others' hopes and can not keep them up, he is not given any thanks for doing the raising, but is given the dickens for not keeping them elevated.

"But, to stop moralizing and tell the story, Boomtown wanted a courthouse so as to get the county seat away from Bayleyville, which had an old ramshackled building called the courthouse, that was a disgrace to the country. We tried to issue bonds to build a new courthouse, but the Boomtown people would not stand for it being at Bayleyville and the Bayleyville people did not want Boomtown to get the county seat, so, with the county divided, the bonds could not carry, and there we were in a deadlock, with it looking just like the town that could build a courthouse of its own would get the county seat. It was easy enough to build a courthouse on paper, but the trouble with us was that most of our wealth was on paper and nowhere else, and the only way to even raise a subscription to build a schoolhouse or church house was to have every man in the community put in so many days' work, or so much material, just like the old pioneers used to do when most of their money was coonskins. A committee of citizens of Boomtown was appointed, with me at its head, to see what could be done, and it was then that I put my thinker to work and developed the idea of making the human element of curiosity help solve the problem. I noticed how that when any new building was started up everybody in town would have to go look on and make comments. There is no need to tell all about that, though, for you know how it is. If you don't, just go out where they are building some

important building in your city and see what a crowd of curious people there are hanging around all the time.

"We got lots of people to subscribe a number of days' work, for that is always an easy thing to do in country districts, and then I hit on a plan of having every man, woman and child that came to see how the work was getting along bring with them as an entrance fee, so to speak—one brick every time they came. We got the local paper to give the plan an elaborate writeup and distributed a lot of dodgers everywhere explaining the idea. We gathered a crowd together and went to digging for the foundation. Well, sir, it was wonderful how the idea worked, and the first few days brought enough people and enough brick to build the foundation. This made it evident that if we could just keep up the enthusiasm we could build the finest courthouse in the country, and build it mainly out of curiosity; so I set about the task of keeping the enthusiasm at white heat by enlisting the local merchants in the movement, asking them to talk it up and stir it up in every way, for it meant as much to them as to anybody else. Then, what did those merchants do but develop some ideas of their own in the way of turning a few honest dimes while helping the cause along. They commenced laying in supplies of brick, sending to various parts of the country for them, some buying one color and some another, and they filled the local paper with advertisements calling attention to the beautiful colors of their brick and inviting the friends of the courthouse idea to come by the store on their way and get the finest things in the shape of brick to be had. The sidewalks and the front windows were filled with displays of brick, some white enamel, some red, some buff and some gray, the whole making such an inviting show that it got to be a craze in town to see who could take the most and finest brick to the courthouse and see them put into the wall. Oh, I'll tell you it was great and inspiring, so much so that I thought I had made the stroke of my life, and we had a magnificent combination of colors. But the first thing we knew there was trouble brewing, and it was this color business that brought it about. Some of the women wanted to boss the workmen about where and how to lay their brick, and objected to other people's brick and their colors going into the wall anywhere near theirs; some wanted to design certain patterns and figures; some wanted one thing and some another, till the wrangle got so bad that we had to appoint a special building committee to adjust these differences. This committee spent a week hearing evidence, complaints and suggestions. Then, after sitting in solemn conclave a day behind closed doors, decided that the only way to regulate matters, to bring order out of chaos, was to take the matter of selecting brick and combining colors into their own hands, and as a means to carry this out, made a rule that instead of people bringing a brick each when they came to satisfy their curiosity and look on at the building operations, they should deposit in receptacles that would be furnished for the purpose, the price of a brick each time they came, and the committee would take these funds and make its own selection.

"Ordinarily that would sound like good logic, would it not? And it probably was good logic, but it was not good for the enthusiasm of that community, because where we had been getting brick as fast as we could lay them, we did not get enough cash in a week to buy a wagon load. After the first week the whole thing was as dead as a field of Kansas corn after two days of hot wind."

At this point old "Historical Hubbard" stopped, heaved a sigh and picked up his lantern as if he were going to start on his rounds again, but feeling that his story was lacking in some finishing touches, we called him back and asked just what he attributed the failure of his scheme to.

"Well," he replied, "I told you this color business reminded me of it, but as the story was really one of harnessing curiosity to make it work, the question naturally is, why would not curiosity work after being harnessed? Now, the fact is, curiosity is a strange element, and the human system is full of strange elements, and one of these is that mankind will cheerfully give up money in a roundabout way for things they won't give up money for direct. For example, we all pay lots of taxes to support state and local government indirectly, and

not only do it cheerfully, but don't get excited over flagrant waste of this money, while if we were to give it direct into the hands of the people and see it used, we not only would lot of bossing of the people we were giving up the money to. That's the way it was with our building project. As long as the people did not realize they were giving money, but something else, all was well, but immediately they began to put in their money direct they lost interest and saved their money. As for color, color is a great thing, and the more of it the better, but it is a thing that should be handled by a master hand and not be subject to the abuse of mere idle fancy without definite aim."

Written for THE CLAY-WORKER.

CAPITAL FACTS AND FIGURES.



SPRING, ethereal mild nurse—or better, wet nurse—is with us in the Capital city, giving its wealth of beauty in arboreal nature, flower and plant, and the brick man's machine is buzzing the song of progress in the line of structural growth. But he (the brickman) is not quite as busy as he was at this time last year, for the bricklayers' and plumbers' strike blocked the wheels of building progress to considerable extent. Still a great deal of work has been done here in winter and spring and buildings are now being put up in many parts of the city and District.

In the northwest section of Washington one can see many new "palaces" which belong to the bon ton who live on the sunny side of Easy street. These houses have put many thousands of dollars into the pockets of the Washington clay-workers—who earned all they received. And the brick industry here is pleasingly apparent in these fine mansions which adorn this city's streets and avenues, showing in face brick, in a variety of very pretty colors, a better effect than is seen in weatherbeaten stone and marble.

Although we have many marble and stone buildings in the Capital City, this place is a brick city, and wisely so, for in brick we have durability, cleanliness and color variety, and something that will stand the most intense heat, when marble and stone will crumble. This has been satisfactorily proven.

It is easy to build a beautiful brick city—if proper care is taken. A lecturer on this subject recently said bricks of a uniform color are not desirable. They produce an effect of monotony and flatness and are devoid of brilliancy. A brick wall can fairly sparkle in color, animation and interest, if the bricks are well chosen and the color well blended. The tones of coloring need not be of somber hue to be beautiful and artistic, for cheerfulness and brilliancy are most desirable and can be attained by the wise choice of color schemes.

Well, this city has for a few years been "getting on" to the color scheme and the fancy brick wall meets one's eyes in many parts of the place. Of course, common red brick at \$6, \$7 and \$8 per thousand, are used here more than any other kind and the brickmaker turns out millions of these.

There are fifteen brick factories in and near the District of Columbia and their combined daily output amounts to about 600,000 bricks. This includes face, fancy and "hygienic" bricks.

One of the progressive 40,000 brick daily capacity factories here belongs to the Highland Brick Company, which has 28 acres of clay land, affording material as fine as desired. This factory is making improvements and soon will increase capacity; it is outside the District, and like others, must employ the long haul system to get its product to this city.

The brick factories at Brick Haven, on the Virginia side of the Potomac river, also have a long haul to get their material to this city, bringing it quite a distance over muddy roads to the famous Long Bridge across the Potomac, over this and thence throughout the city. This collection of factories across the Potomac are five in number and together turn out daily over 200,000 bricks. The most prolific producer is the New Washington Brick Company, the daily

capacity of which is 115,000. This company has many acres of excellent clay land, is located near the river on historic property once owned by Park Custis, son of the widow who became the wife of our George Washington, and here one sees a little factory village. The brick factory employs many hands to do its work and these live in good frame dwellings on the company's property, where there is also a store with post office attachment. Here is a place where the real old Vahginny "coon" can be seen—the ole Vahginian, suh, who says, with the ivory shining in his open face-door, "Ole Vahginny never die wif her black foot an' shiny eye."

An important matter in the business affairs of the brick-makers here is that in connection with new government buildings. Millions of brick have already been put into these and they are still being bricked; all the walls are backed by brick and partitions are of the same material. The new Agricultural Department building is employing in its structural work a large quantity of brick, many of which are light cream in color, used for face work in connection with marble window frames, molding, etc. This is one building where Uncle Sam shows his good sense in using brick for outside wall work—not in all its outside walls, but in a large space fronting on B street S. W.

It is probable that our national uncle will build a brick addition to the new Government Printing Office; the old structure—the old printing office—is not safe and will be torn down. The new printing structure is a fine evidence of what can be well done with handsome brick. It is situated on North Capitol and G streets, contiguous to the old printing office. It has a frontage of 175 feet on North Capitol street and a depth of 408 feet on G street, rising to a height of 125 feet. The floor space is 377,200 square feet, about 10½ acres. The building is in the Italian renaissance style of architecture, rectangular in shape, being divided into two massive wings by a court 30 feet wide and 167 feet long. This great structure contains 10,000,000 red brick, which inclose 6,000 tons of steel frame work, and its windows, of plate glass with cast iron frames, are 900 in number. A great deal of asphalt and other material was used in the basement of the building to prevent dampness and here are found vaults capable of holding in storage 2,000,000 electrotypes plates. The interior finish of the whole structure is uniform, the lower part of the walls and pillars being lined with enameled brick and the upper half with white brick, a total of 15,000,000 bricks in the whole building. Now if Mr. United States can use bricks to such good effect as in the above instance, why don't he keep it up.

Give us the beauty we burn out in clay;
'Twill cut down the sums you so often pay
For marble and stone, the shiny and slick—
Give us beautiful buildings of beautiful brick.

Excepting government buildings, Washington may well be called a brick city. Of course, we have here stone and marble private residences, but even these are part brick. In the District of Columbia, including the city, there are 49,285 brick buildings and 21,691 frame houses, the latter being principally in the suburban settlements near the city.

The estimated value of buildings constructed during the past year—not including official buildings of the District of Columbia and United States Government—is \$11,789,201, which is a decrease from the previous year's building estimate of \$670,649. The number of dwelling houses constructed in the District of Columbia last year was 1,434, and 287 business buildings were erected. The apartment house idea still holds good here, as seen in the statement that 53 of these accommodations of small families and light housekeepers were recently built here.

While the District of Columbia government uses many brick in its structural work there is much room for improvement in this particular. In the matter of street paving, brick would cut a fine figure here, making a handsome appearance and lasting longer than asphalt. The latter will rot when water collects in its holes and depressions while your good brick will stay in place, defying any climatic condition. During the last fiscal year, \$475,000 was spent here for paving and repairing streets and constructing roads in city and suburbs. About \$220,000 was expended in laying sidewalks

and in paving alleys. The sidewalks constructed were of cement. Alley pavements were made with asphalt blocks or vitrified blocks. The latter cost less and are less destructible.

The sewers of city and suburbs here make large demands on the brick and terra cotta industry. The total length of main and pipe sewers finished in the past year was about 15½ miles. The total length of sewers in the District as last estimated, was 484.35 miles, and total cost of the sewer system was \$14,827,248.34.

Uncle Sam is continually doing something for his beautiful national city, now giving it a number of new buildings to cost many millions in the aggregate. The liberal old gentleman thought we needed a new museum structure, and behold, a great marble and brick pile is rising in the Smithsonian grounds. The National Museum is crowded with exhibits and more are being continually added; more room is badly needed and the new building will amply afford this. Thousands of different kinds of clay products—many valuable and charming specimens—can be seen in the exhibit halls, and there is one piece there that is very old and valuable as an early historical record. This is a clay tablet with green glaze, bearing an allegorical representation of what is said to be the discovery of America by Columbus; it is supposed to have been made between 1520 and 1545.

Written for THE CLAY-WORKER.

THE PAVING QUESTION IN NEW YORK CITY AND NEW JERSEY.

THE PAVING QUESTION is coming to the front very strongly in New York this spring. The Merchants' Association has begun a crusade against the present system of paving, and is going to abolish wood blocks if possible. It will be a difficult piece of work to drive out wood paving. The pull of the makers and layers of that abortion on paving is strong and so far no one has been able to prevent its being laid on the business streets, where it does more damage than it does good. The business streets on the west side of the city are paved with them and the big wholesale houses located there say that it has reduced possible truck loads at least one-third. In some cases it is put at one-half. It is slippery in winter and slimy in summer after a rain, and it is almost impossible for horses to haul a heavy load on it. Moreover, it doesn't last. The streets are full of depressions which cause more or less accidents and delays, and make hauling difficult.

The asphalt comes in for its share of criticism, and on the busiest streets the association is attempting to get it abolished. It is not kept in repair, and in numerous instances it is dangerous for horses to move upon it. It is practically impossible to draw a heavy load over it unless it is perfectly dry. When it is wet horses cannot stand.

The association has sent photographers about the city investigating, and has collected in this way some hundreds of views of poor streets, and has presented the report to the proper authorities. How much good it will do no one can say. But those who have observed the Tammany methods for years are confident that the results will scarcely justify the work required to collect such a mass of information. It will serve as a warning to others, perhaps, even though New York obtains no relief.

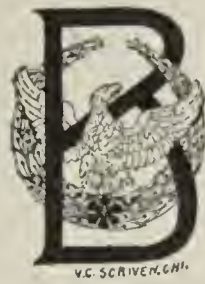
Englewood, N. J., is discussing the proposition of paving Palisade avenue, its principal street, with brick. The street runs up a moderately steel grade and the only objection raised has been because of this grade. The street is only macadamized now and the steadily increasing traffic wears out the top dressing very quickly. Automobiles are the worst wearers of macadam. If the tires are armoured, as many of them are in Northern New Jersey, the effect is destructive, depending upon the age of the macadam.

Newark, N. J. is going to lay many miles of new pavement this season, and a considerable proportion of it will be brick. The success of brick pavements in that city has been of such a pronounced character that the public invariably calls for more whenever paving is discussed.

BURTON.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF NORTHWESTERN OHIO.



BUILDING BUSINESS in this city has not yet recovered from the stunning blow dealt it by the local courts, when some time ago the grand jury returned indictments against nearly all the local brick dealers who had incorporated under the name of the Toledo Brick Supply Company, charging them with conspiracy in restraint of trade.

The wholesale charges included not only the brick men, but the lumber dealers and plumbers, thus affecting nearly all lines of builders' supplies. Immediately upon presentment of the indictments a number of pending improvements were called off for further consideration, and many others who had already formed indefinite plans for building, decided to await the outcome. Last summer the ice dealers were indicted under the same law for criminal conspiracy, and no sooner were the charges presented than they hurried into court, entered pleas of guilty, and invoking the leniency of the court forthwith cut the price of ice to the consumer nearly in two.

This action has not been forgotten, and when the lumber and brick dealers likewise entered pleas of guilty, the general public expected that they, too, would cut the former price of building materials, and that it would be good business judgment to await their action and thus affect a saving in the cost of improvements. The result was that wherever it was possible to call off pending negotiations it was almost invariably done and the building business for this season received a severe setback, from which it has not recovered.

To make matters more uncertain although it has been over a month since the lumber and brick dealers entered their pleas of guilty, the cases are still being held in abeyance, no sentence having been pronounced upon the defendants by the court as yet. Many people take this in itself to mean that an effort is being made to secure a reduction in prices of building material, the coming punishment being held as a club over the heads of the dealers to force them to terms.

While such a reduction in prices of building materials, under present conditions is impossible, this does not affect the result upon this year's building operations. It is undeniably true that the action of the grand jury has materially crippled building business here, and has worked a serious injury, rather than a benefit upon the community. The fact is, that building brick was being furnished about fifty cents per thousand cheaper in Toledo than in nearly any city within one hundred miles of here, and while the brick men may have been technically guilty of violating the provisions of the Valentine law, yet they were working no hardship on the consumer, and for the brick men to reduce the present prices to any appreciable extent would mean to transact business at a loss, and several have announced their purpose to close down their plants, if necessary, and patiently wait for business conditions to adjust themselves. This, it is thought, will occur in due course of time.

Business is likewise quiet with the paving block dealers. There are only half a dozen streets in the entire city now being paved with brick. Considerable legislation is pending that will probably result in much work along these lines later in the season.

A number of the local plants are enjoying a lucrative outside trade and are shipping large consignments of brick to surrounding towns, which in a measure compensates them for the losses that otherwise must be sustained by the painful falling off in building at home.

A number of flat buildings are in course of construction, all of which are of brick.

Most of the smaller towns in this section of the state are enjoying prosperity, and brick is in good demand both for building and paving purposes.

T. O. D.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

The Clay-Worker a Valuable Asset.

Editor THE CLAY-WORKER:

We take the liberty of enclosing herewith copy of our firebrick catalogue, which we have just issued. Permit us to say that we regard your magazine, "THE CLAY-WORKER," which we regularly receive, a most valuable asset to our information department.

Chicago, Ill.

Yours respectfully,

THE GARDEN CITY SAND CO.

The Clay-Worker as an Object Lesson in Sunday School Work.

DEAR FRIEND RANDALL:

Tomorrow I hope to put the CLAY-WORKER to a use that perhaps you did not anticipate. The illustration on the cover is an excellent portrait of the Hebrew bondage in Egypt, and I am going to take it to Sunday School to show my class of youngsters and let them see for themselves the "keen doings" of that period. It so happens to fit exactly the lesson for this day.

Yours very sincerely,

G. H. LACEY,

May 24, 1907.

Indianapolis Terra Cotta Co.

Not in Fire Brick Combine.

Editor THE CLAY-WORKER:

Our attention has recently been called to an item going the rounds of certain trade papers, associating this company with others in the so-called merger of the St. Louis fire clay interests, and mentioning the Evens & Howard Fire Brick Company specifically.

This article does us a very great injustice, as we are not a party to the said merger, and will not be. We take this opportunity of advising you of our position, and if you can see your way clear to make this denial public, we, as your patrons, will very greatly appreciate the favor.

Very truly yours,

EVANS & HOWARD FIRE BRICK COMPANY.

St. Louis, Mo.

Good Site for Brick Plant.

Editor THE CLAY-WORKER:

Crawford, Neb., with a population of 12,000, is on the C. & N. W. Ry., and the Burlington system, in northwestern Nebraska, three miles from Fort Robinson. There are plans out now for several brick blocks in the city, and the U. S. government is just letting contracts for upwards of \$400,000 for brick buildings in Fort Robinson. I recently returned from Washington, where the Secretary of War intimated to me that it is possible that the government may decide to make this a brigade post if building materials, such as brick, can be obtained cheaper than at present. Our clay is a sandy clay, and first class hand-made brick have been made, and many of our buildings have been erected with them. Once, a wire cutting brick machine was brought in just to make brick for one big block, and the brick were good. It is a grand opening for a first-class brick yard. If you know of any person or company that wants a good location, I would be pleased to correspond with them. Or we would form a local company if we were sure of the machine, and just

what kind of a machine to get. However, we have no brick makers here, and would rather that a man who understands the business and has the plant, would come in. At present, most of our brick are shipped from Denver.

Yours truly

J. E. PORTER.

A Modern Brick Plant at Edmonton, Altamont.

Editor THE CLAY-WORKER:

Enclosed please find \$4 post office order to apply on my subscription to the CLAY-WORKER, which is all right. We also send under separate cover, two photographs of our plant, as per your request. We have made a great many improvements in the last two years, both as to convenience and capacity. We expect to turn out about 12,000,000 brick this season with three machines, viz.: One four-mold Berg press, one large size letter A Martin machine and one Mammoth Junior Ohio stiff mud machine, just new, imported from the well known firm of E. M. Freese & Co., Galion, Ohio. The efficiency of the machine manufactured by this firm is so well known that we do not need to go into details, but we wish to say, that any one installing stiff mud machinery would likely save a good deal of swearing and profane language by putting in a Freese equipment.

We also manufacture about thirty shapes of ornamental



General View of Edmonton Plant.

pressed brick on a special Grath hand press and also a few drain tile. We use a steam dryer for soft mud brick, twelve tunnels, 116 feet long. We use exhaust steam in the day time and live steam at night, the condensation is pumped back to boilers. Our stiff mud brick are dried in an open yard. Our steam power consists of two 80 h. p. boilers and one 125 h. p. slide valve engine, made by Brownell & Co., Dayton, Ohio. We read with much interest, your account of the St. Louis convention and regretted very much not being present, but hope to attend next year.

P. ANDERSON & Co.

Edmonton, Alta., Can.

A New Louisiana Firm.

Editor THE CLAY-WORKER:

We have your letter of the 23rd, and would say that we have sent our check for \$2.00, covering our subscription to your journal for one year. We have recently purchased the brick yard operated by the late Frank J. Campbell on the Illinois Central R. R., between Ponchatoula and Hammond, La. We are dealers in building material and have purchased this plant, with the idea of making a first-class standard building brick to be supplied to our trade, and naturally we wish to install the best machinery, and while for a time we will continue with the same kilns, it is likely that in the near future we will take up the question of building kilns of a modern type.

We have subscribed to your journal so that we may be

in touch with the work that is going on throughout the country and be thoroughly posted as to any improvement, etc., in the manufacture of bricks. The yard has probably a capacity now of only 25,000 a day, and it is our intention to increase the capacity as soon as the conditions permit.

Yours very truly,

THAUS KEARNY, Sec'y.
J. WATTS KEARNY & SONS.

New Orleans, La.

Written for THE CLAY-WORKER.

GEORGIA BRICK NOTES.

THE CLAY MINERS of Central Georgia report that business is prosperous and that they cannot supply the demand for clay. There are now six companies in the state, who are engaged solely in the mining of clays. These companies are the Georgia Kaolin Company, Dry Branch; I. Mandle, Dry Branch; The American Clay Company, Dry Branch; The Albion Kaolin Company, Hepzibah, and J. R. Wimberley, Perry, Georgia, and The Atlanta Mining & Clay

Good brick clays in the vicinity of Atlanta, however, which are accessible, are scarce and are becoming rapidly exhausted, and the clay problem is becoming serious for Atlanta brick-makers.

A. CRACKER.

WELFARE WORK AT THE RAYMOND COMPANY'S FACTORY.

THE C. W. Raymond Company of Dayton, Ohio, are among the concerns whose interest in the workers in their factory extends beyond their mere earning capacity. To this end they co-operate with the Dayton Y. M. C. A. and have weekly meetings during a part of the noon lunch hour, usually occurring on Tuesday and lasting for about fifteen minutes. This meeting is presided over by a representative from the Y. M. C. A. and consists usually of two songs by the workers, a solo, and a short talk, ending with prayer. These talks are usually of a religious nature, dwelling largely on the life of Christ. However, religious subjects are occasionally put aside and a practical talk is made on some secular subject which is of live interest to the men.

Among the recent secular subjects, a series of five lectures



Some of the Employees of C. W. Raymond & Co.

Company, Dry Branch. These companies mine and sell pottery, paper and fire clays, most of the clay going to northern markets.

The Legg Brick Company, of Calhoun, Ga., which has been recently established, is turning out an excellent shale brick. This is the first company in the state to manufacture its product entirely from shale, and it is producing a dry pressed brick of uniform and beautiful red color. Shales suitable for brick are of widespread distribution in the northwest part of the state, but have been neglected by brick-makers.

The Magnesia Stoneware Company, of East Point, Ga., reports that it cannot supply the demand for jugs. Its product is sold mainly in Atlanta.

It is rumored that another brick plant is to be built near Macon, Ga., which will use the alluvial clay of the Ocmulgee river.

Building in the city of Atlanta is very active, and as a result, there is a brisk demand for common building brick.

on "First Assistance to the Injured," was given by a practical physician. This subject has shown itself to be of great value to the men. The Raymond Company find that the men are greatly improving in their daily habits, are working more conscientiously and there is a very notable lack of profanity about the factory.

This is one of the best pieces of welfare work which has been undertaken in the larger cities and has had great influence toward the betterment of the wage earners in Dayton.

The photo shows a number of interested employees of one of the departments.

TRADE NOTES.

P. S. Allison, Holly Springs, Miss., writes that he is in the market for an up-to-date pug mill to grind potters clay.

The Globe Developing Company has struck a 12-foot vein of kaolin in Hart County, Kentucky, and also a large deposit of high grade pottery and fire clay, and are now in the market for the necessary equipment for a brick plant. Prof. J. F. Elsom, New Albany, Ind., can give full particulars.

Written for THE CLAY-WORKER.

NEW YORK AND THE EAST.



RICKMAKERS IN THE EAST have had their troubles during the past month. It has been cold like early spring, and as this is written, well into June, one cannot go out without an overcoat after nightfall. Of course coolness, unless it is actually freezing, doesn't hurt brick manufacturing, but the rain does, and that comes down almost continually. A fair day dawns and the sun manages to worry along all day more or less bright. That night a rain will begin which lasts three or four days, or even a week. Thousands of dollars' worth of brick have been destroyed through the east by the almost incessant rains. And what is worse is the fact that conditions do not change. The weather is still against the brick man. Clouds and rain are his portion. The sun has almost deserted this portion of the country. When it will end no one can say. Weather prophets hold out no hope for a change. They all seem imbued with the pessimistic spirit, and utter dismal prophesies of continued cold and rain, which may be expected until about the middle of next month. And Hackensack gets it first hand. It is the home of Andrew DeVoe, the most famous and apparently the most successful of them all. Unfortunately he is one of the kind who cannot be corrupted, and unless there is some change in his alleged signs he will go on predicting all sorts of doleful things until he finds something that justifies more optimistic indications. Perhaps then he will cut short his lugubrious utterances and allow the weather to return to its normal conditions.

At this writing some yards have no fresh brick drying. Others have one burning about ready for delivery. Still others are making small deliveries. The surplus which was reported early in the spring is fast disappearing. Some yards have none at all. Others have but few. Meanwhile demand has been active. Building operations which consume immense quantities of brick of all grades are going along just the same. Builders have been buying freely, and in and about New York the price has advanced from \$1.00 to \$2.50 per thousand during the past month. The tendency is still upward and no one ventures to predict where it will end.

Quotations are somewhat uncertain, and there may be changes by the time this is in print. But as this is written, figures run about as follows: Front buffs, No. 1, \$32.00 to \$33.00; grays, shaded and specked, \$32.00 to \$33.00; white No. 1, \$32.00 to \$33.00; Hudson river common, \$6.50 to \$7.00; light hard, \$5.50 to \$6.00; pale, \$4.00 to \$5.75; No. 1 fire, America, \$25.00; No. 2, \$20.00; Scotch, \$35.00.

Development along the Hudson river has not been undertaken to any considerable extent this season. Of course there have been changes, new machinery has been placed in some yards, and the necessary repairs have been made, but no new yards of importance have been opened, and old ones are not being operated to their full capacity in all instances. The weather conditions have exerted considerable influence. Makers have not been encouraged to undertake any important work, and production has been limited accordingly. With good weather, a brisk demand and only moderate prices would have encouraged makers to go ahead with their development plans and more brick than ever would have been poured upon the market. Now, even though all yards are being operated to as liberal a capacity as possible, the situation, from a market standpoint, at least, has been developed by the scarcity of brick made. Old stock has been worked out at good prices and the supply is much lower than was expected at the beginning of the season. In fact, it seems reasonably certain that there will be comparatively little old stock to trouble makers when they finally succeed in getting weather which will permit them to operate their yards to full capacity.

Substantially the same conditions govern along the Hack-

ensack river. Makers are at work, but in place of the large burnings which are commonly seen at this season the sheds are only partly filled and in nearly all instances only a fraction of the sheds show indications of activity. Where usually a heavy pall of smoke hangs over the yards now only scattering clouds are seen. Some new brick have been made and are being shipped to market. But the quantity is relatively light and the situation shows no signs of improvement. There were a good many old brick to be worked out, and these have brought good prices. But they are practically exhausted, and market demands must be filled from new stock.

BURTON.

A LETTER TO THE TRADE.

It is well known that our Mr. P. L. Simpson is one of oldest, if not the very oldest, manufacturer of dry press brick machinery in the United States, and is looked upon not only as a pioneer in the business but also as having a wider experience than any one else in this line. Mr. Simpson is the manager of this concern and it appears that some of our competitors have quite an original way of keeping customers away from us by telling them that "Mr. Simpson has left America and is now permanently located in Europe on account of his health." It is the purpose of this letter to state emphatically that this story is a falsehood, as Mr. Simpson is permanently settled right here in Chicago and connected with us as our manager, and furthermore, we are glad to state that he is in excellent health and is not at present in any way requiring a residence abroad on account of any physical ailments. We are pleased to invite any customers desirous of purchasing any of our specialties, particularly dry press brick machinery, to call at our office, where our Mr. Simpson will be glad to meet them and freely give of his advice and experience. We would especially urge customers to write or visit us in order to have such stories confirmed or denied before believing them, knowing that when one is discovered uttering one falsehood it is a sign that he cannot be depended upon in any other statement he might make; "falsis in uno, falsis in omnibus."

Yours very truly,

NATIONAL BRICK MACHINERY Co.,
817 Chamber of Commerce, Chicago, Ill.

Wants a Remedy for Checked Brick.

Editor THE CLAY-WORKER:

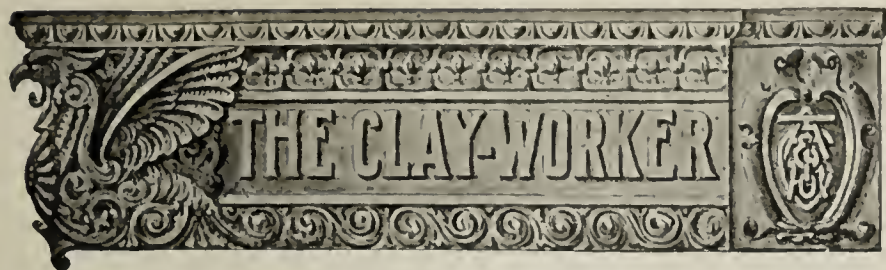
We received the pen, for which you have our thanks. It is an excellent pen. Of course, we all look forward to the receipt of the CLAY-WORKER each month and read and re-read each copy several times. Only wish it was a weekly and contained as much good reading each week. We are constantly finding helps in it, but we are now "cutting a tooth" that the CLAY-WORKER does not ease. Our brick check a little in drying and burning, and we have failed to remedy this. If either of your books treat on this subject, mail same to us and draw draft for the amount. We need help and must have it from some source. The brick are good hard brick, with the exception of the checking, which ruins the sale.

IMPERIAL BRICK COMPANY.

A GOOD DEMAND FOR "NEW SOUTH" BRICK MACHINES.

J. C. Steele & Sons, builders of brickmaking machinery, Statesville, N. C., are having the busiest season they have ever had. They are putting forth every effort to keep in sight of their orders. The unprecedented prosperity of the Carolinas and Virginia, especially North Carolina, is emphasized by the demand for a large part of their entire output in these states. They have already shipped twenty-six machines to points in North Carolina and very few of these were under 25,000 daily capacity.

William Conway, Philadelphia, Pa., president of the N. B. M. A., writes that he has the stack for his new Haigh continuous kiln completed, and is very busy supplying the demand for his brick, which is growing all the time. In fact, he has had to turn down a number of orders.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	\$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " " " " " "	10.00
Ten copies, " " " " " "	15.00

Foreign subscriptions 65 cents additional.

Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVII.

JUNE, 1907.

No. 6.

CURRENT COMMENT.

Trouble rightly taken is frequently a good tonic.

* * *

Sickness, lack of work, injury, old age, are contingencies that come into every man's life.

* * *

The brand of consistency that some people use is like a steel hoop around a small mind that keeps it from expanding.

* * *

A friendly pat on the back adds to the spirit of good will, not only in the man who receives it, but also in the one that gives it.

* * *

Fire is one of the greatest factors in brickmaking, and brick is unquestionably the greatest factor when building for safety against fire.

* * *

He who can find the humorous side to his worries, has more opportunities for fun in this world than a regular attendant at a penny vaudeville.

* * *

Irritability is said to be a sign of honesty. If that is true most of us know at least a man or two entitled to some distinction for honesty whom we merely thought cranky.

* * *

The only time on record when there was no possibility of overdoing the brick industry was when the Tower of Babel was built, and even then the result was not entirely satisfactory.

* * *

Sympathy is said to be the keynote to harmony. Harmony is the keynote to reciprocity. Reciprocity is the keynote of business success, and taken all together it is quite a combination, if we only have the key.

Over in England they have figured it out that the price of corn, or the prosperity of the people has a direct bearing on the number of marriages. Moral, the Old Maids' Society should strive to boost the price of corn.

* * *

There are lots of things to be thankful for about being in the brick business these days. For one thing there is freedom from the worry that comes in some other lines about the competition that comes from the mail order department stores.

* * *

If some of us who chafe at having to work for a living had to live without working, we would in time realize that the necessity for work is a blessing; yet there are lots of weary men ready and willing to give the matter a trial, even while admitting the truth of the logic.

* * *

We are not economical, say the observant writers from the old countries. That's all right, cousin; we've got hustle enough to make up for our shortcoming in thrift, and, besides, we are improving right along, so slide down your own cellar door and don't worry about us.

THE CITIZENS' TRADE SCHOOL CONVENTION.

There was held in Indianapolis during the 10th, 11th and 12th of June, a Citizens' Trade School Convention, the chief purpose of which was the consideration of ways and means for providing the American boy with the opportunity and means of learning a trade. The time has come in the industrial affairs of the United States when something must be done to increase the number of skilled tradesmen in the different industrial lines. The convention was the first of the kind ever held in this country and while the attendance was not large, the delegates made up in enthusiasm what they lacked in numbers, and it is hoped that from this small beginning will come a permanent organization which will accomplish the purposes desired. The officers and instigators hope to form a National Board of Industrial Education, similar to the National College Board of Education, for the purpose of promoting technical education and arousing proper interest in the support of trade schools. Dr. S. C. Dickey, president of the Winona Technical Institute, was a conspicuous figure in the meetings and was made permanent chairman. The delegates were welcomed to the city by Mayor Charles A. Bookwalter and wished Godspeed by Vice-President Charles W. Fairbanks, in an earnest though informal address.

TRADE SCHOOLS AS PART OF PUBLIC SCHOOL SYSTEM

A number of men eminent in the industrial world addressed the Trade School Convention and their offerings, which will be published in pamphlet form, will prove a compendium of valuable information on the subject. It was the consensus of opinion that a young man can have no better asset than a good mechanical training. It developed that there is a disposition to introduce the trade school or manual training department into our public school system. One of the speakers, Mr. John W. Van Cleve, of New York, said in this connection, "Begin the training as soon as the boy can hold tools in his hand and make this instruction compulsory on every boy. By the time the boy is fourteen years old, he will be able to use the more important mechanical tools." He argued that "industrial high schools should be open to receive boys and give them a two years' course, which would qualify them as first class mechanics." Such system, he declared, would soon give the United States all the workmen needed in the mechanical trades. He commended the work

done by the Winona Technical Institute and other similar schools, but said that these institutions can do only a small part of the work needed in training American mechanics.

THE EDUCATION OF THE HAND.

The above theme afforded Dr. Frank Gunsaulus, of the Armour Institute, Chicago, an opportunity to deliver a stirring address. He said, among other things, that "the whole joy of life is in turning the toys of childhood into the tools of work, and the tools into instruments with which to make music for the world. I want that education which takes a commonplace man and makes life poetic for him. What are the tools with which we are working? They are God's ways by which you come to yourself. Tools are toys and toys are tools. The end and aim of all information is to make a man. The end of all work and education is to make a man." He said that "the mind of man gets an idea of a law that governs a mechanism; the mind dreams of it until the idea of a new machine becomes a well defined thought, then the thought gets into the love of the heart; if it did not, the idea would soon be forgotten. From the love of the heart the idea of the machine gets into the hand and becomes something that will work. Without the hand," he said, "the idea which will come into the head and heart would soon die of forgetfulness. The education that fails to get into the head, heart and hand, is no education—least of all, for an American."

THE MEANING OF INDUSTRIAL EDUCATION.

Speaking for industrial education for the masses, rather than the university education for the few, Mr. James A. Emery, representing the Citizens' Industrial Alliance of New York, declared that many of the universities of this country seem blind to the importance of industrial life. "What is prosperity," he said, "but an abundance of commodities evenly distributed? All luxury is dependent upon the worker in material things. It isn't possible to have a happy people unless they are materially prosperous. There is no fund out of which to pay labor excepting its own production. Wages are not alms, the competition of capital and labor fixes the standard of wages. There is this distinction, however, between capital and labor; labor must live where it is, capital has no family ties. Capital is as quick as a telegraphic current in its movements, it is quicker to see and realize its opportunities than labor. However, the laborer fixes his own wage by his efficiency and he increases his wage by efficiency. Every laborer has it in his own hands to better his wages and also to add to the betterment of those around him. Labor unions that seek to control the labor supply by opposing industrial education, shut the 'Door of Hope' in the face of their own children. You can't educate a man's hand without educating his mind. You can't make a better workman without making a better man, and in making industries better you are making the nation better."

THE HISTORY OF TRADE SCHOOLS.

One of the most interesting and instructive addresses at the Trade School Convention was that delivered by the Hon. Anthony Ittner, of St. Louis, which will be published in full in the July CLAY-WORKER. Mr. Ittner has been a close student of the subject for many years and he admits that so far progress has been slow and of little avail, considering the vast importance and great need for trade schools in this country. He is quite confident that if public interest can be aroused to the importance of giving the American boy, born of humble parentage, the opportunity to which he is justly entitled, of learning a trade, that great good will result. Mr. Ittner insists that it is the God-given right of every American boy to learn a trade if he desires to do so, without let or

hindrance from any trade organization, and it is his ambition to aid in the establishment of a public school system of trade education which will enable every American boy, even the very poorest, to develop the very best that is within him, and a truly laudable ambition it is.

HOW TO START TRADE SCHOOLS.

One of the distinguished speakers at the Trade School Convention was Walter H. Page, of New York, editor of the *World's Work*. He made the principal address at the commencement exercises of the Winona Technical Institute, and among other delightful things said: "Suppose everybody in Indianapolis did his or her work perfectly, putting character into it? If such an ideal condition could maintain for five years this beautiful and well ordered city, as it is today, would in that time be a veritable paradise in comparison. People from other portions of the country would want the things made in Indianapolis; more than that, they would want to come here and enjoy the blessings that would be a part of your citizenship. Can you conceive of such a condition and what it would mean if the whole United States could be so conditioned? We would enjoy an era of prosperity and greatness such as no nation has ever known."

THE WORLD'S BETTERMENT.

One of the practical talks made before the Trade School Convention was that of Arthur B. Dean, of Boston, a supervisor of forty-seven trade schools in Massachusetts and Rhode Island. He said: "The only way to start a trade school, is to start it. It is often necessary for private enterprise to start these schools and then turn them over to other organizations to look after their welfare. The tremendous prosperity of the country is the cause of so much talk about industrial education. There is not enough labor to move raw material to the factories, and there is not enough skilled labor to work up the raw material if it was moved. The country is changing every day; it is essentially a machine age. Men are needed, not only to build machines, but to run them. There is a hardship imposed on the American boy who wants to learn a trade. It is not all due to the trades unionism, manufacturers are not doing all they could do to develop skilled men."

AN AUSTRIAN'S CRITICISM—OR HUMOR, WHICH?

In our month's "Foreign Scrapings," on page 907, is an item giving "An Austrian's Opinion of American Dry Press Brick," which is interesting if not convincing in the argument advanced. The statement that brick are not burned hard in America, "in fact, at many places they are only smoked," suggests the idea that the author is a humorist—or the victim of one, and we wonder if our own "Button-hole" humorist, who has been abroad for the past two months, has been indulging his penchant for quaint trade tales and has been taken all too serious by our Austrian critic. The latter's reference to St. Louis may well be considered as a joke, even if intended seriously, but will it be so taken by the redoubtable, Anthony Ittner (who, it will be remembered, always insists on Sibley's jokes), and by his neighbors, particularly the Hydraulic Press Brick Company. "Such bricks as are used in St. Louis would find no market at all in Germany and Austria," says the gentleman quoted, and yet we are told that sand-lime brick are very popular in the former country. The further reference to the iron spot brick, ought to make our pressed brick manufacturers generally sit up and take notice, as it is coupled with the statement that "anybody who buys a house in America cannot complain when, after ten years, the material proves to be bad." We are wondering if the gentleman visited the St. Louis World's Fair and formed his conclusions after viewing that great show from the apex

of the Alps. Mayhap, it was the wobbly brick pavement on the Pike that made such an unfavorable impression on the critic's, or shall we say joker's, senses? The Pike pavement was wobbly, and no mistake, and the fact that that condition was in no wise the fault of the brick themselves, may have escaped the notice of our critic, as it did with many who tarried too long in the Alps. Lest our foreign readers be misled by the statements quoted, we wish to say, seriously, that there are no better brick in the world today, anywhere, than are made in St. Louis and other American cities, by the dry press process. If our critic will return to America "after ten years," or fifty, or a hundred years, for that matter, he will find the splendid brick structures, such as the Missouri Trust Building, illustrated on page 43 of the January CLAY-WORKER, which challenged the admiration of every visitor to St. Louis, and which were builded of dry press brick, still standing monuments to the skill of our dry press brick manufacturers and the indestructible quality of brick made on American dry press brick machinery.

REPORT OF THE WISCONSIN CLAYWORKERS' ASSOCIATION.

The report of the proceedings of the seventh annual meeting of the Wisconsin Clayworkers' Association, held at Madison, Wis., February 28 to March 1, which has just recently come from the press, is a very attractive volume with a neat grey cover. It contains 114 reading pages, aside from the printed constitution and by-laws, list of members, officers and committees. It contains all the papers and discussions of the last convention, and is a very valuable contribution to the CLAY-WORKER'S files.

The paper by Arthur Peabody, supervising architect of the University of Wisconsin, on "Brick and Brick Work in Architecture," is finely illustrated with attractive pictures of Italian and Belgium architecture. Anyone wishing this report should correspond with the secretary, Oscar Wilson, Menomonie, Wis.

ILLINOIS UNIVERSITY CERAMIC BULLETINS.

The bulletins issued by the Illinois University under the title of "Studies From the School of Ceramics," are valuable contributions to ceramic literature. This department of the University of Illinois is doing a good work in lines of ceramic experiments and its publications are evidences of the labor and careful study the head of the ceramic school and his students are giving to further the interests of their work.

Recent numbers of "Studies From the School of Ceramics" treat with "Studies in Glaze" and the "Pyro-chemical and Physical Behavior of Clays." The subject, "The Studies in Glazes," is divided in two parts. The first appears in a well printed pamphlet consisting of 94 pages on Fritted Glazes.

This is the result of the excellent work of Mr. Ross C. Purdy, who is at the head of the Ceramic Department of the Illinois University, and Mr. H. B. Fox, assistant professor in Geology, Champaign, Ills. This is a careful study of the variations of the oxygen ratio and the silica-boracic acid molecular ratio.

The second part of this subject is on the "Crystalline Glazes," by Mr. R. C. Purdy and J. F. Krebbiel, a graduate of Alfred University. This is a finely illustrated pamphlet of 93 pages, the illustrations being beautiful crystalline glazed vases, the work of these two men at the Illinois University. It is a most interesting publication and treats of the subject in a very thorough manner.

The third number of the Ceramic Bulletin is written by R. C. Purdy and J. K. Moore, the latter being a student in the University. They treat at length upon the subject of the "Pyro-Chemical and Physical Behavior of Clays." This is a large number consisting of 116 pages and a number of

ceramic charts. The university and ceramic world in general is to be congratulated on having such enthusiastic ceramic exponents. We await with interest the next bulletin.

THE ST. LOUIS FIRE BRICK MERGER.

THE PRINCIPAL item of news in clayworking circles in St. Louis the past month was the filing of articles of incorporation of the Laclede-Christy Clay Products Company, with a capital stock of \$4,000,000, fully paid. The object of the incorporation, as stated in the corporation papers, is to deal in all kinds of clays, minerals, etc., and to operate foundries, furnaces, kilns and railroad tracks, etc.

For the purpose of the incorporation the stock is held as follows: Alexander Russell, 27,495 shares of preferred and 12,495 shares of common; W. J. Holbrook, G. H. Blackwelder, W. C. Mitchell, E. W. Banister and S. T. Bixby, one share each of preferred and common. None of these stockholders will figure as important shareholders or directors in the final organization.

The capital stock will be divided into \$2,750,000 of preferred stock and \$1,250,000 of common stock. The preferred stock is entitled to a preferential dividend of 6 per cent. The capital stock is fully paid.

The principal officers and stockholders in the two old companies, the Laclede Fire Brick Manufacturing Company of St. Louis and the Christy Fire Clay Company of St. Louis, are to continue as stockholders in the new concern. James Green, president of the Laclede Company will be chairman of the board of directors and Calvin M. Christy, president of the Christy company, will be chairman of the executive committee; William C. Morris, of the Christy company, will be president; John L. Green, son of James Green, vice-president, and Richard D. Hatton, secretary and treasurer. Other directors will include Montague Lyon, an attorney, and R. H. Miller, who will be general sales manager.

The companies going into the merger are the oldest fire clay concerns in St. Louis, the Christy factory having been started in 1857 by the late William D. Christy and the Laclede in 1844. They are manufacturers of fire brick, sewer pipe, clay retorts and similar products. The Laclede company has a plant embracing three factories and the Christy company has an extensive plant. Both of these plants will be continued in operation. Whether other fire clay concerns will be absorbed is not yet known.

The formation of the above merger was told in the last issue of the CLAY-WORKER and the consolidated company will be the second largest manufacturer of fire clay products in the United States in point of output and capital invested.

"THEY NEVER FADE."

This is getting to be quite a familiar expression at the different clayworking conventions, and is a very neat and novel heading for the advertising matter of the Ricketson mineral paints, manufactured by Ricketson Mineral Paint Company, Milwaukee, Wis. This firm has made quite a reputation for itself in their line, for they manufacture a fine grade of mineral colors for the coloring of mortars, cement building blocks, clay, cement and sand-lime brick, stucco work, paper tinting walls, etc. This is a well established firm and has a reputation for good quality, strength and durability of its products.

GOLD IN HOUSE BRICKS.

It has been discovered that the common red clay of which bricks are made contains gold at the rate of nearly a shilling's worth to the ton. In the houses of London there are at least 5,000,000 tons of bricks. Make a little calculation at the rate of one shilling a ton, and it will be found that no less than 250,000 pounds of the precious metal is locked tightly up in the ugly red walls of London alone.—Dundee Advertiser.

Written for THE CLAY-WORKER.

KNEE-DEEP IN JUNE.

Tell you what I like the best—
'Long about knee-deep in June,
'Bout the time strawberries melts
On the vine,—some afternoon
Like to jes' get out and rest,
And not work at nothin' else!

Orchard's where I'd ruther be—
Needn't fence it in fer me!—
Jes' the whole sky overhead,
And the whole airth underneath—
Sorto' so's a man kin breathe
Like he ort, and kindo' has
Elbow-room to keerlessly
Sprawl out len'thway on the grass
Where the shadders thick and soft
As the kivvers on the bed
Mother fixes in the loft
Allus, when they's company!

Jes' a sorto' lazein' there—
S'lazy 'at you peek and peer
Through the wavin' leaves above,
Like a feller 'ats in love
And don't know it, ner don't keer!
Ever-thing you hear and see
Got some sort o' interest—
Maybe find a bluebird's nest
Tucked up there convenently
Fer the boys 'ats apt to be
Up some other apple-tree!
Watch the swallers skootin' past
'Bout as peert as you could ast;
Er the Bobwhite raise and whiz
Where some other's whistle is.

Ketch a shadder down below,
And look up and find a crow;
Er a hawk away up there,
'Pearantly froze in the air!
Hear the old hen squawk, and squat
Over every chick she' got,
Suddent-like!—And she knows where
That-air hawk is, well as you do!—
You jes' bet yer life she do!—
Eyes a-glitterin' like glass,
Waitin' 'till he makes a pass!

Pee-wees' singing', to express
My opinion second-class,
Yit you'll hear 'em more or less;
Sapsucks getting down to biz,
Weedin' out the lonesomeness;
Mr. Bluejay, full o' sass,
In them base-ball clothes o' his,
Sportin' 'round the orchard jes'
Like he owned the premises,—
Sun out in the fields kin sizz,
But flat on your back, I guess,
In the shade's where glory is!
That's jes' what I'd like to do
Stiddy fer a year er two!

Plague! ef they aint sompein' in
Work 'at kindo goes ag'in
My convictions!—'long about
Here in June especially!—
Under some old apple tree,
Jes' a-restin' through and through,
I could git along without
Nothin' else at all to do
Only jes' a-wishin' you
Was a-gittin' there like me,
And June was eternity!

Lay out there and try to see
Jes' how lazy you kin be!—
Tumble round and souse yer head
In the clover-bloom, er pull
Yer straw hat acrost yer eyes,
And peek through it at the skies,
Thinkin' of old chums 'ats dead!
Maybe, smilin' back at you
In between the beautiful
Clouds o' gold and white and blue!—
Month a man kin railly love—
June, you know, I'm talkin' of!

March aint never nothin' new!—
Aprile's altogether too
Brash fer me! and May—I jes'
'Bominate its promises,—
Little hints o' sunshine and
Green around the timber-land—
A few blossoms, and a few
Chip-birds, and a sprout er two—
Drap asleep, and it turns in
'Fore daylight and snows agin!—
But when June comes—clear my throat
With wild honey! Rench my hair
In the dew! and hold my coat!
Whoop out loud! and throw my hat!—
June wants me, and I'm to spare!
Spread them shadders anywhere,
I'll git down and waller there,
And obleeged to you at that!

—James Whitcomb Riley.

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THE RESULTS of years of re-
search by Mr. Ellis Lovejoy, upon
"Scumming and Efflorescence" now
available to all. 50 cents brings the
book. Stamps taken.

The Richardson-Lovejoy
(See Page 972.) Engineering Co.

FOR SALE, WANTED, ETC.

FOR SALE CHEAP.

Brick and tile plant in Eastern Iowa. Good
engine, boiler, stiff mud machine, capacity 25 000
and dry sheds. Round down draft kiln. Home
demand for all output; also good shipping facili-
ties. 23 acres of land comprising a ten foot clay
bank. Six acres of small fruit and orchard.
Good house and outbuildings. Reason for selling,
engaged in other business. Address
611 cm S. and S., Care Clay Worker.

DRY PRESSES FOR SALE.

One 2-mold U. S. Brick Press. One 3-mold
Boyd Brick Press. One 4-Mold Brick Press of
standard make. One 3-mold Andrus Brick Press.
Dry Pan, Pulverizer, Screen and Transmission
One set of plates for seven foot Wet Pan. 1,000
horse power Corliss Engine and boilers.
611 ip B-K BRICK CO., Denver, Colo.

For Sale, Wanted, Etc., Ads Continued on
Pages 953, 954 and 955.

200%

MORE

Radiating Service than any "Hot Air" Dryer made.

Simple of operation and construction.

Burns any kind of fuel.

Constantly under perfect control.

A new system of ties and a positive rail clamp absolutely prevents spreading of the track.

Write for exhibit 2077

The C. W. Raymond Co.,

Dayton, Ohio, U. S. A.



THE RAYMOND RADIATED HEAT DRYER

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



CHICAGO building market, as indicated by the statistics of permits issued by the commissioner of buildings, goes up and down some from week to week, but by and large is maintaining a pretty good average. Just at present it is at as high a level as it has been any time this year. The month of May showed up considerably better than did April in comparison with the record of last year, a noticeable spurt being recorded for the last weeks of the month. There was, however, a decrease both in number of buildings and in total estimated costs from the figures for the same month of 1906. The decrease for May was two per cent., a decided improvement over the decrease of 56 per cent. in operations for April, 1907, as against April, 1906, abnormal though the April decrease was. It is also interesting to note that with a decrease in operations and total estimated cost, there was an increase of an average cost per building of sixteen per cent.

The outlook is apparently most encouraging. Extensive building is being planned throughout the city. True there is not the same prospect for an immediate wholesale improvement of strictly down-town property that there probably would have been, had the state legislature seen fit to pass the real estate corporations bill, which would have permitted corporations and syndicates to have acquired title to much of the best down-town property, and to have raised for the improvement of these properties with modern buildings such funds as are quite beyond the reach of most of the owners. Still there are plenty of big plans being talked of and some that are being definitely settled upon, while there are great numbers of moderate sized structures for mercantile, commercial and industrial purposes being planned.

The city hall is by far and away the biggest contract in view, excepting, of course, the new mammoth stations to be erected by the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul, and the other roads using the Union station with it, plans for the latter being still somewhat in the air. Then there is talk of another big general passenger station to take the place of the present Polk street structure.

Plans for a ten-story building to be erected for Hirsch, Wickwire & Co., wholesale clothing manufacturers, at an estimated cost of \$400,000, at Franklin and Van Buren streets, have been prepared by Architects Jennie and Mundie, and it is understood that the contracts will soon be let. The building will roughly be 100 by 150 feet in area. The exterior will be in pressed brick and terra cotta, and the interior of steel and hollow tile. The top story will be twenty feet high.

The Chicago Telephone Company is preparing through its architects, Pound & Pound, to erect an operating department building, eight stories high at 87-89 Frankling street. The building will be 40 by 160 feet, and will cost about \$300,000. It will be of pressed brick and steel, terra cotta and hollow tile, it is understood. Another good brick job will be that of the new barns for the Chicago City Railway Company, to be put up at a cost of about \$200,000 on a forty-eight acre tract recently acquired at Seventy-eighth street and Princeton avenue.

Bonner & Marshall Company are shipping from Logan, Ohio, to Kingston, Jamaica, a carload of salt-glazed sidewalk tile ordered by the West Indian Electric Company, to be used in the battery room of a new power plant they are constructing.

Much activity is shown in apartment buildings, but there is a decided move toward individual homes, especially out on the west, and more especially out on the northwest, side of the city. The speculative builder in these good times is finding separate installment-plan homes a marketable article and

a profitable investment. Beside there are many who are building their own homes and either paying cash, or negotiating their own building loans. These small dwellings, like most of the apartment buildings, are strictly "into the mit" of the brick dealer. In school buildings, which were a fruitful source of profit to some dealers last year, there is nothing doing this year. The Dunne board, which Mayor Busse recently pried off their public perch with the now-renowned "bed-slat," was reckless in its financial methods, and went ahead and built schools last year when the school income did not warrant it. As a result, there is retrenchment now.

Local pressed brick dealers are complaining bitterly, like a good many other mercantile men, of the frightful switching charges which the railroads are exacting here. It would be laughable, were it not so pitiable, to see the way the roads are getting the best of the shipping and traveling public, especially the former, as a result of all the rate agitation and "big stick" talk. The common brick men have suffered too. Formerly western roads receiving from eastern roads for delivery within the city or to Evanston would "absorb" the charges, expecting the eastern road to reciprocate. Formerly it cost about \$5 a car for switching charges within reasonable points in the city. Now it costs \$12 at a minimum. C. A. Shank, traffic manager for the National Brick Company, appeared before the railroad and warehouse commission the other day and declared that Chicago men had enjoyed the Chicago rate on the northwest side for years, when suddenly the Northwestern and the St. Paul withdrew them. Formerly, he said, their rate had been one cent a hundred pounds with a minimum of 30,000 pounds. Now, he told the commission, the rate is two cents a hundred, with a minimum of 50,000. In the division of the burden of regulation between Federal government and the states, the public seems to have slipped between two chairs.

It may be hard to teach an old dog new tricks, but it is a lot harder to put a new trick over the eye of any old brick man. A brick man in Chicago who is so well known that he is regarded as an expert, was asked recently by a friend to pass his opinion on a certain cement brick that the friend had on his mind for consideration. The brick man wishing to be as fair as possible, thought he would like to get his information at first hand, and went where the cement brick were being turned out. He found the work being done by a very interesting machine and a very convincing process. In spite of the years he had spent as a devotee of clay and clay products, the new idea quite caught his fancy, and he began to think he had been wrong in thinking that no cement brick could be made which could successfully compete with the clay products. Examining one of the brick closely, he thought he detected another surprisingly good characteristic. He wet his finger and rubbed it on the surface. He took a little water and poured it on the brick. The water stood out upon the surface and ran off cleanly.

"Why," exclaimed the old brick man in delight. "It's impervious!"

"Sure," replied the cement brick man. "Can you beat 'em?"

For answer, the expert struck off a corner of the brick. Then he poured some more water on the broken surface. The "impervious" brick drank it up like concrete—almost as a piece of conglomerate would have done.

"You've treated it with parafine," said the expert quietly, but in a tone of disappointment and disapproval.

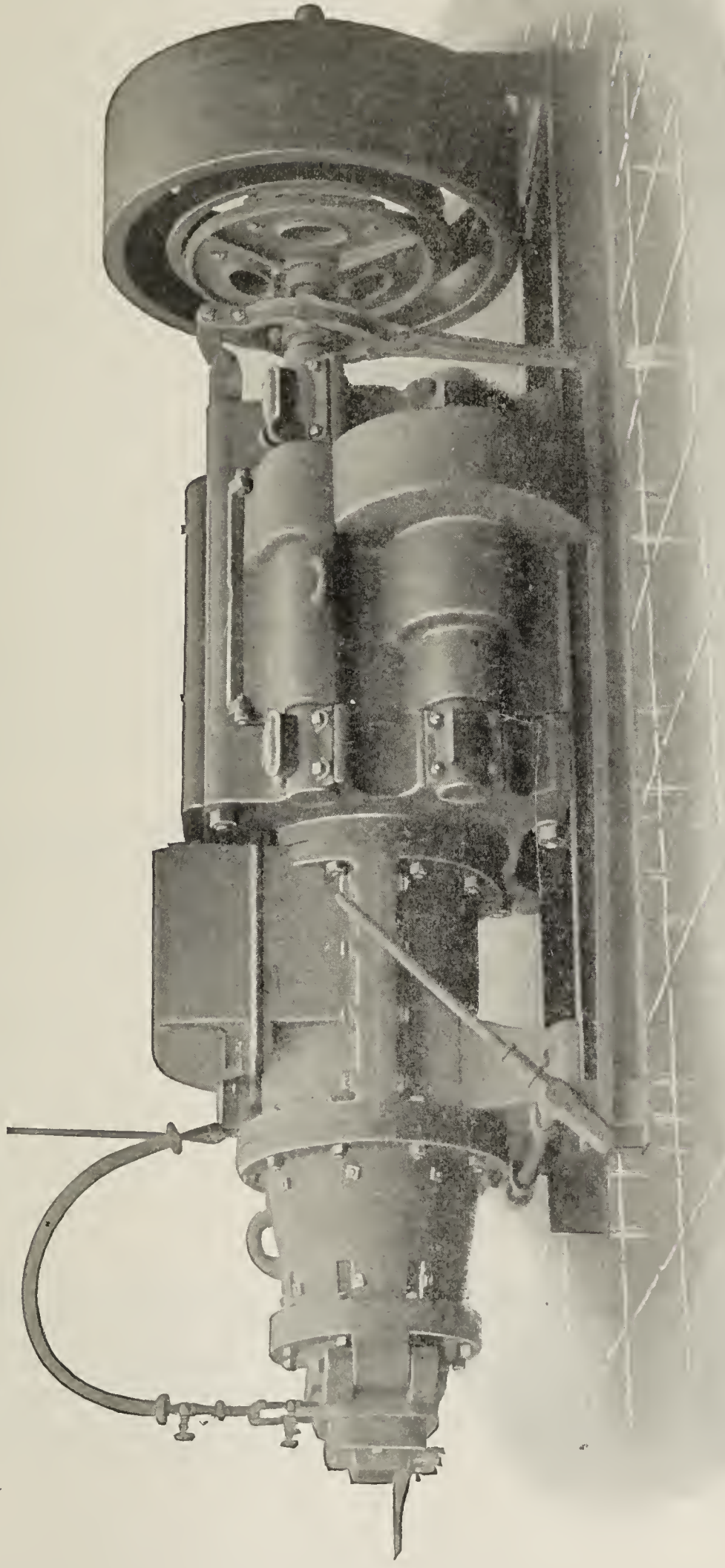
"O, yes; to be sure," replied the other. "But it's all right so long as the brick does not present a broken surface to the weather."

"Yes," said the clay products man, "All right till it's broken. And then—how about the cost, the first cost?"

SCRIP.

If you are looking for cheap machinery, scan THE CLAY-WORKER "For Sale" ads.

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

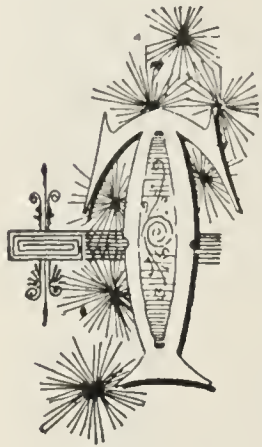
Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

Written for THE CLAY-WORKER.

WESTERN PENNSYLVANIA BRICK AND BUILDING NOTES.



THE LOCAL BRICK industry has been in excellent condition for the past month or two, and now with the coming of the real summer, there is every indication that there will be a still greater increase. The weather so far this year has been extremely bad, and not at all conducive toward outside construction, but in spite of this fact, building operations are considerably in advance of the figures of last year.

Red building brick and pressed building brick has been in excellent demand right along, and for the past month has been showing an increase each week, due to the increase in building operations. There are still a large number of excellent building operations in the hands of the architects, as well as at least a thousand new houses that will be built during the next six months, all of which will increase the demand for this class of brick.

Heavy orders are being received by the manufacturers in this part of the state for vitrified paving brick, and some of the plants manufacturing this grade of brick are running to the extreme capacity. It may be said that practically all of the towns in the Pittsburgh district are prosperous, and this season are doing an immense amount of street paving, which creates the unusual demand for this material. Even in some of the larger cities, vitrified brick is rapidly replacing asphalt, which has for a number of years been the favorite paving material, and in almost every instance that the writer has noted the city engineering departments claim that a good grade of this quality of brick gives far superior satisfaction than the smoother paving material, and that the life is also longer when compared with the original cost and subsequent repairs.

It seems that throughout the entire Pittsburgh district a sudden demand has arisen all at once for silica firebrick, and the large producers are in most cases running behind in their deliveries. The Carnegie Steel Company, probably the largest user of high grade firebrick in the country, is building a large number of new furnaces and stoves, and at the same time repairing and relining most of the old ones that have been in active service for a number of years, and this has been the means of the placing of a large number of very heavy orders with the large makers of refractory materials. The Pittsburgh plants of these companies are at the present time filled with orders, and these will insure the running of the plants to the capacity for the next six months at least.

The sewer pipe business is experiencing the rush that was due. It is estimated that in the neighborhood of 100 cities and towns in this territory are installing sewage systems, and in a large majority of these cases, terra cotta is the pipe used, creating therefore an excellent demand, which promises to continue throughout the summer.

Probably the only disappointing feature in the clay-working business hereabouts is the hollow tile fire-proofing business. Owing to the few large buildings that are to be built this summer, the local business has fallen off considerably, but the manufacturers claim that they are not suffering to any great extent, owing to the increased number of orders for shipment to other cities.

Reviewed from all sides, however, it is not thought that there is any industry, outside of the manufacture of iron and steel that is actually in any better shape, or more prosperous than the clay-working industries.

The National Fireproofing Company, of Pittsburgh, has been awarded the contract for furnishing the terra cotta fire-proofing that will be used throughout the big seventeen-story

Geenan building, that will shortly be started on Liberty avenue, at Seventh street, Pittsburg. This will be one of the most modern fire-proof buildings in the city, and the order calls for a large amount of fire-proofing material, all of which will be in the shape of hollow blocks, or tile, and amounts to about \$100,000.

One of the largest orders for coke oven brick that has been placed with any of the Pittsburgh manufacturers for some time past, was given to the Harbison-Walker Refractories Company, Farmers' Bank building, last month. It calls for about 1,600,000 brick that will be used in the construction of the first battery of coke ovens that are to be built for the Connellsville-Central Coke Company, of Connellsville, Pa., at the Herbert Works, near New Salem, Pa. These 200 new ovens, which will be of the Belgian type of construction, will be thirty-five feet in length, which is unusually large, even for this district, where the largest and most modern coking plants in the world are located. Shipments will commence at once.

The Waynesburg Brick and Stone Company, Waynesburg, Pa., has made a number of excellent mechanical improvements at the plant on Smith Creek. The company is about ready to commence the manufacture of paving brick, and has been awarded the contracts for furnishing the brick to be used in paving the streets of West Waynesburg, Morrisville and Rogersville.

The McFeely Brick Company, of Pittsburgh, has been awarded the contract for the brick to be used in the construction of the Swaney hotel, at Youngstown, Pa. The brick are being manufactured at the Latrobe, Pa., plant, and are being shipped to the destination by trolley, this being the first instance in Western Pennsylvania where brick have been shipped in this manner, it having been made possible last month by the Governor signing the trolley freight bill.

The contractors, Good, Brunot & Co., Greensburg, Pa., have awarded the Reese-Hammond Fire Brick Company the contract for a large number of paving brick to be used in paving a number of the streets of that city. It is the intention of the city authorities to award several more large paving contracts shortly, and in all of these Reese-Hammond brick is specified, which will mean that several other fine orders will be placed.

The plant of the Van Ormer Brick Company, at Stewart Station, Pa., a few miles east of Pittsburgh, is running to capacity, and has a large number of excellent orders booked ahead. This company has just been awarded a contract for 2,500,000 brick to be used in the construction of the new addition to the plant of the Westinghouse Electric Company, at East Pittsburgh.

H. Wheldin, of the Wheldin Pottery Company, of Philadelphia, Pa., was in Pittsburgh a few weeks ago, purchasing new machinery for his plant. During his visit here he took a number of side trips to the several large pottery centres in the vicinity of Pittsburgh, including the large new pottery at Newell, W. Va., which he claims is a model plant.

The plant of the Ford City Pottery Company, which concern recently was thrown into bankruptcy, was sold to the Colonial Trust Company, of Pittsburgh, and it is thought that the people for whom the trust company purchased the plant will immediately put it into operation. The plant is one of the best equipped in the country. The price paid by the new owners was \$51,000.

The report read at the annual meeting of the Pittsburgh-Buffalo Company, which is now one of the largest manufacturers of high grade firebrick in Western Pennsylvania, as well as one of the leading coal producers, was one of the most favorable ever submitted to the stockholders of that company. In spite of the immense sums put into improvements last year by the company, the net profits of the company showed a material increase, and the company has now more orders on the books than at any other time in its history.

The Carbon Brick Company, Farmers' Bank building, Pittsburgh, has made a number of changes at the plant near New Castle Junction, Pa., and has one of the most modern plants in the Beaver valley. Two new down-draft kilns have been added to take care of the rapidly increasing business.

F. C. Fisher & Co., 804 Home Trust building, Pittsburgh,

local representatives of the Federal Clay Products Company, the Douglass-Whistler Brick Company, the Imperial Clay Company, the Washington Brick Company and the California Clay Manufacturing Company, when interviewed by a representative of THE CLAY-WORKER, advised that although they had no particularly large contracts, they had a large number of small and medium orders, the volume of which exceeded that of any other season at this time of the year, and that the outlook was particularly encouraging from their standpoint.

Probably the most important announcement in the local brick manufacturing world in a number of years is the announcement that the Pittsburg-Buffalo Company, one of the largest independent producers of brick, refractory materials and sewer pipe in the world, will build an immense new plant at a new town they are building in Washington County, near Pittsburg, the town to be known as "Miriani."

It is now stated that this move has been contemplated for some time past, but the secret has been well guarded, and not until John H. Jones, the president of the company, returned from Europe a short time ago, was the contemplated plant announced, and then only to a few of the higher officers of the company.

The company, for a year, has been constructing an immense coal plant at Zollarsville, a short distance from the site of the contemplated brick plant, and at these mines the largest shafts in the world are being put down. At the new town, in addition to several hundred houses for the men to be employed at the coal works, the company proposes erecting an immense coking plant, which will create a demand for a large number of high grade fire brick, and it is the intention of the company to manufacture these brick on the grounds, instead of shipping them from one of the other plants. All of the brick to be used in the construction of the houses and other company buildings will also be made at the building brick plant that the Pittsburg-Buffalo Company will also build there. The combined output of the two plants will

be in the neighborhood of 100,000,000 brick annually, and it has been estimated that the operations of the company, now proposed and under way, will require 60,000,000 brick.

Work on these brick works will be started at once, and the entire equipment will be the most modern mechanical and labor saving equipment that is on the market today. It is believed locally that it is the intention of the Pittsburg-Buffalo Company to centralize their plants at this new town, but in view of the information in the hands of the local representative of the CLAY-WORKER, it is hardly believed that the company will abandon the immense brick plant at Johnetta, Pa., this plant being one of the largest and best equipped in the United States, and having the advantage of having a large capacity for sewer pipe, as well as refractory, building and paving brick. We hope to be able in the near future, to reproduce the plans of the proposed new plant, which will be of great interest to all engaged in, or identified with, the brick and clayworking business.

Another important announcement that has just been made by a Pittsburg brick manufacturer is that of the Harbison-Walker Refractories Company, which has had plans prepared by their engineering department for the erection of an immense fire brick plant at Indiana Harbor, Ind., near the new steel plants under course of construction for the United States Steel Corporation of Pittsburg. This new plant, or rather the first of the series of buildings that will comprise it, will be one story in height, 400 by 450 feet, and will be built of brick, steel and concrete. It will cost approximately \$350,000, and will have a capacity sufficient to take care of the orders of the company in connection with the blast furnaces, stoves and open hearth furnaces of the new steel plant. Work will be started at once and the plant will be placed in operation at the earliest possible date. O. M. Reif is the manager of works of the company and will have the improvements in charge, while the plans were prepared by the engineering department under the supervision of C. A. Saring, chief engineer of the Harbison-Walker Refractories Company.

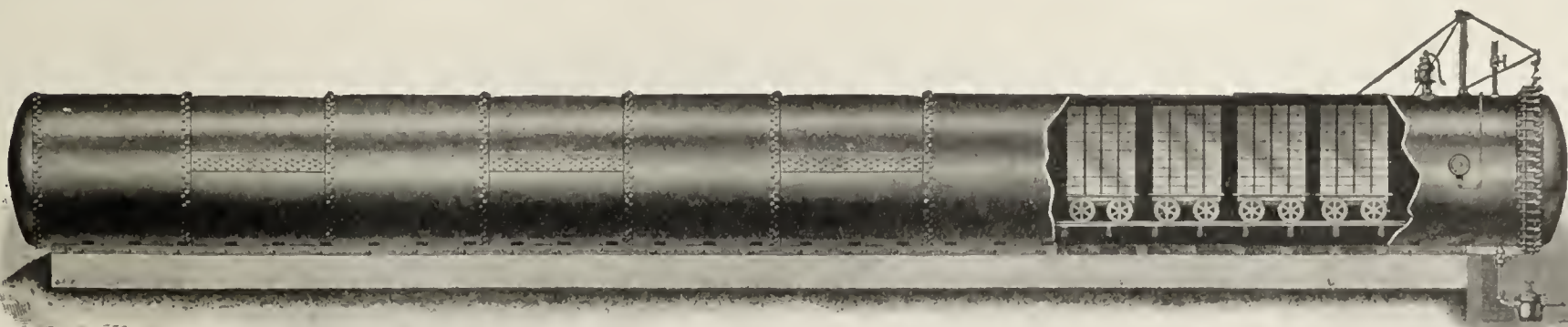
F. A. C.

Sand=Lime Brick Machinery



As builders of machinery for the manufacture of brick by every known process, we have placed upon the market a complete line of Sand-Lime Brick Machinery and appliances. There is no line of machinery so complete for making this class of brick. We have every machine or appliance necessary and equip the entire plant from our own factory. Every machine is substantially and carefully built of the very best material. Being constantly under the supervision of our own foremen we are able to guarantee the quality.

We also build the largest line of Clayworking Machinery and appliances in the world.



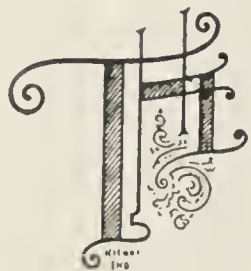
The American Clay Machinery Co.,

See ads on pages 957 to 960.

Willoughby, Ohio, U. S. A.

Written for THE CLAY-WORKER.

POTTERY NEWS.



PAST MONTH has been one of continued business success for the manufacturing potters of the western territory. The manufacturers have sufficient orders on their books to keep the many plants in continued operation for months. The placing of new decorations and new shapes before the trade for the mid-summer and fall trade has brought a large volume of new business to the home offices.

An interesting event will occur early in July, when the National Brotherhood of Operative Potters will hold its annual convention in this city. Standing committees have been appointed by the Brotherhood and the United States Potters Association to consider all resolutions which may be passed by the Brotherhood convention. Two years ago the wage agreement was signed for two years, and this pact expires this fall. It has been suggested by some manufacturers that no agreement will be entered into by the manufacturers unless a bond of at least \$100,000 is put up by the Brotherhood that the organization will stand by its agreements. It is asserted that violations of past agreements have been many during the past two years, and because of this the manufacturers have had no redress but have to withstand all.

Very few additions will be made to the potteries in the western territory this year. The manufacturers are working their plants to their capacity, and it may be that a lull may come later. With this thought in mind it is not likely that more than a few kilns will be added to the several potteries throughout the entire western district.

The Pearl Clay Products Company, of Bradford, Pa., has just been granted a charter under the laws of West Virginia. The capital stock is \$200,000, but only \$400 has been subscribed and paid, this amount being all that is required by the laws of that state. The concern is chartered to manufacture and deal in brick and other products. The incorporators are James P. Ryan, G. W. Foster, C. E. Foster, F. P. Shoemaker and W. M. Hodges, all of Bradford, Pa.

There is reason to believe that the Gem Clay Manufacturing Company, of this city, which has just been chartered under the laws of West Virginia, with a capital stock of \$10,000, will erect a new plant at Sebring, Ohio. The company is one which manufactures clay attachments for gas mantles. It started in a small way here, and its business has advanced so rapidly that larger buildings are needed immediately.

An additional kiln is to be built this season by the Crooksville China Company, of Crooksville, Ohio. Secretary Guy Crooks announces that a new casting shop is to be built, and other improvements hurried through in order to increase the capacity of the plant.

Frank E. Owen, chief office man and secretary of the Colonial Pottery Company, was married early in June to Miss Minnie V. Milligan, of Findlay, Ohio. Mr. Owen is one of the youngest men interested in a pottery enterprise in the west.

Two additional kilns have been erected by the Kenilworth Tile Company, of Newell, W. Va., and placed in operation. This firm started with one kiln eight months ago, and were compelled to make additions in order to take care of their business.

It is asserted that the Acme Pottery at Crooksville, which was formerly engaged in the manufacture of general ware, is to be taken over under a new management and converted into a stoneware plant.

The proposition to build several additional kilns to the plant of Patterson Brothers' yellow ware pottery at Wells-ville, Ohio, has been given up for the present. It was planned to make whiteware at this factory, but negotiations with that end in view have been suddenly terminated.

Within a fortnight the Homer Laughlin China Company

will be operating its plant in full at Newell, W. Va. About 95 per cent. of the number of workmen it is intended to employ have been engaged. The firm is operating a total of 64 kilns, including its two potteries in the East Liverpool district.

An additional decorating kiln has been completed by the Goodwin Pottery Company.

The Cartwright Pottery Company have plans made for the erection of additional decorating kilns. Should the firm succeed in having the city vacate an unused street an additional glost kiln will be built this summer.

O. MEGA.

WITH THE NEW ENGLAND BRICK MEN.

Connecticut plants are suffering from the same trouble that has affected brickmakers elsewhere. Rains have fallen almost continuously, and cold weather has interfered with the work more or less seriously. Conditions are not satisfactory yet, but they are better, and there is promise of something being done that will be an increase compared with last year. Some plants are now attempting to get their outfits in shape for a larger output than they have ever had before. The market is there. It is a question of getting brick to fill orders. If the weather will permit, business will develop faster than ever before. Building operations all over Connecticut promise to be large. Contracts and propositions are bigger than before, and makers are looking for the best business they have ever known.

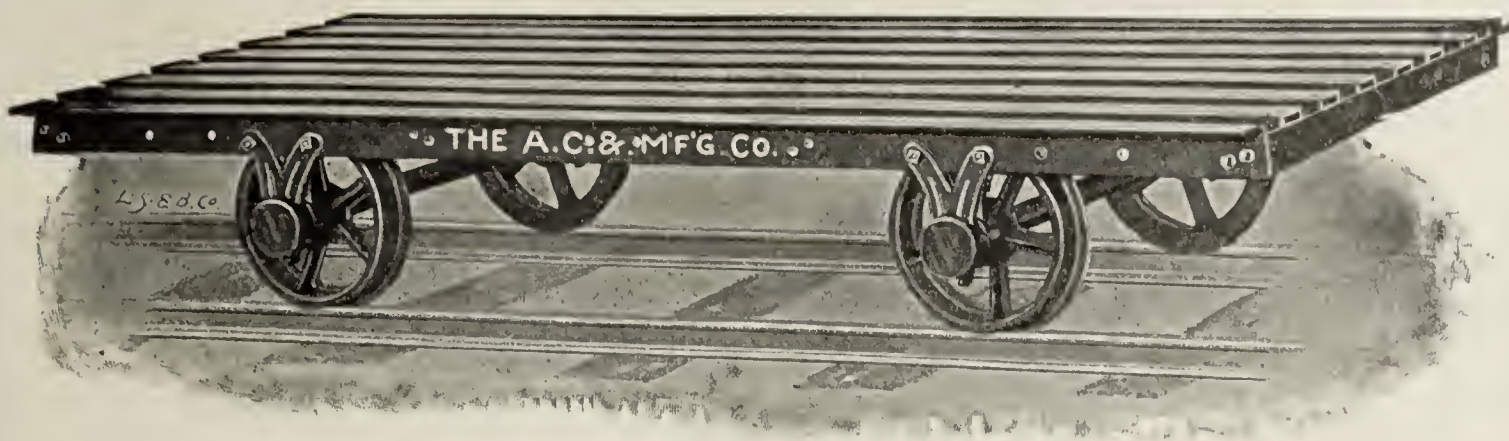
From Boston come accounts of the arrival of new brick in the market, though the supply to draw from is much smaller than usual. The territory which supplies Boston has had extraordinarily bad weather and the effect has been to cut down output very seriously. The increase in supply will be so limited for some time to come that observers are not looking for any decrease in price. The indications are that the next change in Boston will follow that in New York, and be upward rather than downward. Manufacturers and dealers say the current demand is fair and likely to improve as soon as it is felt that the weather is settled. Warm, dry weather would increase building operations and cause an expansion in the demand for brick. At the same time it would enable makers to turn out more. But probably at first they would profit by a change of this character and it is certain that all would be pleased to see warmer and dryer weather, even though it would reduce prices by increasing output. Spot prices are as follows: Up and down s. s. brick, f. o. b. yards in Massachusetts or New Hampshire, \$7.50 to \$8.00; up and down w. s. brick, f. o. b. yards, \$9.00 to \$9.50; New Hampshire selected w. s., f. o. b. cars in New Hampshire, \$12.00; Massachusetts face brick, \$19.00 to \$20.00; fire brick, \$28.00 to \$35.00.

Demand for drain pipe is fair and the market appears to be a shade firmer. Discounts range from 70 to 73 per cent. according to the magnitude of the transaction and other elements which enter into the business. The inside price can only be obtained by valued customers who buy large lots.

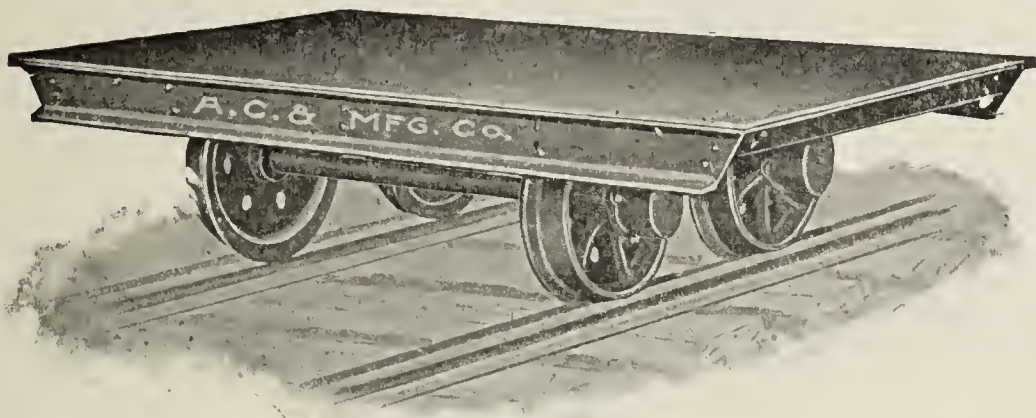
Throughout Massachusetts the situation is substantially the same as elsewhere. Preparations have been made for the biggest year in the history of the business and undoubtedly makers will get it before the season ends, but at first it has been uncomfortable and business has been seriously retarded. Spring has been winter, with continued cold and rain. The outlook aside from this one thing, is perfectly satisfactory, and there is not the slightest question about great activity as soon as it is possible to do business.

BURTON.

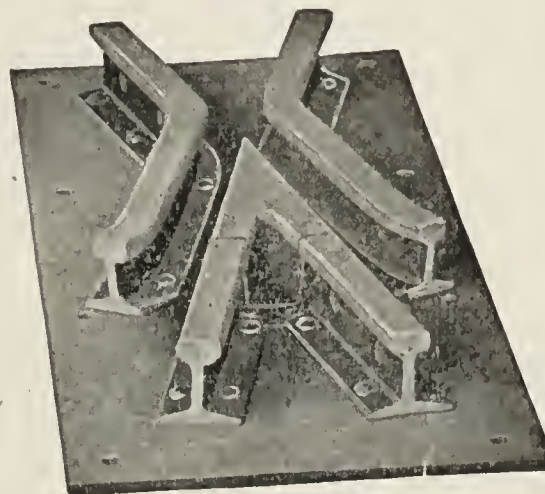
At the Ohio County Good Roads convention, held last month at Wheeling, W. Va., it was decided to use brick so far as possible in paving the county highways, and this will accordingly be done this summer. The convention was largely attended, and reports of the successful brick roads in various parts of Pennsylvania were read to the delegates.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

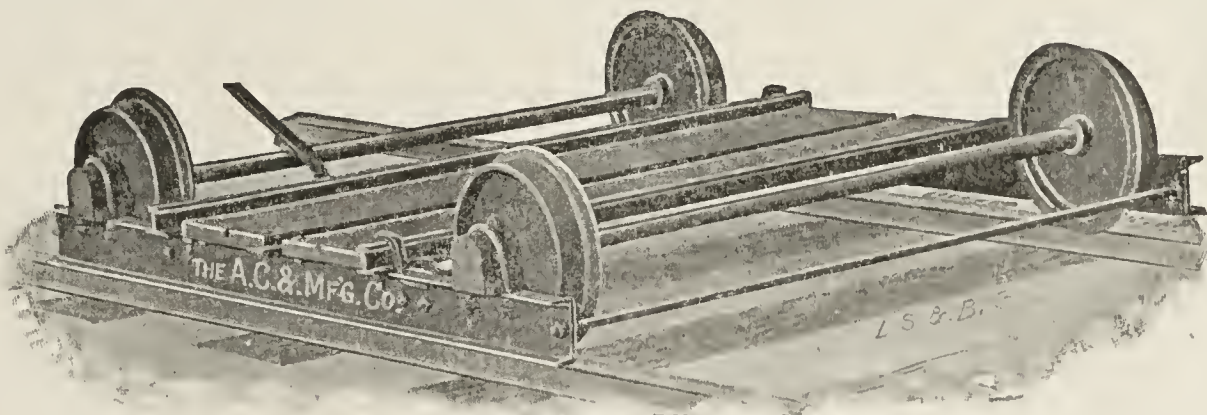
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



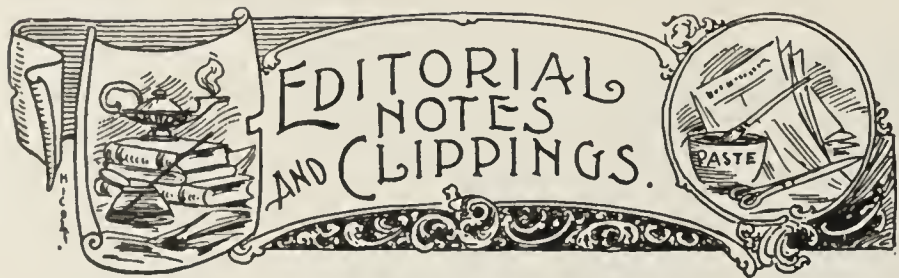
No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.



W. R. Kahlow and Charles Ostenberg will establish a brick yard at Okanogan, Wash.

C. B. and L. E. Bentley and G. W. Brush will erect a plant at Tama, Iowa, for the manufacture of brick and tile.

Bowers Brothers, Canon, Ga., have put in new brick works of 25,000 daily capacity, using J. C. Steele & Son's machinery.

The terra cotta works at Clayton, near Canaan, Conn., which have been closed down for several months, are again in operation.

The Macclesfield Brick Company, Macclesfield, N. C., has installed a new brick plant of 25,000 daily capacity, using the Steele machinery.

Cornelius Nist, a retired pioneer brick manufacturer of Louisville, Ky., died at his home in that city, June 7, from a complication of diseases.

A new brick plant of 40,000 daily capacity has been put in operation by Messrs. Williams & Lee, at Lee's Mill, Va., using the machinery manufactured by J. C. Steele & Sons.

The Ross-Keller Triple Pressure Brick Machine Company is loading a six-mold triple pressure brick machine for the Kaysville Brick Company, of Salt Lake City, Utah.

The Waverly Brick Company is a new concern recently incorporated at Waverly, Va. John Sailes is president, W. C. Carr, general manager, and R. T. West, secretary and treasurer.

W. R. Barnhart has purchased the interest of Albert Shupe in the Wooster Shale Brick Works, at Wooster, Ohio, and is now sole proprietor. Prospects are good for a prosperous year.

The Francesville Clay Product Company has been incorporated to manufacture brick at Francesville, Ind., with \$40,000 capital stock. The directors are O. T. Hodgkin, Wm. Scherman and others.

The Hawkins Brick Company, of Guthrie, Okla., has been incorporated with \$60,000 capital stock by H. Kimber, St. Joseph, Mo.; N. B. Howard, of Cottonwood Falls, Kansas, and E. L. McGuire, of Guthrie.

The new plant of the Muscogee Brick and Terra Cotta Company, at Columbus, Ga., started operations early last month in their brickmaking department and expect to have the terra cotta department running in a short time.

The Ross-Keller Triple Pressure Brick Machine Company is shipping a complete four-mold outfit to the Badger Pressed Brick Company, of Fond du Lac, Wis. The plant is to be located at Oakfield, Wis., and the product will be a high grade mottled brick.

Samuel Palmer, superintendent of the Durango (Colo.) Pressed Brick Company, fell into one of the machines recently and had both of his legs and his arms mangled and died from his injuries a short time after. He was sixty-five years old and leaves a family.

The Sibley-Menge Press Brick Company is making a number of improvements at their plant at Warrior, Ala., tending toward an increased capacity. They have placed an order with Chambers Brothers Company for another of their suspended pattern dry pans.

The Alsip Brick and Tile Co., Winnipeg, Ont., has purchased twelve acres of clay land at Fort Williams, Ont., on which there is a deposit of clay forty feet deep. A brick plant with two large capacity brick machines will be erected at once. The company will also manufacture hollow tiles and fireproof brick.

The Indian Creek Brick Company, whose property is located within half an hour of Wheeling, W. Va., has been circularizing possible investors in an endeavor to raise money to develop its business. The product of the concern is said to be quite up to the highest standard and there is ample opportunity to build up a large and profitable proposition, the only question now being the securing of additional capital. J. J.

Terhune is president and manager and reports business as favorable.

L. F. Patterson, Bainbridge, Ga., has increased the capacity of his brick plant by the addition of a No. 4 Steele machine.

Hawkinsville Brick Company, Hawkinsville, Ga., has increased the capacity of its plant to 50,000 per day by putting in a No. 4 Steele machine.

W. S. Collings, of Zumbrota, Minn., has leased the brick plant of J. Pfeiffer, at Cedar Falls, Iowa. There is a good demand at the latter point for all the brick the plant can turn out.

The Peninsula Face Brick Company has been incorporated at Peninsula, Ohio, with \$60,000, by I. M. Justice and others. A plant will at once be erected for the manufacture of red and buff face brick.

The Central Ohio Roofing, Tile and Brick Company, of Columbus, Ohio, of which C. H. Vance is president and Milton N. Grant secretary, has reduced its capital stock from \$60,000 to \$10,000.

The plant of the South River Brick Company, at Atlanta, Ga., which was recently destroyed by fire, is being rebuilt and the machinery for same is being furnished by the Chambers Brothers Company; Philadelphia, Pa.

The Pearl Clay Products is the name of a new concern recently incorporated to manufacture brick at Bradford, Pa. Those interested are W. M. Hodges, F. P. Shoemaker, C. E. Foster, G. W. Foster and James P. Ryan, all of Bradford.

The Nebraska City Vitrified Brick Company, Nebraska City, Neb., recently booked an order for 400,000 brick for a normal school building at Peru, Neb. The company is running overtime in order to keep up with the demand for their product.

The plant of the Blackwell Brick and Tile Company, at Blackwell, Kan., is almost ready for steady operation. When started, the plant will have a capacity of 75,000 brick per day. Later on they expect to add machinery for the manufacture of sewer pipe. Mr. Harris is president of the company.

The Western Fire Brick Company has purchased a tract of land at Argo, Colo., on which a large plant will be erected for the manufacture of high grade fire brick. Wm. Geddis is president, David Seerie, vice-president, and Mr. Adams secretary and treasurer of this concern, which has been incorporated.

The new brickyard of Roger Moore's Sons Co., at Wilmington, N. C., has been completed and is now in full operation. While the plant has a capacity of 100,000 per day, at present they are only turning out about 50,000. The plant is modern in every respect and is equipped throughout with machinery from Chambers Bros. Company, Philadelphia, Pa.

The Fultonham Brick Company, at Axline, Ohio, on the Zanesville & Western, has been sold to T. F. McClure & Sons' Company and the Kirschner Construction Company, of Cincinnati. The deal was made early in May at a meeting between the directors of the Fultonham Company and T. F. McClure and Attorney Frank Dinsmore. The plant was valued at \$100,000.

On page 955 is an announcement by the National Brick Machinery Company, Chicago, Ill., that they will have full page ad in next month's issue of the CLAY-WORKER illustrating their new dry press machine. This machine is built on patents of P. L. Simpson, a man of extensive experience in the dry press brick business and who is manager of the National Brick Machinery Company.

H. M. Baldrige, of Mt. Auburn, Ill., has purchased a tract of land at Forest City, Iowa, on which he will establish a modern brick and tile manufacturing plant, moving his present equipment from Mt. Auburn to that place. He expects to have the plant in full operation by the middle of August. At first the output will be about 100,000 four-inch tile per month, but this capacity will be increased later on.

The California Clay Manufacturing Company, of California, Pa., has been awarded a contract for 600,000 brick for West Brownsville, Pa., as well as several orders for smaller quantities from a number of the other neighboring cities and towns, and the management of the plant advises that a steady run and a busy season is assured. The company is also considering the erection of several additional modern kilns to take care of the rapidly increasing business, and these improvements will probably be made within the next few

(Continued on page 950.)

REMARKABLE OFFER.

We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for **\$3.00**



The New Way.

“POST” SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen. Guaranteed by Makers.
NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

Gen. Lew. Wallace: The author of “Ben Hur” writes, “I have tried every kind in the market and unhesitatingly give the preference to the “Post.”

Judge Luther L. Mills, Chicago: The “Post” Fountain Pen is the Best I have ever used; simple, reliable, durable.

Dr. Josiah Strong: The great author of “Our Country” says: “I have been hunting for twenty years a perfect fountain pen; have tried many, and they have tried me; but the “Post” leaves nothing to be desired.”

The CLAY=WORKER, INDIANAPOLIS,
—INDIANA.

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IT
NOW**

T. A. Randall & Co., Publishers The Clay=Worker, Indianapolis :

You will please send me THE “POST” FOUNTAIN PEN and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued, beginning with

the.....Enclosed find \$.....

Name.....

Postoffice.....

Street and Number.....

County..... State.....

EDITORIAL NOTES AND CLIPPINGS—Continued.

months. A fine power mixer and cutter has just been installed, as well as several minor improvements.

The Los Angeles Brick Construction Company, Los Angeles, Cal., sustained a slight loss by fire recently, which it is supposed was started by spontaneous combustion.

The total force of employes of the National Fire Brick Company, at Maynard, a little town three miles from Hammond, Ind., went out on a strike June 12 for higher wages.

W. A. Dobbs has purchased a tract of land and will erect a pressed brick manufacturing plant at Hickman, Ky. Machinery has been ordered and the plant will be in operation in a short time.

The Raleigh Press Brick Company, of Raleigh, N. C., has put in a new outfit of brickmaking machinery of 40,000 daily capacity, using the machinery manufactured by J. C. Steele & Sons, Statesville, N. C.

The Ross-Keller Triple Pressure Brick Machine Company has just completed a four-mold plant for the Carrollton Pressed Brick Company, of Carrollton, Texas. The first kiln has been opened and shows a high grade red face brick.

J. R. Holmes and C. H. Williams, of Macon, Ga., have organized a company at Ainslee, Ga., to be known as the Ainslee Brick Co. The plant will be located thirty miles south of Macon on the Southern railway. They have 100 acres of very fine clay.

Crawford & Cable have leased a tract of land at Ellensburg, Wash., on which they will at once erect a brick plant of 15,000 daily capacity. Later on, as the demand for the product increases, the capacity will be increased by the installation of machinery.

The Ross-Keller Triple Pressure Brick Machine Company has just shipped a complete four-mold outfit to the Lyle Rock Company, of Kansas City, Mo. This company installed a Ross-Keller press a year ago and are now doubling their capacity by the addition of another of these triple pressure machines.

C. A. Poston is making good headway with his new paving brick plant at Attica, Ind. He is installing a waste heat fan outfit built by the Crawford & McCrimmon Company, of Brazil, Ind. Mr. Poston has had experience in the use of this fan, as the same outfit is in use at the Poston Paving Brick Company's plant at Crawfordsville.

Chambers Brothers Company, Philadelphia, Pa., write that business continues active with them. They recently received an order for another complete equipment of side cut brick machinery from Japan, this being the second machine to the same firm. They are also shipping a Philadelphia Repress No. 2 to Lock Haven, Pa., and one to Baltimore, Md. They also have a number of unfinished orders on the Pacific coast.

The Empire Brick Company's plant at Spokane, Wash., has been sold out and a new company has been organized under the name of the Rockford Brick Company, with W. T. Bacon president and manager; C. J. Johnson, secretary and treasurer, and the following board of directors: Dr. Goula, R. D. Speck, George C. Mitchell, D. C. Farnsworth, J. W. Hughs and Deatheridge brothers. Work has already commenced to put the plant in first class shape for operation. They expect to employ at least thirty-five men.

The Reese-Hammond Fire Brick Company, which formerly maintained its main offices at Bolivar, Pa., where the works are located, and a city sales office in the Park building, Pittsburgh, has moved the entire office force to Pittsburgh, where the general and executive offices will be located in the future, and merely a works office at Bolivar. This company has been awarded the contract for the coke oven brick that will be used in the new ovens to be built this summer at Wilpen, Pa., by the Shenango Furnace Company, of Pittsburgh. The plant will cost about \$400,000, and the order calls for several million brick.

The Riverview brick plant at Ottumwa, Iowa, the property of the Swift-Campbell Brick Company, has been sold to H. B. Ostiek & Sons, brick manufacturers, and the new owners will begin operating it at once. It is understood that the new firm will increase the capacity of the plant and will in the near future add tilemaking machinery and possibly later machinery for making fire brick. The clay at the Riverview yards has been tested and found to be superior for making drain tiling, sewer pipe and fire brick as well as "soft mud" brick. The consideration for the plant exclusive of the stock is said to have been \$12,000. The reason given for selling is that since Mr. Swift has moved to Dayton, Ohio, where he is en-

gaged in manufacturing his patent furnaces, he is no longer able to give the business at Ottumwa his time and attention.

Stephen D. Mills, for many years a brick manufacturer of Braddock, Pa., died at his country home near Niles, Ohio, May 26. A wife and five children survive.

The Alonzo Curtis Brick Company's plant at Grant Park, Ill., sustained a \$1,500 loss from fire which started in the kiln recently. The loss was fully covered by insurance.

A new plant of 25,000 daily capacity known as the Roanoke Brick Company, has been put in at Weldon, N. C., and the machinery was furnished by J. C. Steele & Sons, of Statesville, N. C.

A company has been organized at Malakoff, Texas, with a capital stock of \$250,000, for the purpose of erecting a modern sewer pipe and conduit plant. E. C. Hoadley is at the head of the company.

The Okatibbe Brick Company has been organized at Meridian, Miss., with \$15,000, by Wm. Richardson, James McDonnell and J. S. Buchana. They will manufacture both brick and tile.

The Hudson Valley Brick Company, of Mechanicsville, N. Y., has been incorporated with \$80,000 capital stock. The directors are W. H. Allen, W. C. Cromble and F. H. Langstaff, all of Mechanicsville.

The Ross-Keller Triple Pressure Brick Machine Company has just contracted with the Lebanon Pressed Brick Company, of Lebanon, Ohio, for the installation of a complete six-mold brick plant with a daily capacity of 30,000 pressed brick.

Papers of incorporation have been filed by the Montgomery (Ala.) Brick and Tile Company. The officers are H. B. Battle, president; I. S. Statton, vice-president; J. W. Kelley, secretary, and E. W. Stay, treasurer. The company is incorporated with \$100,000.

C. L. Martin and Dr. W. E. Fish, of Anita, Iowa., will erect a brick plant at Aberdeen, S. D. The buildings are in course of operation, machinery has been ordered, and they hope to be turning out brick within a short time. The brick will be dried in a steam dryer.

The Etruscan Brick Company has been organized at Ballston Spa, Pa., with a capital stock of \$100,000. The directors are Edwin G. Kastenhuber and Clifford J. Bailey, of Schenectady, and Frank P. Van Alstyne, of Ballston Spa. A large plant will at once be erected for the manufacture of brick.

The Olean Pressed Brick Company, of Olean, N. Y., will build another plant on their property at East Olean. It will be modern in every particular and when finished the company will have just double its present capacity. There is a growing demand for the Olean brick and the present plant is not able to supply it.

The Independent Brick Company, at Trenton, N. J., which started up only a few months ago, is already making additions to the plant, doubling the capacity of the dryer and preparing for a much larger output. The machinery and dryer will be furnished by the Chambers Brothers Company, who furnished the original equipment for the plant.

The Arkansas Brick Company has been chartered under the laws of Arkansas, with a capital of \$10,000, with a paid up capital of \$5,000. H. L. Webster is president of the new concern, while W. E. Casey is secretary and treasurer, with H. C. Lehman business manager and general superintendent of the plant. A plant will at once be erected at Texarkana, Ark., with a capacity of 40,000 soft mud brick daily.

The immense plant of the Robinson Clay Products Company, at Akron, Ohio, is fast nearing completion. Sewer pipe will be manufactured at this plant, which is the ninth plant now owned by the company. The machinery is being installed and fourteen of the largest kilns ever built in that section are in course of erection. The output of the plant will be 3,000 acres of sewer pipe a year. Russell L. Robinson is superintending the construction of the plant and on its completion will be in charge of the operation of same.

J. H. Arbogast, the senior member of the firm of Arbogast & Son, manufacturers of brick at Lumberton, Miss., was instantly killed recently by the shovel of a steam shovel dropping on him. Mr. Arbogast, with a crew of men, was putting the shovel in operation and while directing the work happened to pass under the shovel, which from some unknown cause was set free and came down on him. Mr. Arbogast moved to Lumberton from Farmer City, Ill., several months ago with his son to take charge of the brick plant. He leaves a widow and four sons.

A SURE CURE FOR THE CONCRETE CRAZE

"BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE"

AN ELABORATE PUBLICATION

Cover in 4 Colors.

Ninety-Six 10x12 Pages.

Eighty-three 7x5 Half-tones.

Issued by the

BRICK CONSTRUCTION ASSOCIATION,

which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

Every brick man should have a book, and see to it that everyone interested in construction in his locality has a copy.

The Brick Construction Association has distributed gratis, locally, over 3,000 copies among Architects, Engineers, Bank Directors, Builders, etc. **Do your share.**

Books sent prepaid at the following rates:

Single copies, up to 100.....	\$ 1.00 each
100 lots.....	75.00
500 lots.....	250.00

Brick Construction Association,

707 Lankershim Building.

LOS ANGELES, CALIFORNIA.

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Written for THE CLAY-WORKER:

ST. LOUIS BRICK NEWS.



CONDITIONS in the brick industry are quite satisfactory and all the brick and terra cotta plants are busy, because of the big demand for their output.

Building operations are excellent. Not only are many large buildings, both manufacturing and office, being erected in the down town business districts, but residences, apartment houses and flats are going up in the residence sections.

The monthly report of the building commissioner shows a falling off for May of \$179,497, as compared with 1906. There was an increase of about \$180,000 on new brick permits but all the other classes of permits show a falling off. The totals for the month are: Brick—new, 255 permits, \$1,914,291; additions and alterations, 161 permits, \$128,634. Frame—new, 405 permits, \$105,209; additions and alterations, 83 permits, \$15,121. Total, \$1,983,758. The same month last year showed the following figures: Brick—new, 225 permits, \$1,728,208; additions and alterations, 155 permits, \$153,931. Frame—new, 392 permits, \$190,099; additions and alterations, 79 permits, \$11,520. Total, \$2,163,255.

The Missouri Tile Company of this city filed articles of incorporation recently, with a capital stock of \$3,000. The company will deal in roofing materials. The incorporators are Franklin P. Hunkens, Gordon Willis and Samuel T. G. Smith, each holding ten shares.

Anthony Ittner, president of the Anthony Ittner Brick Company, was over at Indianapolis on June 10 to 12 attending the first trade school convention ever held in this country. Mr. Ittner took an active part in the proceedings.

The Missouri Fire Brick Company of this city request it

to be announced that the articles published recently in the newspapers connecting their name with other corporations going into a consolidation are without foundation. It is not their intention to sell out or merge.

The effort of the clay manufacturing industries and accessory trades in St. Louis to organize a permanent organization, has started. On May 28th quite a number of their representatives met at the Planters' Hotel at 6:30, had a luncheon, elected Mr. Lemon Parker temporary president and W. C. Howland temporary secretary, and after quite a discussion postponed further proceedings until June 12. On that date the meeting was held and quite a number were also present. Mr. Parker, the temporary president, called the meeting to order. A committee of three, Mr. E. A. Camp, Mr. Lemon Parker and W. C. Howland, was named to draft a constitution and by-laws, with instructions to meet at an early date and report. It is thought that permanent officers will be elected and the organization perfected. This organization meets with the hearty approval of most of the clay manufacturers and accessory firms, as it will bring them all more closely together and matters affecting the industry can be pushed better than if the various companies work independently of each other.

A. SAINT.

One of the finest examples of brick paving, where heavy traffic is notable, is in the yard at the new Fort Wayne station in Allegheny, Pa., where the new Adams Express Company building is also located, and where the heavy traffic is incessant for at least twelve hours daily. This brick is all laid on a solid concrete foundation, six inches in thickness, and the engineers in charge claim that it will outlast any paving that could be used in a location of this kind. "Shawmut" brick was exclusively used.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

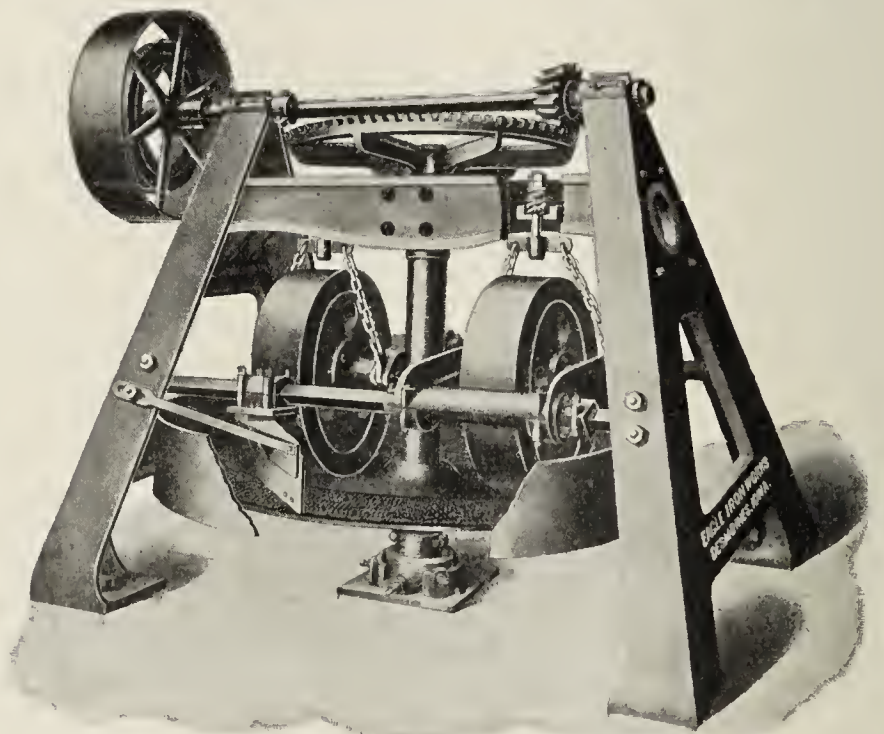
C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

Independent and Suspended Mullers

the distinguishing feature of our **DRY PANS.**



Other valuable features which our catalogue fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

FOR SALE.

Penfield sewer pipe press and outfit. A bargain. Address, BOX 414, 6 1 d Richmond, Va.

FOR SALE—A first-class tile and brick plant in Iowa, capacity 15,000 brick, and tile in proportion. Reason for selling, age. Address, H. L. SWIFT, 5 Riverside, Iowa.

FOR SALE—Freese intermediate brick machine with pug mill, combined side cutting, board delivery and automatic end cutting tables. Eighty single deck dryer cars. Address, P. O. BOX 129, 6 1 cm Lemoyne, Pa.

WANTED—Immediately, single man who thoroughly understands burning drain tile and fireproofing; must be sober and reliable and wages moderate. Address, giving age, wages expected and full particulars, to P. O. BOX 227, 5 2 d Albany, N. Y.

WANTED—Thoroughly competent and up-to-date manager, to manage and superintend the installation of machinery for new sewer pipe and conduit plant. One with \$10,000 to invest. E. C. HOADLEY, 6 1 dm Ft. Worth, Tex.

WANTED—A live, active man, who is thoroughly conversant with the trade, to sell product of large clay factory, including sewer pipe and conduits. To the right man a good paying position is offered. Address, M. J. D., 6 1 d Care Clay-Worker.

FOR SALE—A well equipped brick yard in central New York. Fifteen acres of clay, which burns a first-class red, 30 to 50 feet deep. Capacity, 25,000 per day. Market for all brick made. Good shipping facilities. Address, 1702 Midland Ave., 6 1 c Syracuse, N. Y.

WANTED—A general foreman for a No. 1 fire brick and farm drain tile plant, located in the Mississippi Valley. Must be sober, up-to-date and a hustler. Good wages to the right party. F. T., 6 1 d German Insurance Agency, Rock Island, Ill.

WANTED—By a well known machinery manufacturer, a man competent to handle sales ledger and credits and collections. Applicant must have good habits and furnish best of references. In reply, please state age, experience and references. Address, C., care Clay-Worker. 6 1 l

FOR SALE—Modern press brick plant, located in Ohio, making red, chocolate and all shades of buff. Well established, with abundant supply of raw material; exceptional railroad facilities and home market. Running full capacity successfully and profitably. A rare opportunity. Address, A. B. C., 6 2 d Care Clay-Worker.

POTTERY FOR SALE.

A two-kiln pottery for sale in Philadelphia, Pa., conveniently located to P. R. R. Co., to P. & R. Ry. Co. and to wharves. In running condition for the manufacture of any line of pottery ware. Kiln, 16½ feet, up-draft; also a decorating kiln. All as good as new. Address, MacQ., 6 1 c Care Clay-Worker.

FOR SALE—One Raymond No. 999 brick machine with cutting table, complete. Apply, SHAWMUT BRICK WORKS, 5 3 d Shawmut, Elk Co., Pa.

FOR SALE—Two Eagle represses. Never been used. Price, \$500 each, f. o. b. St. Louis. Address NO. 333, 4 tf d Care Clay-Worker.

FOR SALE OR LEASE.

Modern brick yard, Haigh continuous kiln. Capacity, 40,000 per day. Everything in first-class condition. For further information apply to

WILLIAM M. LAMB, 6 1 d Westbrook, Maine.

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States. WESTERN CLAY DEVELOPMENT CO., Van Meter, Iowa.

FOR SALE.

One No. 26-48 pug mill and one No. 40 hollow ware auger machine, both American Clay Machinery type. Used only six days on a very plastic clay, which did not brighten blades. Are in perfect condition. Reason for selling, will not work our clay. Are replaced by wet pan and steam press. Address, THE CAMP CONDUIT CO., 5 3 cm Akron, Ohio.

FOR SALE.

Here is an opportunity of a lifetime. Eighty acres of the finest flint fire clay, 5-ft. vein; also No. 5 and No. 6 coal on same land. The Mineral Point flint clay has been proven the best in the United States. Located on the B. & O. and Penn. lines, splendid location for plant. For particulars, address, LOCK BOX 489, 6 1 cm Mineral City, Ohio.

FOR SALE.

One steam power and one h. p. soft clay machines. One feed water boiler heater. One wheel scraper. A number of dryer cars. Two second-hand dump carts, practically as good as new. All of the above in first-class condition. Address, THE HORTON MANUFACTURING CO., 6 tf L Painesville, Ohio.

A RARE OPPORTUNITY.

For a practical brickyard superintendent or manager to become a director in a company which is being organized to promote the patent molding machine of P. L. O'Toole, Edwardsville, Ill. Said machine will make from 500 to 1,000 dry press brick per minute and convey them to various kilns. Party must give the best of references and invest \$1,000 in stock. Address, P. L. O'TOOLE, 6 1 c 415 Schwarz St., Edwardsville, Ill.

FOR SALE—Only building brick plant in city of 30,000 people. Steel town. Orders greater than capacity of works. Sixteen acres of good clay. Abundance of shale. 30,000 daily capacity. 125 h. p. boiler and engine, two 9-ft. dry pans, 8 30-ft. round down draft kilns, 150 steel dryer cars, 10 tunnel improved Shearer dryers. Works new. Have been run only two years. 1¼ yard steam shovel. Owners have other business. Address, J. V. ROSE, 5 3 d Sharon, Pa.

FOR SALE.

One Raymond rotary automatic cutting table with all carriers, belts and pulleys. One Raymond Victor repress. Both comparatively new. Mock's system of trolley dryers, with pallets and trucks for handling. All complete and in good order. Will sell all or part, cheap. Reason for selling, going out of the brick business. Address, NEWPORT CLAY WORKS, 6 tf d Newport, Ind.

WANTED—A capable, energetic man to act as assistant superintendent of a paving brick plant. A good opportunity for promotion. Address ASSISTANT, 6 1 d Care Clay-Worker.

WANTED—Position as superintendent or foreman of a brick, tile and sanitary plant, vitrified or glaze brick, or floor tile of all description. Twenty-five years experience. References of the best. Address, 5 3 d WOOD, care Clay-Worker.

WANTED—Situation as general manager or assistant of either dry pressed or stiff mud plant, by one who thoroughly understands the designing, erecting, operating and marketing of the finished product. At present have good position, but desire to make a change on account of climatic conditions. All references from both present and past employers. Address 4 tf d CHICAGO, Care Clay-Worker.

VANDALIA, ILLINOIS

Offers special advantages for the manufacture of Drain Tiling. Six drainage districts have been established and all drain tile have to be shipped here. A factory can do big business. Splendid raw material. For further information address

GEO. A. A. DIECKMANN, 6 1 cm Vandalia, Ill.

WANTED—Position as superintendent or manager, by a practical, up-to-date experienced man. Can take entire charge, including business if necessary of plant, for the production of either fire, building, paving, common and other brick; furnace, locomotive and other blocks and tile. Familiar with up and down draft, continuous and other kilns, also the handling of men, etc., necessary for the successful operation of plant. Address,

WARRAW, 6 1 1p Care Clay-Worker.

HAVING received a patent covering an improved method of conveying brick from machine to kiln, and drying and burning same by forced draught without dry kilns, doing away with center distributing ducts as in other systems, I am prepared now to install plants with my system at a much lower yard right than charged by others.

An interest in my patent is for sale. CHAS. WELLER, owner of patent No. 842043, Box No. 65, Atlanta, Ga. 5 2 d

WANTED.

Situation by a thorough clay man as superintendent or manager of some large brick plant, thoroughly understanding the business from top to bottom. The manufacture of fine front brick by either the dry clay or stiff mud process, also the manufacture of sewer pipe, flue lining, fireproofing, fire brick and common brick.

Thoroughly understands the erection of complete plants from the ground floor up, the erection of both up and down draft kilns, the successful handling of same with either coal, oil or wood, the handling of all kinds of machines, etc.

Thoroughly understands the labor question, the successful handling of same, and knows how to get results out of labor, knows when a days' work is being done and how to get it. At the present time have the management of one of the largest dry press plants in the country, making the finest ware made anywhere, but wish to make a change for good reasons. Address, EXPERIENCE, 6 1 d Care Clay-Worker.

WANTED, FOR SALE, ETC.

FOR SALE—Thirty acres of land containing shale for making paving brick; also high grade of potters clay, limestone and one lime kiln for burning fertilizing lime, coal enough on land to burn lime, 8 brick kilns. All located on the B. & O. R. R. Inquire, A. H. COLEMAN, Massillon, Ohio.
5 3 cm

FOR SALE CHEAP.

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machines first-class. Capacity 7,500 to 10,000 brick per hour. Greatest bargain. Write for particulars.

GREAT EASTERN CLAY CO.,
5 3 cm 39 Cortlandt St., New York City.

FOR SALE OR LEASE.

Complete stiff mud brick plant, located between Waterloo and Cedar Falls. R. R. switch to kilns and coal bin. Four Stewart's down draft kilns, American Clay Machinery Co's brick machine, four faced slide cut automatic machine, Phillips steam dryer. The clay car runs direct to clay pit. Abundance of good clay. Good 140 h. p. Corliss engine and 40 h. p. engine. Cars, trucks and tools. Demand for all output at good prices. Exceptional opportunity for good practical brick man. Address
WATERLOO AND CEDAR FALLS BRICK CO., Cedar Falls, Iowa.
4 3 c

FOR SALE.

SECOND HAND MACHINERY.

PUMPS.

One 20x6x18 "Hughes" duplex outside end packed plunger pump, pot valves.
One 16x8x18 outside end packed plunger pump, brass valves, for heavy press.
One 12x8½x12 "Snider-Hughes" duplex pump, inside packed pistons.
One 8x6x10 "Smith-Vaile" duplex pump.
AIR COMPRESSORS.
One 10x10x12 "Guild & Garrison" horizontal duplex, steam driven.
One 8x8 vertical, steam driven.
One 13x8x12 vertical compound, belt driven.

GAS ENGINES.

One 50 h. p. "Olds" gas or gasoline.
One 50 h. p. "Fairbanks-Morse" gas or gasoline.
One 15 h. p. "Miami," gas.
One 20 h. p. "Ohio," gas.
One 5 h. p., gas or gasoline.

CONDENSERS.

One 7x9x10 "Dean Brothers," jet condenser.
One 10x14x18 "Laidlaw-Dunn-Gordon" condenser.

BOILERS.

One 66 inches by 16 feet, standard horizontal tube.
One 54 inches by 16 feet, standard horizontal tube.
Two 60 inches by 16 feet, standard horizontal tube.
Three 72 inches by 16 feet, standard horizontal tube.
Two 72 inches by 18 feet, standard horizontal tube.
One 105 h. p. "Wickes" horizontal water tube.

ENGINES.

One 18x26x42 heavy duty, tandem compound, Allis-Chalmers corliss.
One 16x24 "Atlas," R. H., plain S-V.
One 12x20 "Mansfield," R. H., plain S-V.
One 12x20 "Columbus," R. H., plain S-V.
One 10x16 box bed, plain S-V.
One 16x32 "Buckeye," R. H. automatic.
One 14x20 "Atlas," L. H. automatic.
One 10x18x12 "Erie-Ball," Ver. Cross Com. Aut.
Two 9x15x9 "Westinghouse," Com. Ver. Aut.
One 8x7 "Westinghouse," Aut. Ver.

HEATERS.

One 300 h. p. Ver., closed.
One 250 h. p. Hor. closed.
One "Rice" heater and B. F. pump, combined.
Also other sizes than given in list, if wanted.
Prices and description on application.
C. C. WORMER MACHINERY CO.,
77 Woodbridge St., W., Detroit, Mich.
3 tf d

FOR SALE.

Brick yard consisting of 20 acres of land, twelve 2-room tenement houses, three 4-room tenement houses; one large 2-story barn, 4-mold Boyd dry press, one 6-ft. dry pan, one clay gatherer, one Hercules mud machine and sander, one 13-inch by 20-inch H. S. & G. engine, one 54-inch by 16 foot boiler, one fireproof waste heat dryer, 80 rack cars for same, two large up draft kilns. Machinery all practically new, having been used only a few months. Yard located on railroad near large city in the South. Demand for all the brick which can be made, at \$7.50 to \$8 for common brick and \$15 for press brick. Will sell entire plant for \$6,000, \$1,000 cash, balance on easy terms. Address, J. C., 5 tf d Care Clay-Worker.

COMPLETE BRICK MAKING OUTFIT FOR SALE CHEAP.

We are consolidating our paving brick plants. This throws out of use:
One center crank, 100 h. p. engine.
Two boilers, 50 h. p. each.
One feed pump.
One 8-ft. Frost pan, wood frame.
One elevator.
One pug mill.
One auger machine, 50,000 capacity.
One Freese automatic cutter.
Shafting, pulleys and belting.
All in good working order and valued at over \$5,000.
Will sell same cheap—immediate delivery.
STREATOR PAVING BRICK CO.,
4 3 c Streator, Ill.

Philadelphia **LINK-BELT COMPANY** Indianapolis
New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY

Robert Twells Will Buy or Sell Second-Hand Brick Machinery.

For some time past, I have been devoting my time to assisting fellow clayworkers who have had trouble in burning their ware, and have always succeeded in obtaining better results in burning, as well as improving the ware, shortening time of burning, saving coal and getting the desired color.

SECOND-HAND BRICK MACHINE EXCHANGE.

I have now opened an Agency or Exchange for second-hand brick machinery and brickyard supplies of every description. Why buy a new machine when you can buy a good second-hand machine for half the price? Many machines are taken out to make room for one of larger capacity, or because it was not adapted to the particular clay it had to work, or because the clay bank becomes exhausted, or the plant burned down, or the owners failed in business, or for a number of reasons, none of which reflect upon the machine itself. Tell me what you want, and I will tell you at once whether I can furnish it.

If you are putting in new machinery, and have any machines or supplies that you wish to dispose of, send me a description of same, stating exact condition of machine, and the lowest cash price you will take for same, f.o.b. cars at your place. Listing it for sale with me will not hinder you from selling it yourself if you get a buyer.

ROBERT TWELLS, Walnut Hills, Ill.

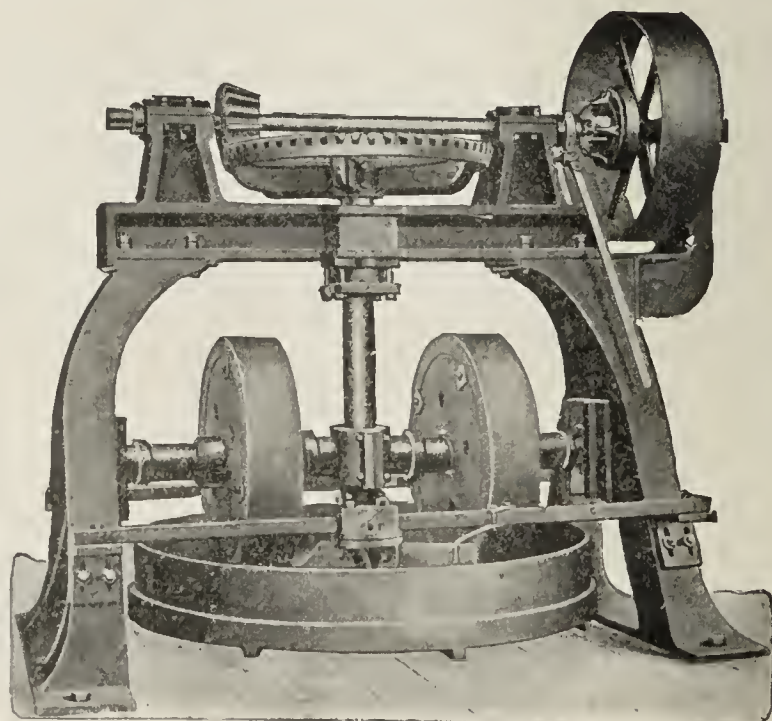
PHILLIPS & McLAREN CO.

PITTSBURG, PA.

Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.
Also
Rock and Ore Crushers.

When writing for Prices state
kind of Clay or Material to be
ground and capacity required.

Eastern Sales Agents
BORTON & TIERNEY CO.,
Stephen Girard Bldg.
Philadelphia, Pa.



FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND
CONTRACTING COMPANY,
Zanesville, Ohio.

5 tf d

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH, 5 tf L 3325 Caroline St., St. Louis, Mo.

WANTED—Position as superintendent or foreman in shale or soft mud brick plant, or if you have any trouble with your burning, give me a trial. Address,

PRACTICAL,
Care Clay-Worker.

6 1 cm

OPPORTUNITY.

Ironton, Ohio, and vicinity, is destined to be the greatest clayworking center of the United States. This region has unbounded supply of clays and shales of all kinds, except kaolin. Railroad facilities are unexcelled. Fuel the cheapest. We can supply you with common or preferred stock in going concerns, or sell plants outright, or sell you clay lands, or furnish sites for plants with clays on royalty. Right people financially assisted. Paving, or fine pressed brick, terra cotta or fire brick propositions will find this locality superior. Reference, any responsible person in Ironton. THE TRI-STATE IMPROVEMENT CO., 5 3 dm Ironton, Ohio.

WANTED—A capable, energetic young man of good habits to take charge of paving brick plant and superintend the burning. Good opportunity for the right man. Address BROOKS, 6 1 d Care Clay-Worker.

Do you want to sell your brickyard?
Do you want to buy a brickyard?

If you want to buy, sell or exchange any kind of business or real estate, anywhere at any price, address

FRANK P. CLEVELAND,
Real Estate Expert,
965 Adams Express Bldg.,
Chicago, Ill.

5 tf d

ATTENTION!

Steam Shovels, Cars, Locomotives of all kinds and Rails.

Give us your requirements.

THE MALES CO.,

26 Cortlandt St., New York, N. Y.
1508 First Nat'l Bank Bldg., Cincinnati, O.

ENGINES AND BOILERS.

Engines, 12x36, 16x42, 18x36 and 20x48, Corliss; also, 40 other sizes; all styles in stock.

Boilers, 84x18, 78x16, 72x18, tubular; also, 60 other sizes; all styles in stock.

Let us know what you need and we will make you a proposition that will interest you.

THE RANDLE MACHINERY CO.,
1735 Powers St., Cincinnati, Ohio.

5 tf d

FOR SALE CHEAP.

One Henry Martin letter A brick machine and pug mill, complete and in good condition. One 50 h. p. boiler. 40,000 lath pallets, 10 by 33, also standards for same. Standard 2 by 4 inches by 6 feet, pine, with a 2 by 4 by 24 inch foot piece, 10 one inch pins. Cheap for cash, f. o. b. Cleveland, Ohio. Address,

JOHN WILSON,
23 Stillson st.,
Cleveland, Ohio.

3 tf d



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

7 tf d

Warwood Kiln Co.

SEMI-CONTINUOUS, ROUND AND SQUARE DOWN-DRAFT KILNS
MUFFLE KILNS and
DIRECT AND WASTE HEAT DRYERS.

Warwood's Semi-Continuous Kiln, the cheapest, simplest and most effective first-class kiln on the market. It combines all the advantages of the best type of single down-draft kilns with the fuel saving features of the continuous kilns.

It can be built either round or square and each kiln can be used individual or continuous, as desired.

Your present kiln, now constructed, can be easily and cheaply changed to Warwood's Semi-Continuous System, and in most cases your own style of kiln bottom can be used, and without any perceptible difference to its working features.

Warwood's Semi-Continuous System can be successfully applied to all kilns for burning all grades of Brick, Sewer Pipe or Fireproofing. In fact, anywhere a single down-draft kiln is now used.

In a correctly weighed test in a 100,000 capacity round down-draft kiln, we have burned all hard brick with 300 lbs. of coal per M, a saving of more than 60% of the fuel formerly used, and will guarantee to burn 95% hard brick.

Warwood's Kiln will burn any kind of fuel that any ordinary down-draft kiln, either coal, oil or gas. Address:

WARWOOD KILN CO.,
BEAVER FALLS, PA.

Southern Address,
Augusta, Ga.

We Manufacture

These Buckets

In All Styles, Sizes and Gauges.
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For our full page ad next month illustrating our new dry press brick machine.

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EXPERT SERVICE.

Instructions how to improve burning Paving Brick, Drain Tile and Face Brick. Saves Coal, Time and Labor.

New simple method to create draft from the start of the fires.

Down-draft kiln plans for sale.

The least expensive and most effective kiln on the market.

ANTON VOGT,
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H. H. Wright, Maitland, Mo., writes under date of May 22, 1907, "I am just emptying a kiln today—splendid burn. I can say truly that I never before burned a kiln so easy, as I have this one under your instructions. We always made hard work of it."

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Clayworking and Ceramics**

Established by the Legislature
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Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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Tried out for 20 years.

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Red, brown, buff, purple and
black.

RICKETSON MINERAL PAINT WKS.,
MILWAUKEE, WIS.

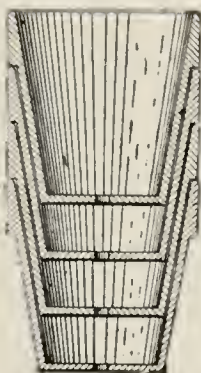
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Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

GEO. S. COX, East Liverpool, Ohio.

For End-Cut, Side-Cut
and Automatic Tables.

Satisfaction guaranteed.
Send for samples and prices.



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WITH THE ONLY SUCCESSFUL

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(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.

The Rockwood Mfg. Co.,

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**The Kiln of Kilns is the
"IDEAL"**

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

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MANUFACTURERS OF

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We manufacture BRICK AND TILE
CUTTING WIRE, drawn especially
to withstand abrasion.

Send for prices of wire in coils.



**CANADIAN TRADE.
Wooden Brick Pallets.**

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BARCHARD & Co., Limited,

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The harnessing of electricity to Clayworking Machinery has proven a success, and many of the extensive line manufactured by The American Company, are furnished with a motor drive, when desired. Where electrical power is used the machines can be set without any regard to line shafting or pulleys, which is a great convenience and advantage. The dispensing with line shafting saves the cost of shafting, hangers and belting which are expensive to maintain. From 15 to 35 per cent of the power required is saved, which is a daily saving in power as well as a saving in the installation of the power plant. The obstruction, danger and expense of shafting, hangers and belting are eliminated. The buildings need not be so high, and it is possible to cut off instantly any machine, and the power it requires, thus saving the cost of unused power. We are builders of the most extensive and successful line of Clayworking Machinery in the world. Particulars on any machine to make any Clay Product, by any Process, for any Power, upon request.

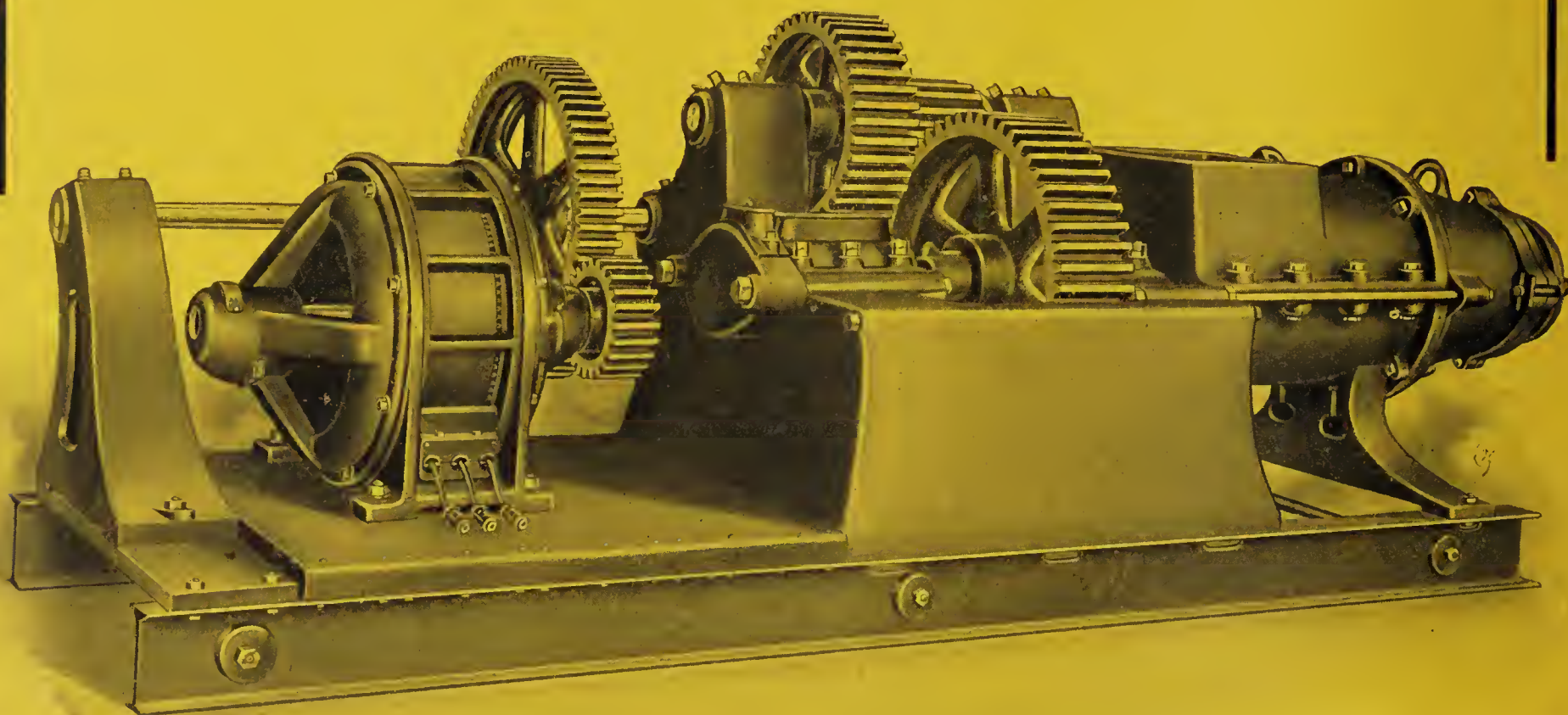
THE AMERICAN CLAY MACHINERY CO.,
Bucyrus, Ohio, U. S. A.



Electrical Driven Auger Brick Machine



This cut shows an Electrical Driven No. 41 Auger Brick Machine built by The American Clay Machinery Company. This is our standard type of heavy duty auger machine and is direct connected to a motor of ample horse power of standard make. A number of these machines equipped with motors are proving a success. We also equip our other auger machines with motors. Particulars covering the equipment and operation of any of our machinery for motors will be sent upon request.



Electrical Driven No. 41 Heavy Duty Auger Brick Machine

Manufactured by the American Clay Machinery Company,
Bucyrus, Ohio, U. S. A.

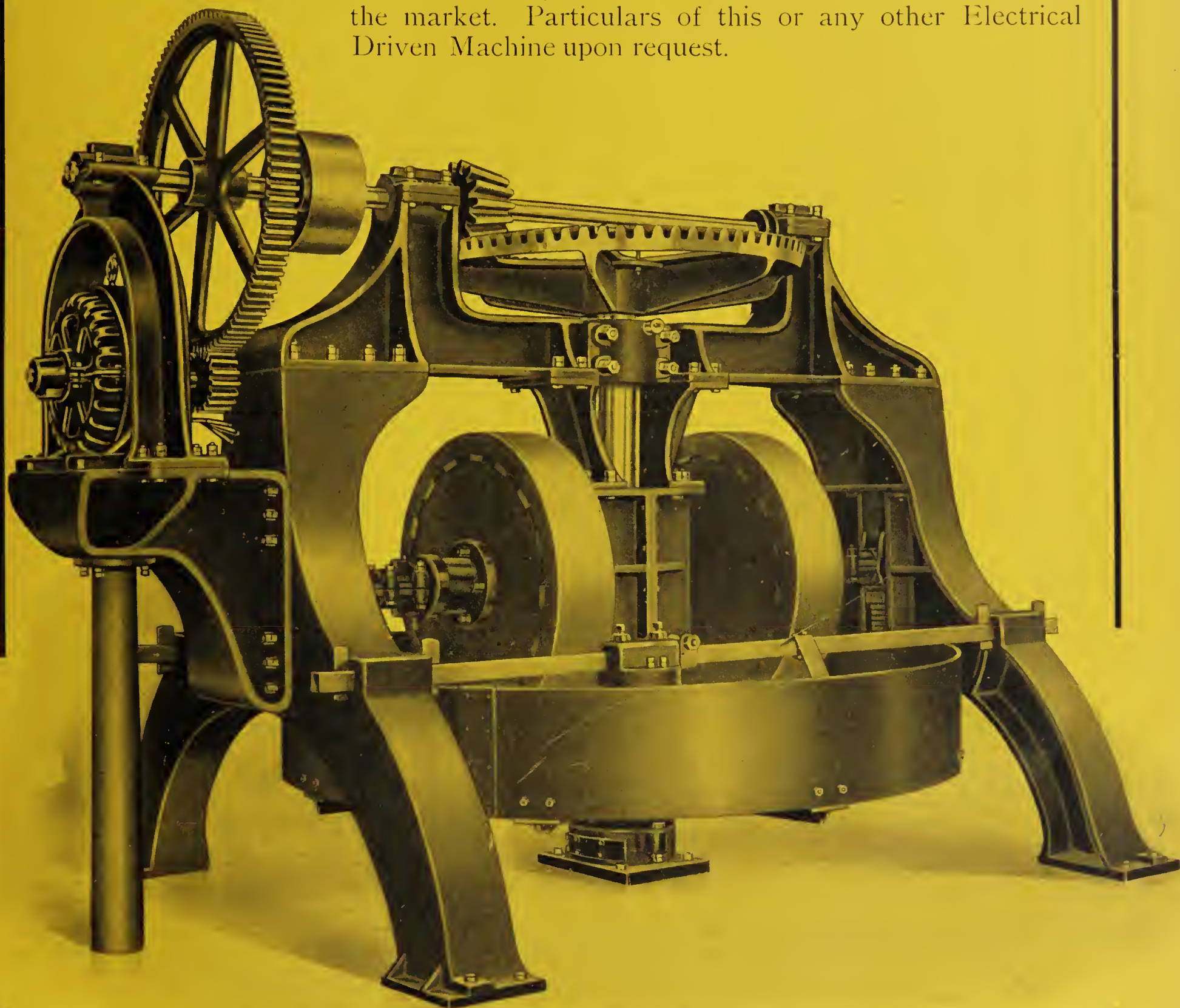
We Build
Any Machine
For any Power
To make Any Clay Product
By Any Process.

**The American
Clay Machinery Co.**
Bucyrus, Ohio, U. S. A.

Electrical Driven Dry Pan



The accompanying cuts shows an Electrical Driven Nine-Foot American Clay Machinery Company Dry Pan, direct connected. The motor is amply supported by a strong pedestal. This equipment is extremely simple and efficient. The pan is our standard quality. It is one of the best machine values on the market. Particulars of this or any other Electrical Driven Machine upon request.



Any Machine for Any Power for making Any Clay Product by Any Process. We make them all. None too large or too small.

The American Clay Machinery Co.,

Bucyrus, Ohio, U. S. A.

Electrical Driven No. 29 Pug Mill



This illustration shows a standard pattern No. 29 Pug Mill, electrical driven. It is rigidly built with forged steel shaft. Generous gearing. Long bearings and other strength giving features. The Motor is of standard make and ample power. Particulars on this or other Motor Drive Machinery upon request.



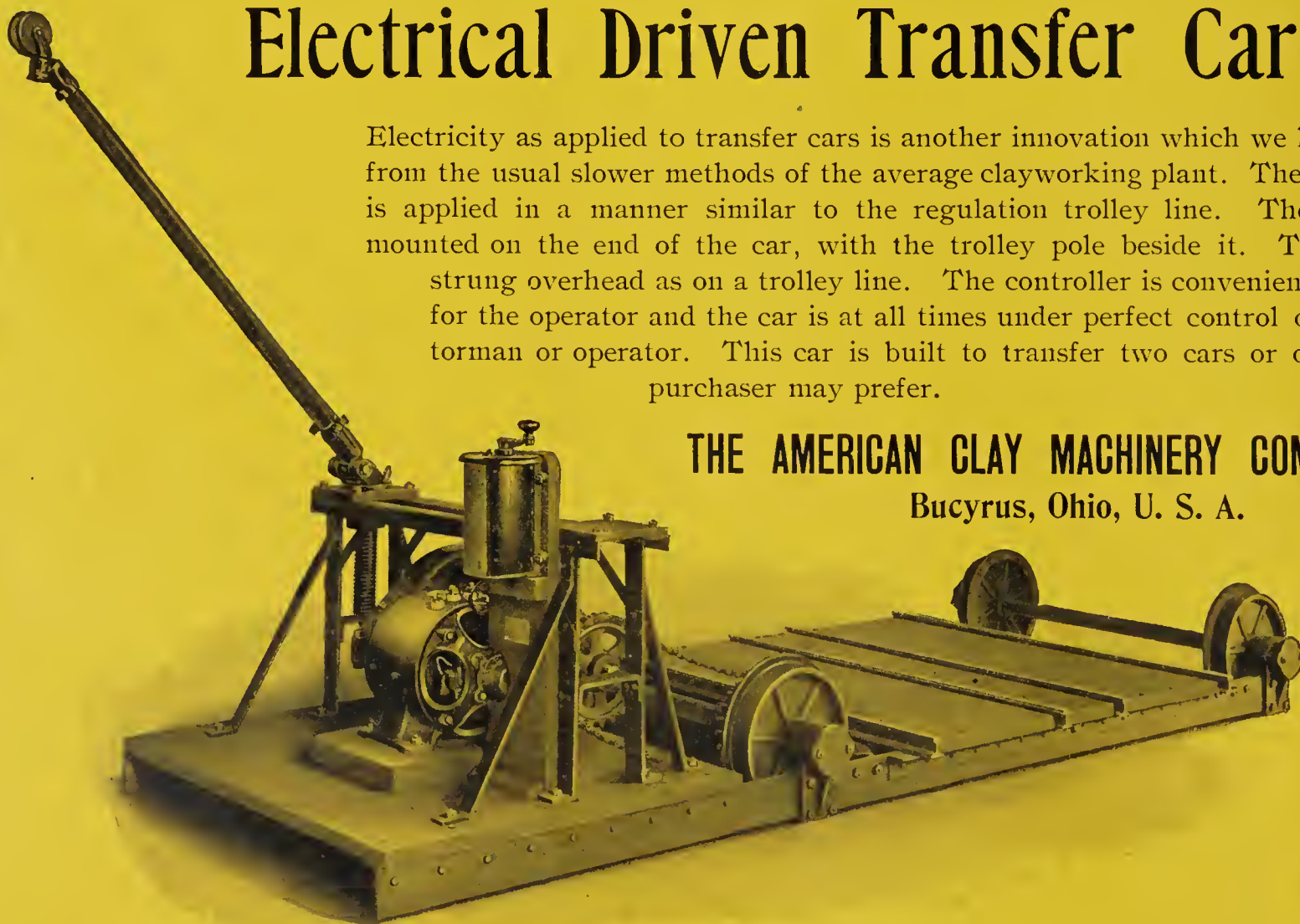
The American Clay Machinery Co.,

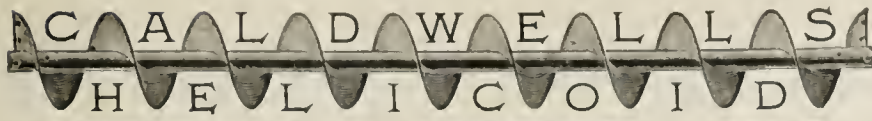
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Electrical Driven Transfer Car

Electricity as applied to transfer cars is another innovation which we have made from the usual slower methods of the average clayworking plant. The electricity is applied in a manner similar to the regulation trolley line. The motor is mounted on the end of the car, with the trolley pole beside it. The wire is strung overhead as on a trolley line. The controller is conveniently located for the operator and the car is at all times under perfect control of the motorman or operator. This car is built to transfer two cars or one, as the purchaser may prefer.

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HELICOÏD SCREW CONVEYOR is heavier, stronger and better made than any other. Requires fewer repairs—no lapped and riveted joints to come apart—flight all one piece. We are the only people who actually roll a continuous flight conveyor by either the hot or cold rolling process. All other steel conveyors have sectional flights. Our No. 28 Catalogue explains the difference. Elevating, Conveying and Power-Transmitting Machinery.

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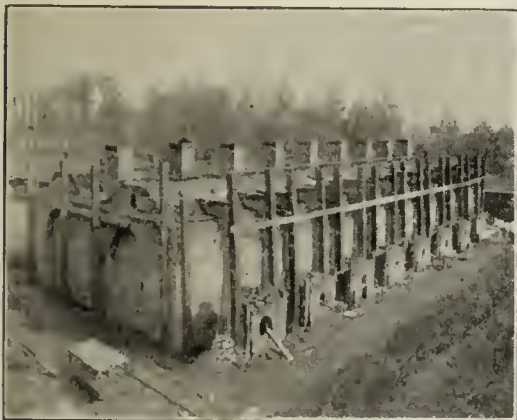
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Patented April 14, 1903, and September 8, 1903.

A set of plans with all information on how to set and burn either my double or single kiln for \$100.00. This offer is to give every one a chance. It will stand good for but 60 days.



Double Up and Down Draft Kiln.

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Dear Sir—We are now preparing to build another Dennis Kiln. Kindly send us by return mail your latest prints, showing the furnaces at the corners of the kiln and the updraft holes in the ends.

We are getting fine burns; absolutely all hard.

Yours very truly,
FULTON BRICK WORKS.

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LUMP, GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS GOODS A SPECIALTY.

SAMPLES AND PRICES ON INQUIRY.

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Brick and Mortar COLORING.

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Samples and estimates cheerfully furnished
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Sole Importers in the United States of the



The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

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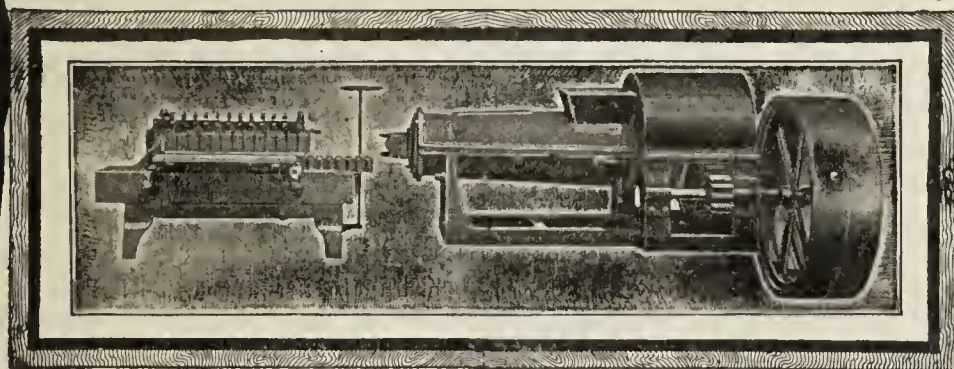
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**Eclipse
Mortar Colors,**

Red, Brown, Buff, Black.

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has been the synonym of excellence in the Brick and Clay-working industry for the past thirty years.

It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

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ADRIAN, MICH.

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When writing to Advertisers.

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Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," \$1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

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Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

Do you want to buy a

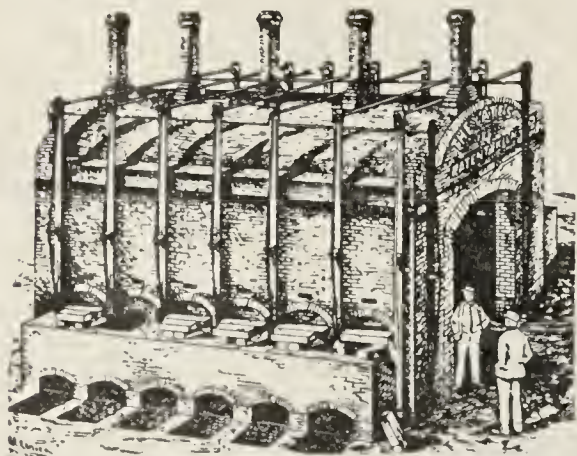
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If So

Correspond with

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For Economy of Fuel and Percentage of Hard Burned Brick, This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

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The Best Are the Cheapest.

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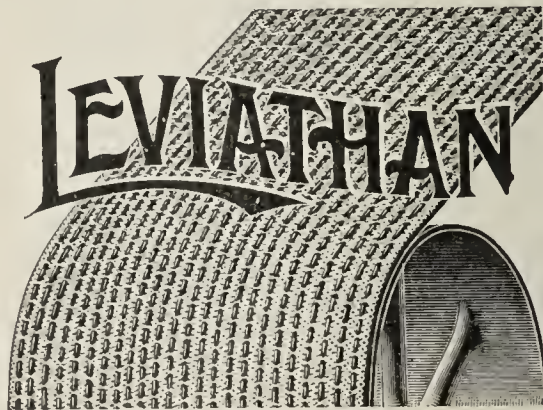
Converted to Leviathanism.

"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

"Thanking you for your courteous dealing, and assuring you of our patronage for anything in your line we may need in the future, we beg to remain,

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"Signed: VALLEY BRICK & TILE Co."



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The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

We build and equip complete

SAND-LIME BRICK PLANTS,

SHALE AND CLAY BRICK PLANTS.

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TO PRODUCE POTTERY ECONOMICALLY
USE

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THE CROSSLEY MFG. CO.
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If you intend to build or rebuild your brick plant acquaint yourself with the

Chmelewski Patent Kiln

That's just the thing you need to get prosperous.
For descriptive booklet write to

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Sole Agent in the U. S. A. and Canada

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THE secret of **successful burning** of any clay product lies in the **right application of heat**. To apply heat **where it is needed** it is obvious that **draft control is necessary**. **Positive draft control is provided by our**

IMPROVED FLUE SYSTEM

which has **the right principle** and is simple and easy in operation and construction.

Our kilns are profit makers, burning the brick with the **minimum fuel, shortest time; all the same color and all hard**.

We welcome correspondence from those who intend building new kilns, and from those having old kilns that are not giving satisfaction. Address

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Sewer Pipe and Clay-
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Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



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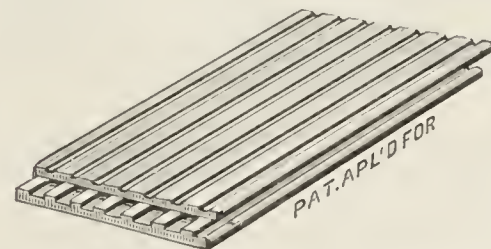
Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

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Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles, Dies for all shapes, Hips, etc., in metal or plaster.

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Terms
reasonable.

First-class
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If you have trouble with Clay, Machinery
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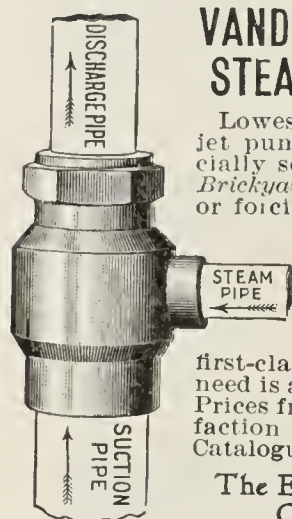
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Special attention paid to dry clay press
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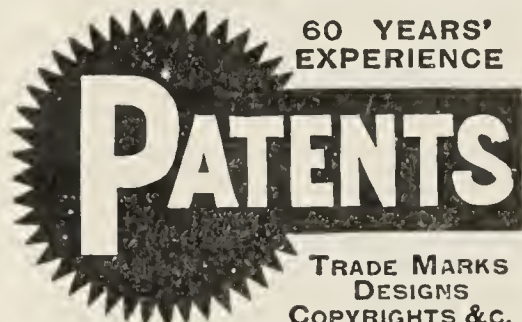
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Lowest priced reliable steam-
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Are the Best for
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Laclede Fire Brick Mfg. Co., St. Louis, Mo.

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**Fire Brick for
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Awarded Gold Medal at St. Louis for
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MITCHELL CLAY MFG. CO.,

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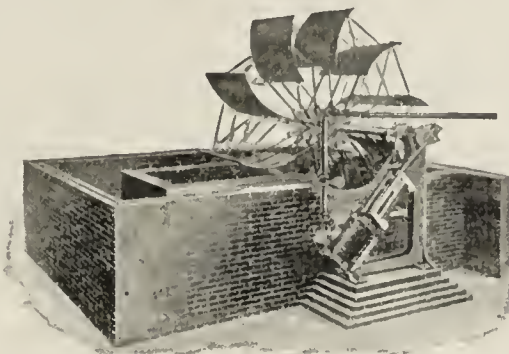
\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

Waste Heat Fans.

While we frequently have to repair other fans than ours we have never yet in years had to repair our own.

Durability is a strong feature and the use of a Brick fan house insures low first cost.

Efficiency is proved by the many thousands of these fans sold for Mining purposes. Outside journals. No water cooled boxes to make trouble

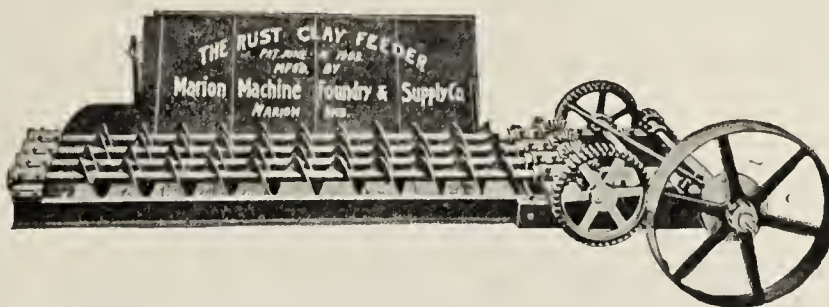


ESTABLISHED 1869.

Crawford & McCrimmon Co., - Brazil, Ind., U. S. A.

A New Clay Feeder and Mixer.

Send for full descriptive circular.



BOSTON BRICK COMPANY,

Main Yard and Office, South Boston, Va. Branch Yard, Bauister River Branch N. & W. Ry.

Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

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The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.



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Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

If... You Want a Man

for any position or a position in any connection with the Clayworking Trades use the

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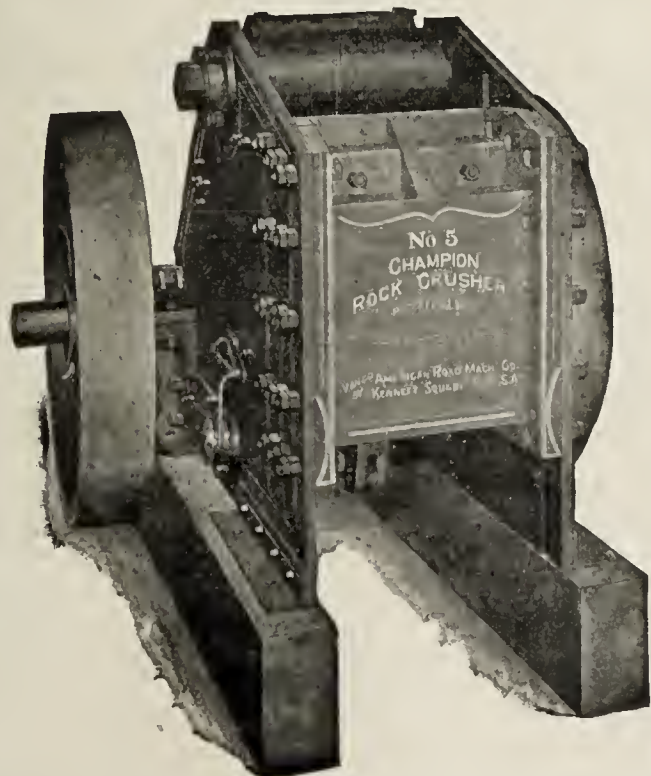
The...

Clay=Worker.

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NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good

on paper.

It Looks Better

crushing shale, fire clay, rock and other hard material.

THE CHAMPION CRUSHER

is expensive, *to do without*, because it saves you money.

Catalogue is free on application. Address

AMERICAN ROAD MACHINE CO.

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HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

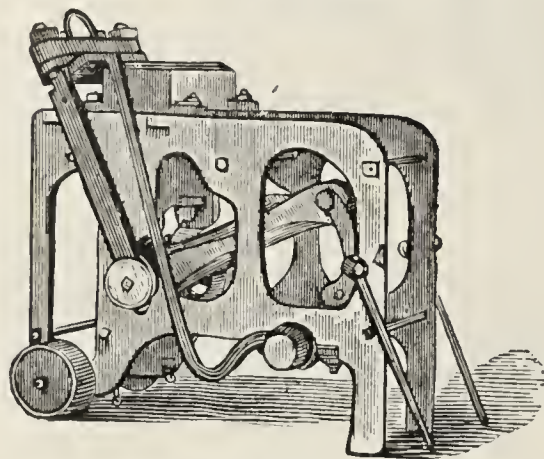
HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

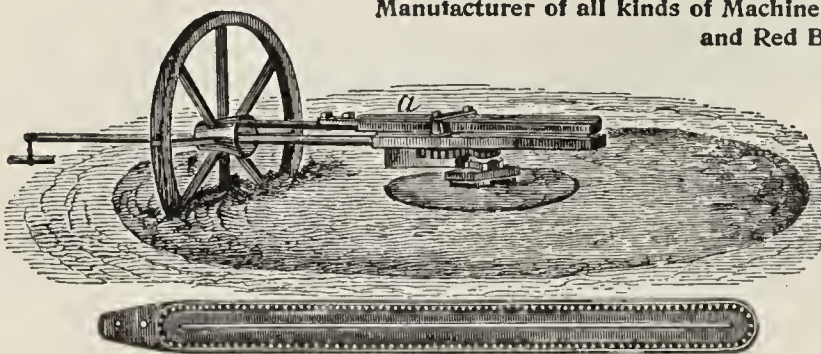
Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



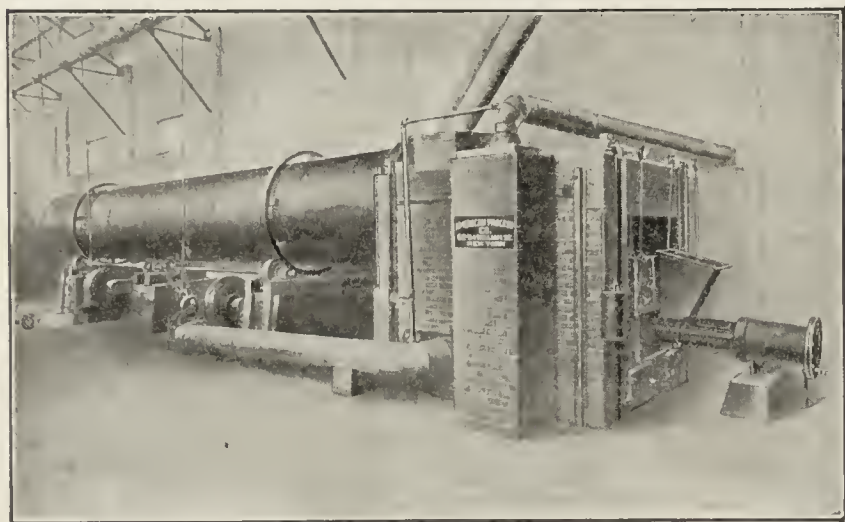
RED BRICK PRESS.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

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Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel. Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.

FOR CLAY PITS.

A pump that will handle any amount of gritty, muddy water without sustaining the least injury to itself or any of its working parts is

THE PULSOMETER STEAM PUMP

The fact that a large percentage of the 25,000 and over now in use are operated by Clayworkers, Brickmakers, Pottery Plants, etc., is evidence of their utility for this severe service.

No engine, belt, oil, packing or special foundation required. Works as well suspended as stationary.

SIMPLE TO INSTALL.

SIMPLE TO OPERATE.

Catalogue Free.

PULSOMETER STEAM PUMP COMPANY, 14 Battery Place
New York



The
**ROESSLER-HASSLACHER
CHEMICAL COMPANY,**

100 William Street,
NEW YORK.

As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

Ludowici=Celadon Company,

General Sales Office—Chamber of Commerce Bldg., Chicago.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Macon, Ga., Dec. 19, 1906.

Mr. John C. Boss, Elkhart, Ind.

Dear Sir—Replying to your favor of the 1st inst. it gives us great pleasure to express our thorough appreciation and approval of your system of burning brick which we have had on our plant now for something over eighteen months. We are still using this system and find it entirely satisfactory and we know of no other system that we would exchange for it, all things considered.

Knowing that you are interested in our plant we beg to inform you that we have recently increased our drying capacity to 175M brick per day and have had a very nice business for the past twelve months.

Wishing you a Merry Christmas and a Happy New Year, beg to remain,
Very truly yours,
CHEROKEE BRICK COMPANY,
By W. E. Dunwody, Vice-Pres.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

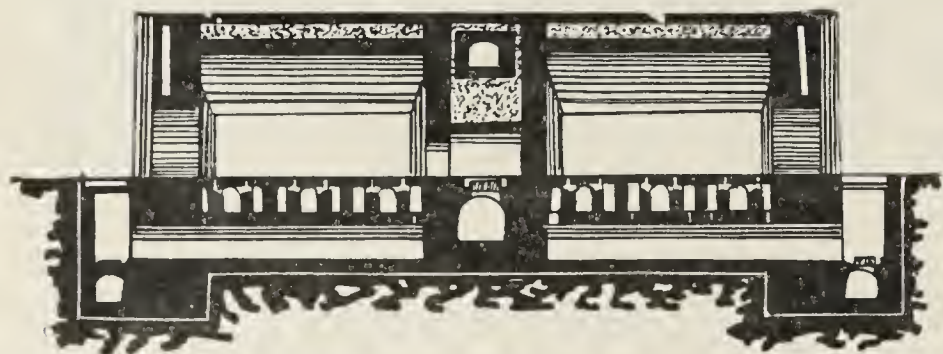
ELKHART, IND.

German Kiln and Construction Co.

(Incorporated)

Engineers and Contractors,

71 and 73 Nassau Street, New York City, N. Y.



All Styles of Kilns in the Ceramic Industry.

Hoffman's Continuous Kiln.

Railroad Tunnel Kiln.

Gas Continuous Kiln.

Kiln with Movable Fire Box.

Up and Down-Draft Kilns, Round and Square.

Shanks and Two-Story Kilns, largest in the world.

Muffle Kilns for Glazing and Enameling.

Chimneys built of radial brick.

We guarantee satisfaction, the best work and lowest prices.
Correspondence solicited.

An Old-Time Favorite.

Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & CO.,

P. O. Box 756.

Rome, Ga., U. S. A.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906.

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,

West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of	5,000 each,	15,000
2 " 4 "	"	3,000 "	6,000
1 " 5 "	"	2,040 "	2,040
2 " 10 "	"	550 "	1,100
2 " 12 "	"	415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with	3 ins.
The 10 "	6 ins. and 4 ins.
The 12 "	8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in.	7,100 4 in.	2,810 5 in.	1,100 6-in.
830 8-in.	1,100 10-in.	830 12-in.	

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am
Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.



Standard double side, all steel Dump Cars, Cradle Type, carried in stock in capacities up to 36 cu. ft. and in gauges up to 30 in.

DUMP CARS

for Coal, Ashes, Sand, Clay and Earth.

Especially Valuable for Hard Service.

We carry a LARGE STOCK of industrial railway equipments for all kinds and conditions of service. We can therefore render prompt shipment of standard material, such as Rails and their accessories, Steel Ties, Portable Track, Switches, Frogs, Turntables, Steel and Wooden Cars of all gauges, sizes and capacities.

TWENTY YEARS EXPERIENCE.

Write Our Dept. 13 for Catalog N.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
•COMPANY•

Works: Youngstown, Ohio.

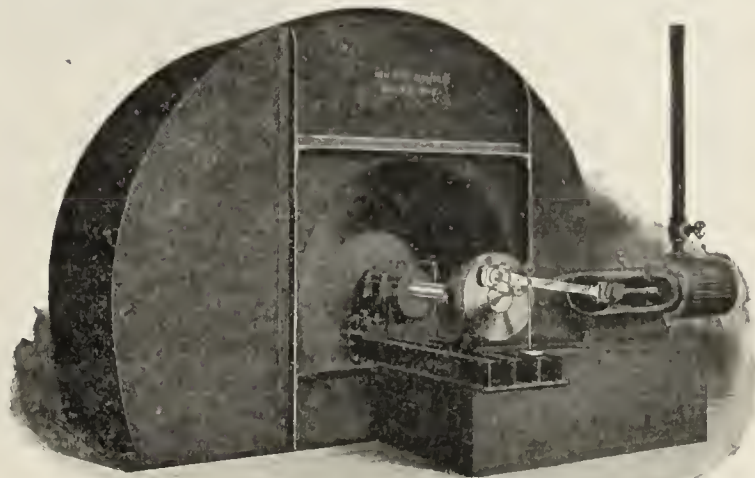
64 Broad St., New York. First Nat'l Bank Bldg., Chicago.
620 Board of Trade Bldg. (121 State St.) Boston.
Barnaby Bldg., Bisbee, Ariz. 333 Cooper Bldg., Denver, Col.
The Youngstown Car Mfg. Co., Youngstown, O. representatives
for West Virginia, Ohio and Western Pennsylvania.

COAL — HEAT MONEY

All Saved by Using Our
WASTE HEAT DRIERS.

Get Catalogue 56F.

ESTIMATES AND PLANS FREE.



The New York Blower Co.,

CHICAGO, ILL.

BUCYRUS, OHIO.

PHILADELPHIA.

NEW YORK.

ST. LOUIS.



B. E. BECHTEL.

**We Are
PRACTICAL BRICKMAKERS.**

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



~~~~~ Jacob Buhrer's Technical Bureau, ~~~~~ CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In **Buhrer's Shortened Kiln** (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in $1\frac{1}{2}$ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

STEAM SHOVELS FOR BRICK YARDS.



We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

Marion, Ohio.

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

F. H. HOPKINS & CO., Agents
Montreal, P. Q.

Sand-Lime Brick Machinery

BOYD QUALITY

MODERN METHODS

NO EXPERIMENTING

More Boyd Presses making sand-lime brick than any other press on the market. The Boyd Press is selected and purchased by those who want the best. Our "Special" Combination Block and Brick Press is the only successful machine in the world for making large building blocks and stones.

Sand-Lime Brick Plants designed and complete machinery equipment furnished, installed and set in operation.

Machinery and product guaranteed.

Correspondence solicited.

Chisholm, Boyd & White Company,

Office and Works, 57 and Wallace Sts.

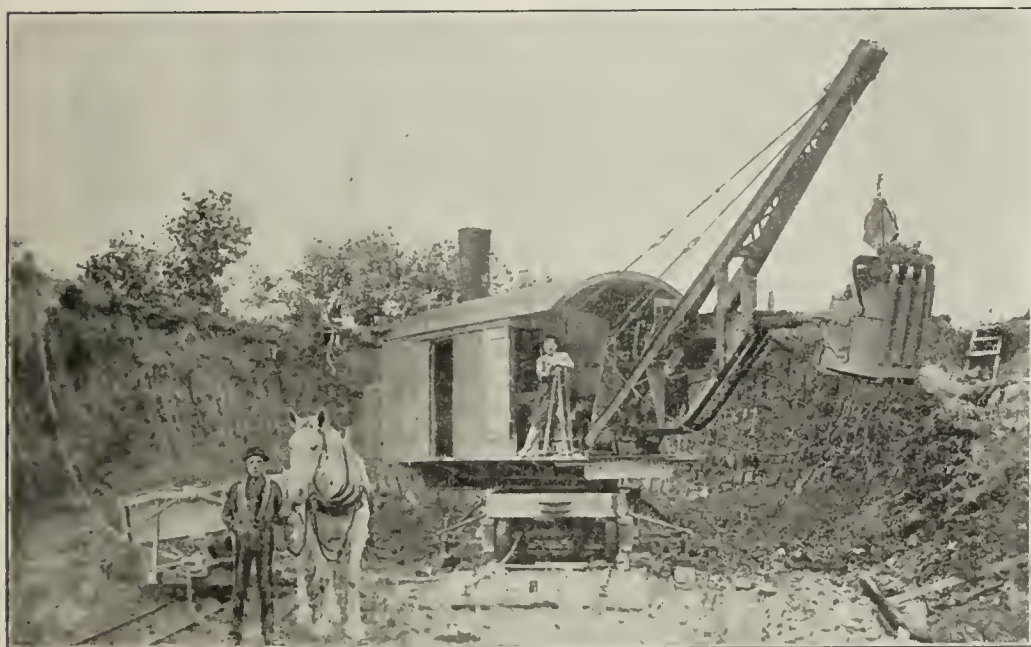
CHICAGO, ILL.

SEE ADS ON PAGES 882 AND 883.

**Handle Your Clay
With One Man and**

The Thew Steam Shovel.

.....



Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

.....

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

.....

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

Type No. 1—Traction Wheels or Car Wheels, $\frac{3}{4}$ -Yard or One-Yard Dipper.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

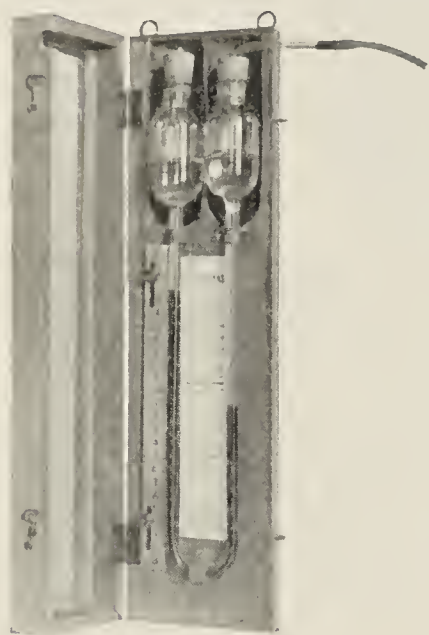
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THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

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BETTER RESULTS . .

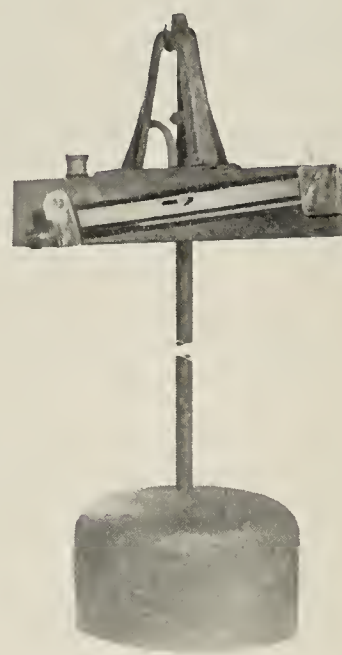
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Seger Gage



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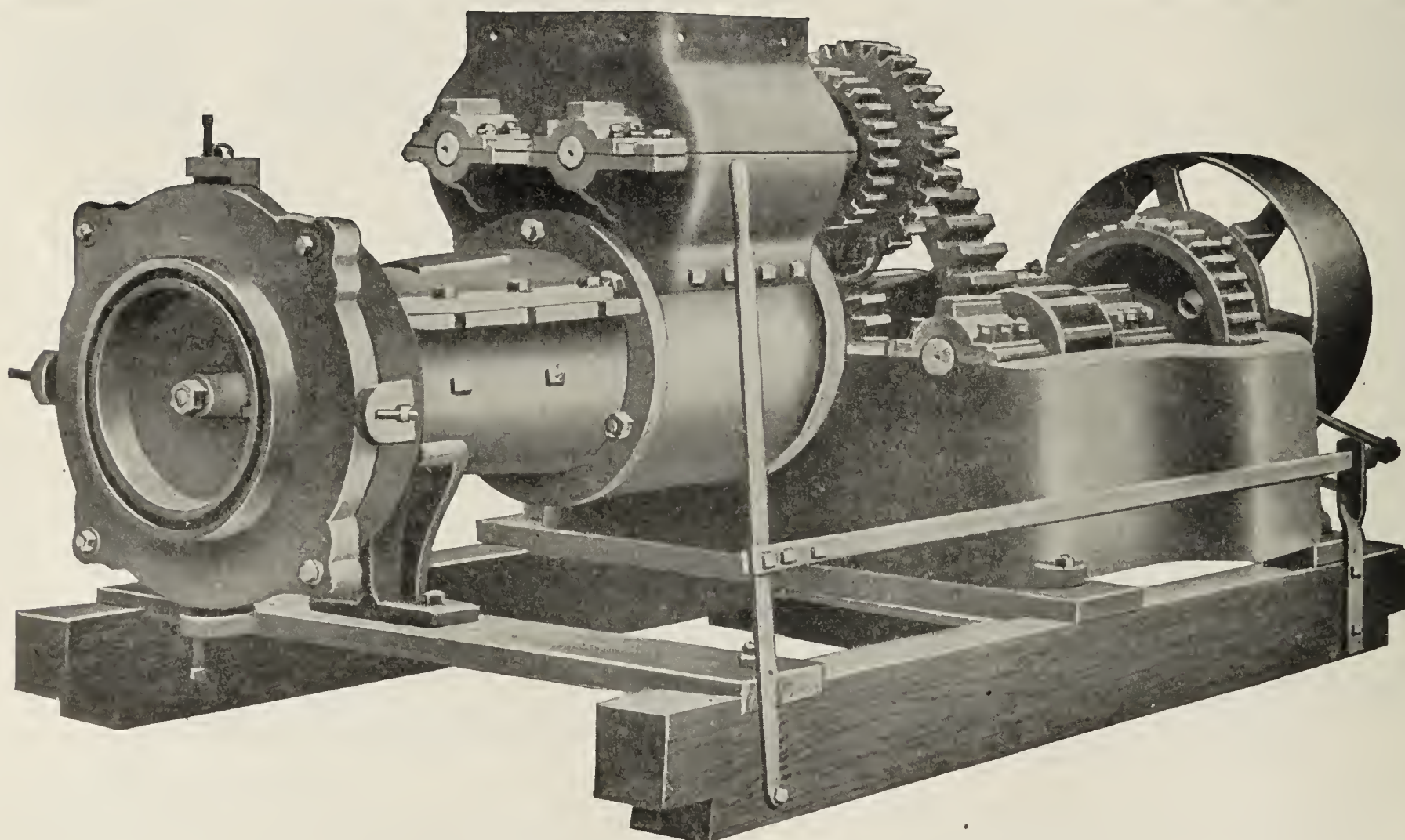


Incline Tube Gage

Pyrometers, Thermometers, Hygrometers, Electric Furnaces, etc.

THE RICHARDSON-LOVEYOY ENGINEERING CO.,

1534 NORTH HIGH STREET, COLUMBUS, OHIO.



NEW MODEL STIFF MUD MACHINE.

Write us for
information.

MADDEN & CO., Rushville, Ind.

BRICKMAKERS WHO FAIL

to take advantage of every opportunity to reduce the cost of manufacturing their products are working on a smaller margin than is necessary.

Every dollar's worth of labor or fuel saved is clear profit to the brickmaker.

Our new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud or soft mud brick.

THE DRYMORE SYSTEM

7TH AND CHESTNUT STS., ST. LOUIS, MO.

The Exhaust Steam Dryer is THE NATIONAL.

The National Dry Kiln Co.,
Indianapolis, Ind.

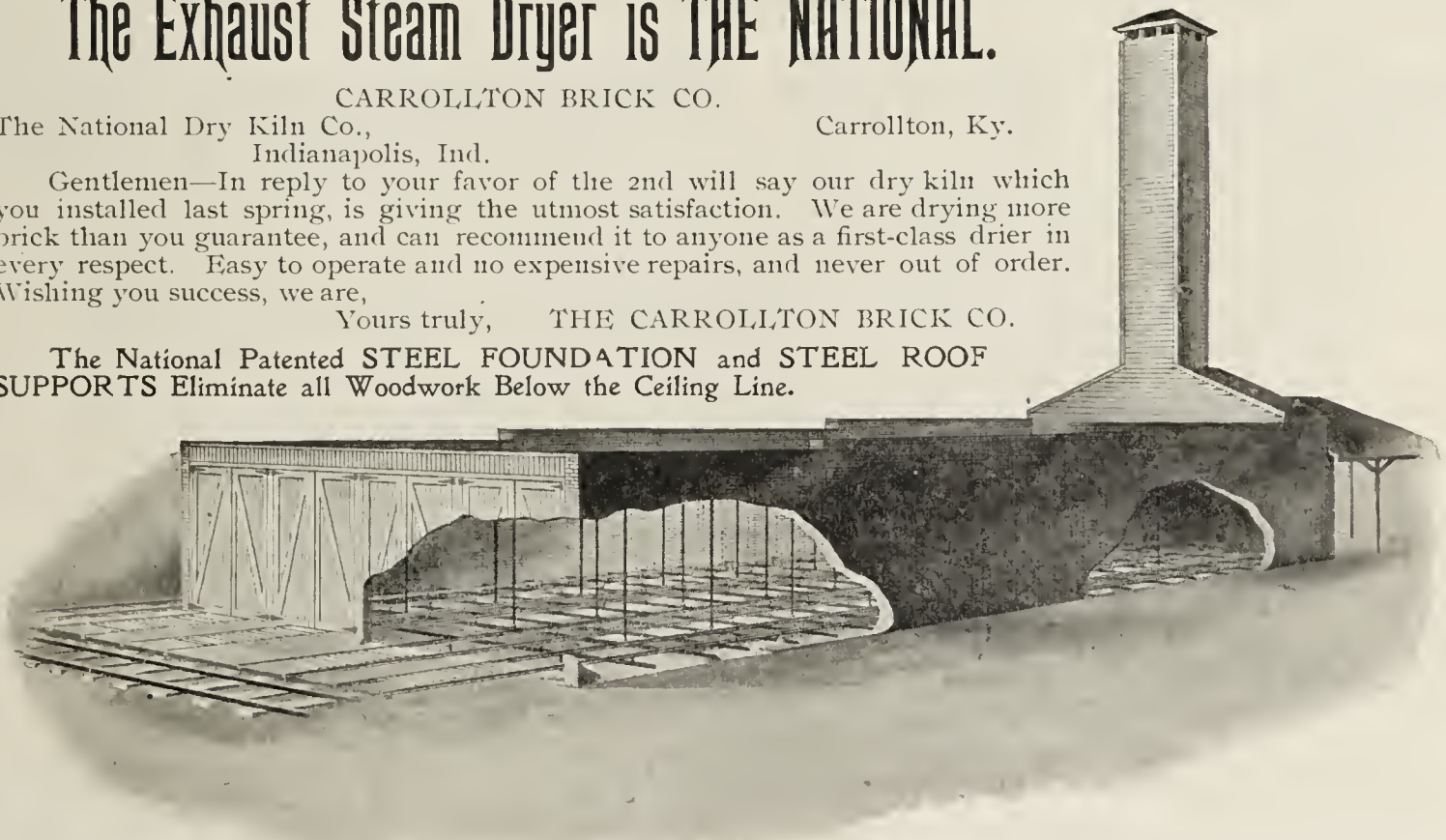
CARROLLTON BRICK CO.

Carrollton, Ky.

Gentlemen—In reply to your favor of the 2nd will say our dry kiln which you installed last spring, is giving the utmost satisfaction. We are drying more brick than you guarantee, and can recommend it to anyone as a first-class drier in every respect. Easy to operate and no expensive repairs, and never out of order. Wishing you success, we are,

Yours truly, THE CARROLLTON BRICK CO.

The National Patented STEEL FOUNDATION and STEEL ROOF SUPPORTS Eliminate all Woodwork Below the Ceiling Line.



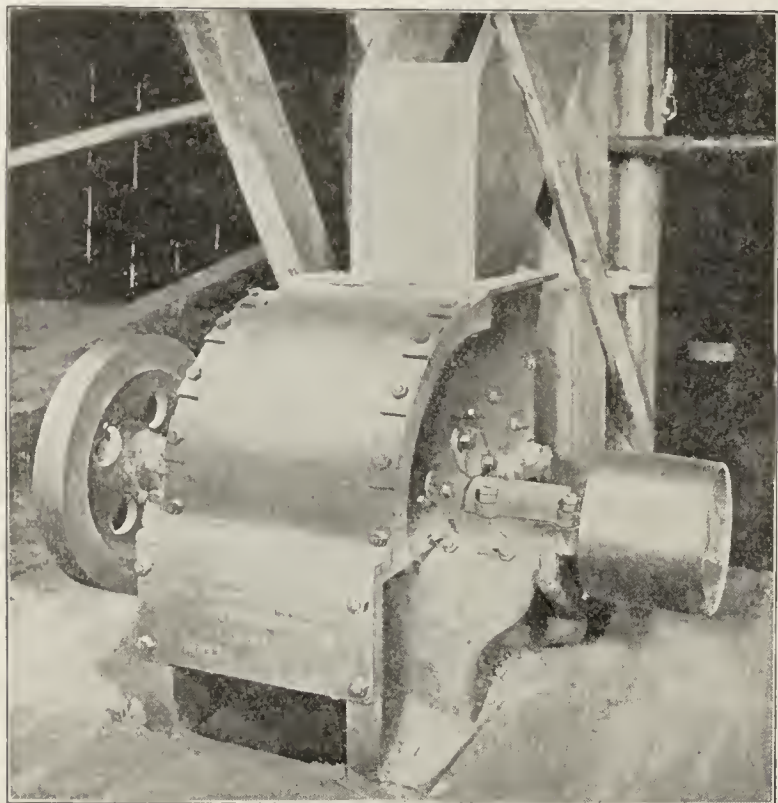
We make all kinds of Cars for carrying Brick, Turntables, etc.

The National Dry Kiln Company,

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & BOWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

INDIANAPOLIS, IND.

Jeffrey SWING HAMMER Pulverizer



In Operation—Grinding Shale.

PRODUCES

QUICK RESULTS.

CHEAP TO MAINTAIN.

Free Crushing Tests
Made.

Make Inquiry.

Ask for
New Chain Catalogue No. 80.

Catalogues free.

Manufactured by

THE JEFFREY MFG. CO., Columbus, Ohio, U. S. A.

Makers of Elevating-Conveying-Screening-Drilling Machinery.

Success Brick Machinery Co.,

Memphis, Tenn.

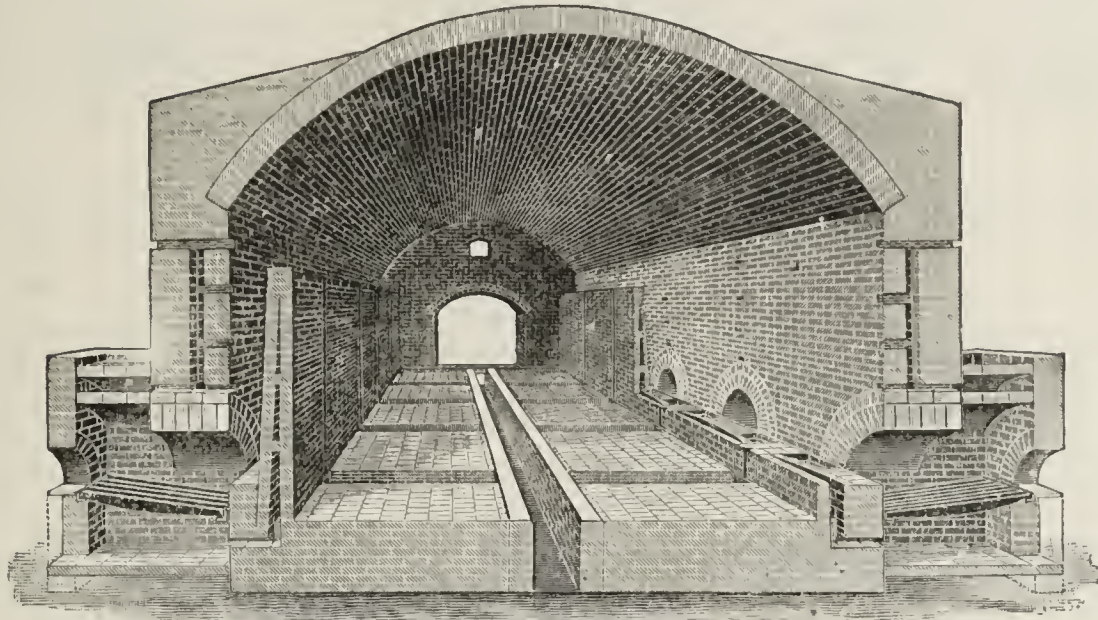
Equippers of COMPLETE Plants.

Let us figure with you on your machinery and supplies. Investigate our brick barrows, trucks, cutting wires, "Perfection" brick moulds, and other supplies.

Our REID'S SUCCESS ELEVATING BRICK CARS AND DRYING SYSTEM [the most modern method of handling your brick] now built in our own shop. Let us install an outfit in your plant. It will save you money.

The EUDALY DOWN DRAFT KILNS

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

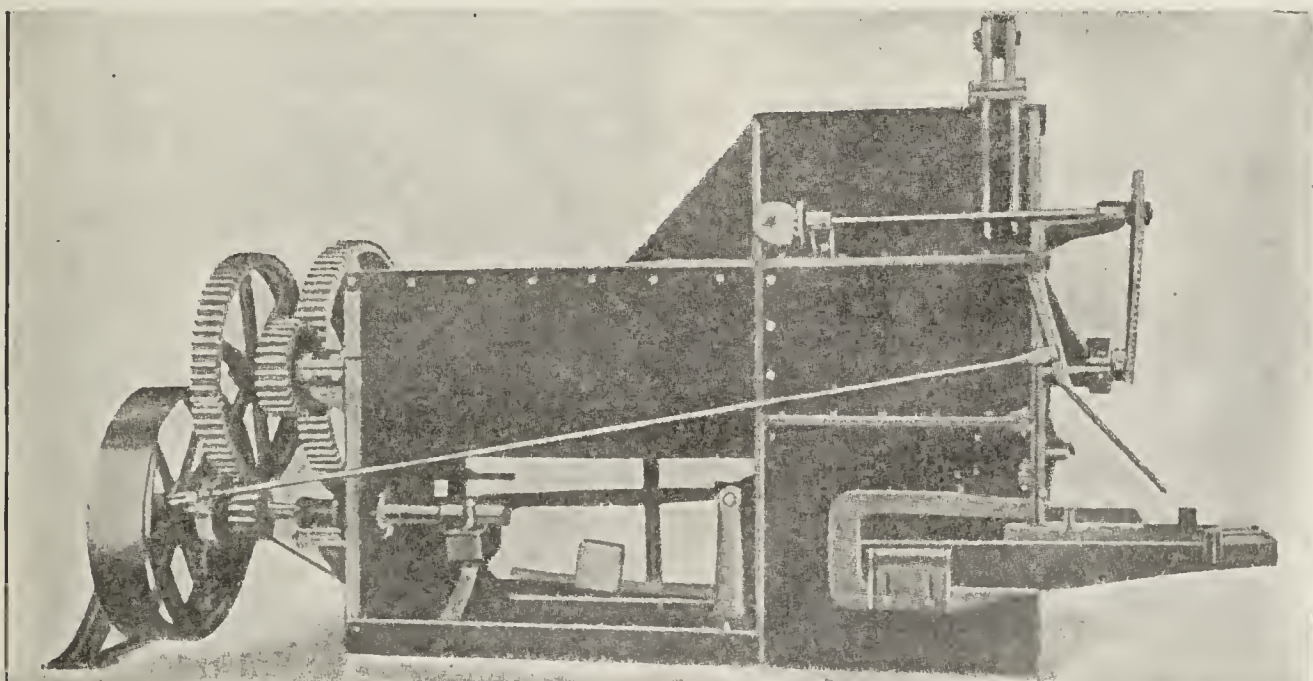
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal, or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg., Cincinnati, Ohio.

The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine, of large capacity strong and heavy, with vertical press. To meet this demand we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

For small capacity yards there is nothing that is quite as good as the "QUAKER" Machine, which is made for horsepower as well as steam.

James W. Hensley,
Indianapolis, Ind., U. S. A.

Let me give you full particulars.
List of users furnished on application.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO

Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untying knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the issue. Enclosed find \$.

Name

Postoffice

Street and Number

County State

The Youngren Continuous Kiln

Producer Gas Fired.



SETTING BRICK IN THE YOUNGREN CONTINUOUS TUNNEL KILN.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

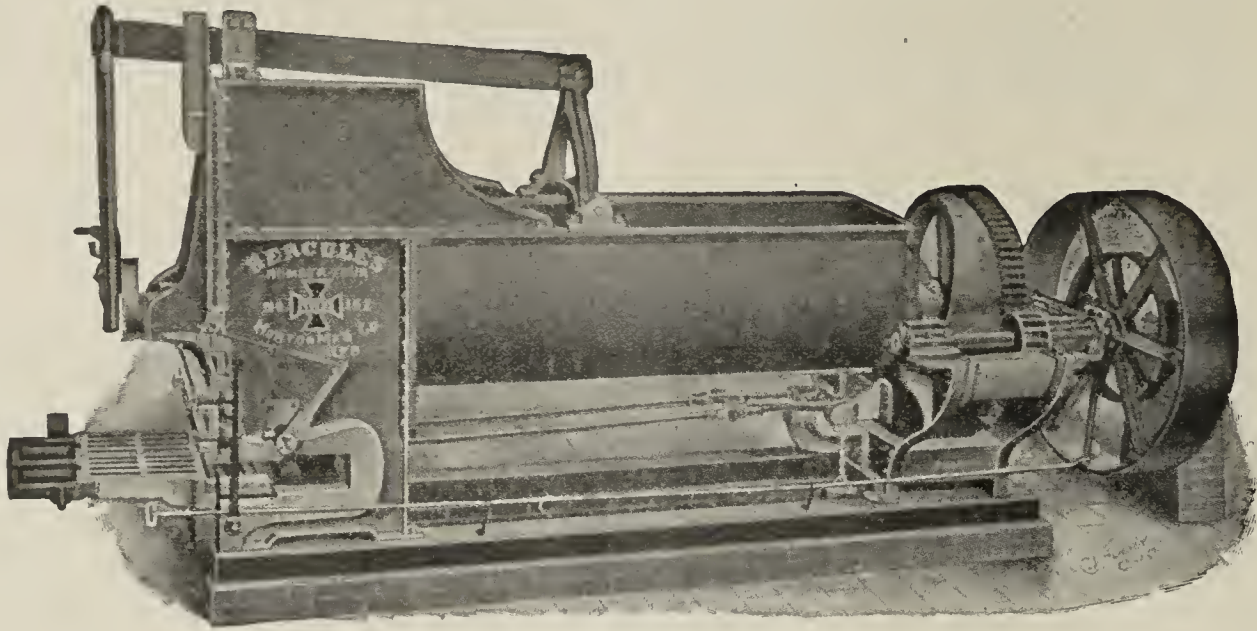
Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

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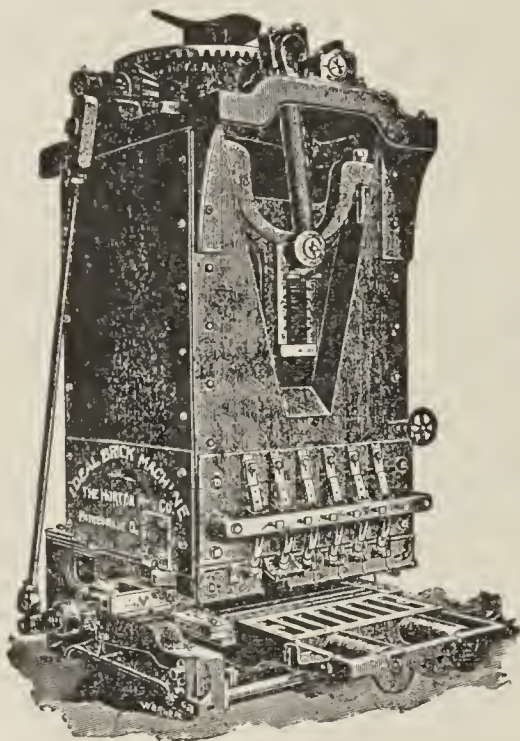
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Do Not Miss This Opportunity.

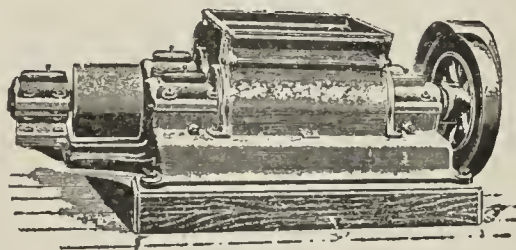


Hercules No. 4 Brick Machine.

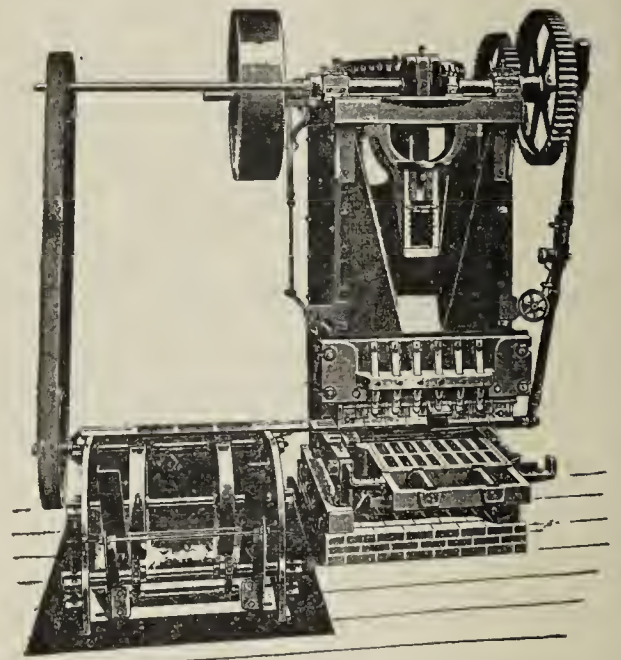
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Ideal Horse Power.

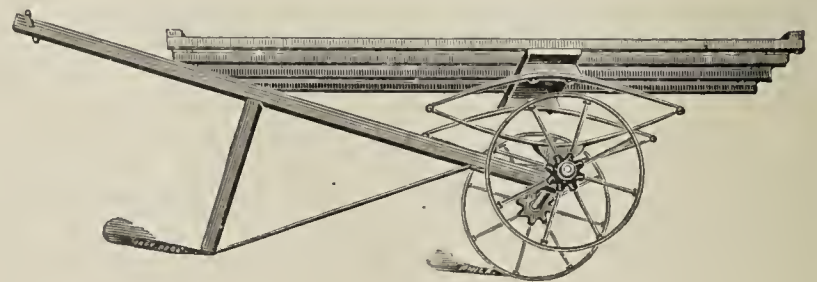
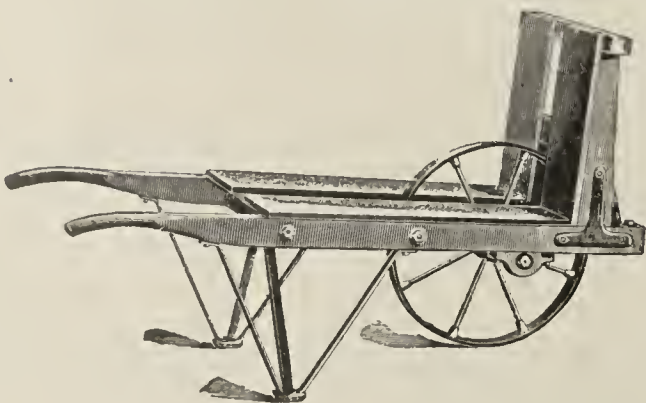


Disintegrator.



Ideal Steam Power and Sander.

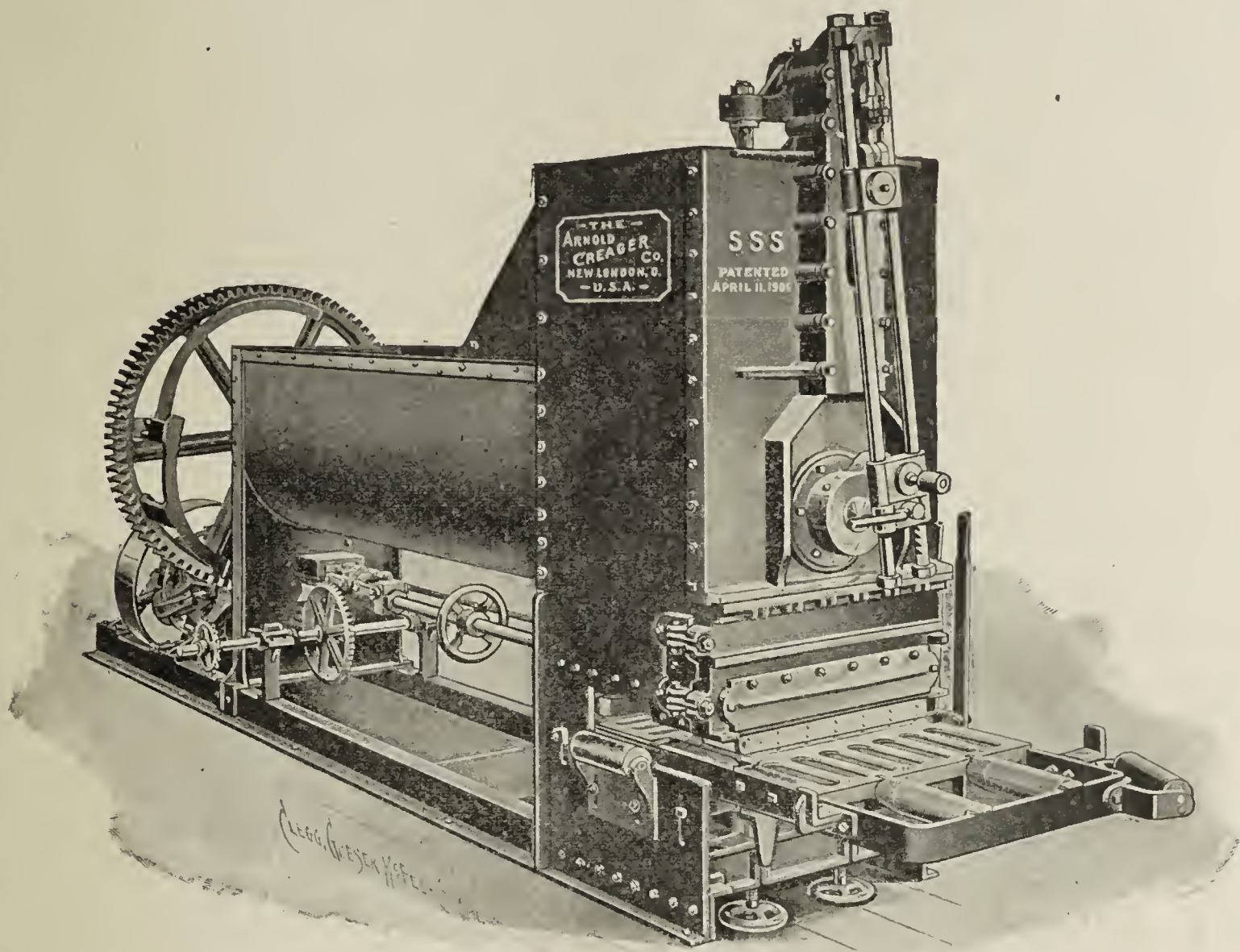
OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

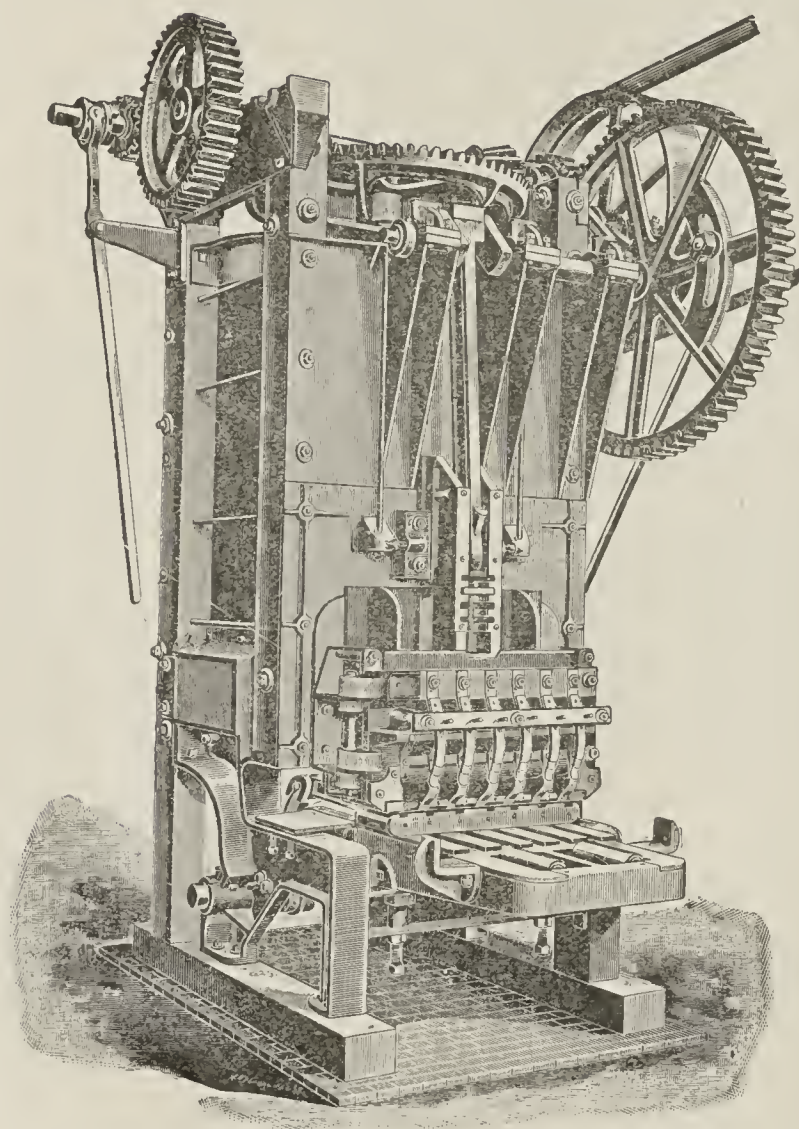
The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

CINCINNATI, OHIO.

CABLE "AUTOMATIC".

"New Haven" Brick Machines.

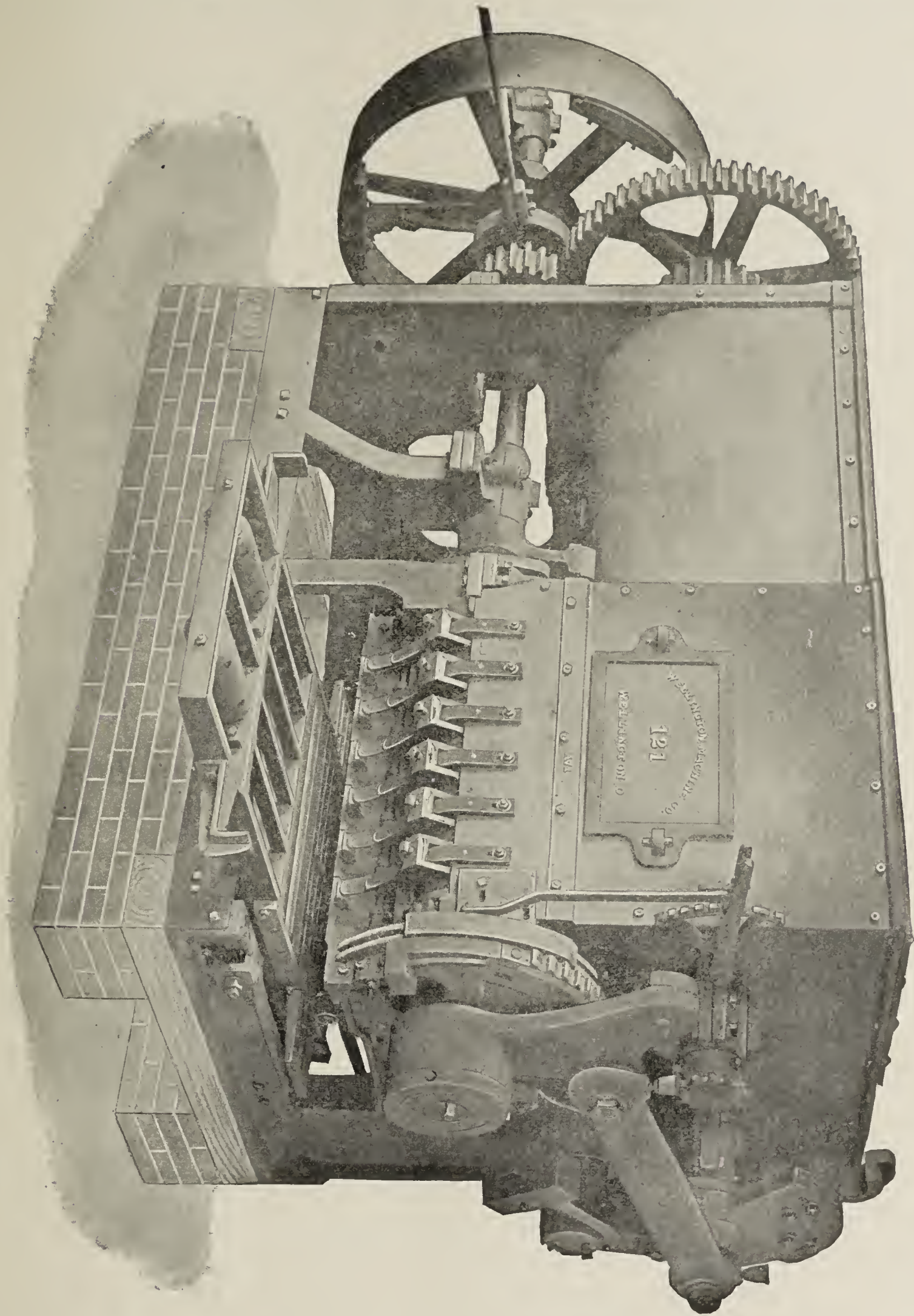


The Eastern Machinery Co.,
New Haven, Conn.

Soft
Clay
Brick
Machines
Are
the
Only
Kind
We
Build
and
We
Build
Them
Well.
Stout
Shafts,
Long
Bearings,
Large
Oil
Holes,
Strong
Gears,
Steel
Liners
and
Other
Details
in
Proportion.

OVER
235
"Monarch"
Brick
Machines
in use
==
OVER
565
"Quaker"
Machines
in use.

==
WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

**ROLLER-BEARING
BARROWS.**

The Wellington Machine Co.,
WELLINGTON,
OHIO.
Send for Catalogue.

Sand Mould Brick Machines

By this process you will make a brick that will sell in preference to brick made by any other process, in the majority of markets for more money.

WE MANUFACTURE



HORIZONTAL BRICK
MACHINES
DISINTEGRATORS
MOULD SANDERS
GRANULATORS
PUG MILLS
WINDING DRUMS
CLAY CARS
SAND DRYERS
MOULD WASHERS
TRUCKS
BARROWS AND
MOULDS.

We are the Largest Manufacturers of this line of Machinery in the World.

We furnish everything complete from the Clay Bank to the Kiln and guarantee results.

Potts Horizontal Brick Machine, Disintegrator and Mould Sanders make an outfit equaled by none, one which will make Quality as well as Quantity.

Every Machine fully guaranteed and shipped subject to trial. Write for our new Catalog.

C. & A. POTTS & CO., Indianapolis, Ind.

Mention The Clay-Worker.

BRICK DRYERS

as Manufactured by C. & A. Potts & Co., are complete in every respect and built upon scientific lines. Every advantage is taken to get the best results from a given amount of fuel.

NO HOT WELLS
NO CARS OR TRACK
NO FANS OR HIGH STACKS
NO EXTRA ENGINE

Will dry the most tender clay in from 8 to 12 hours. So constructed that Exhaust Steam can be used the entire day.

A Labor Saver and Money Maker on any Brickyard.

Will more than Double the Capacity of your Brickyard.

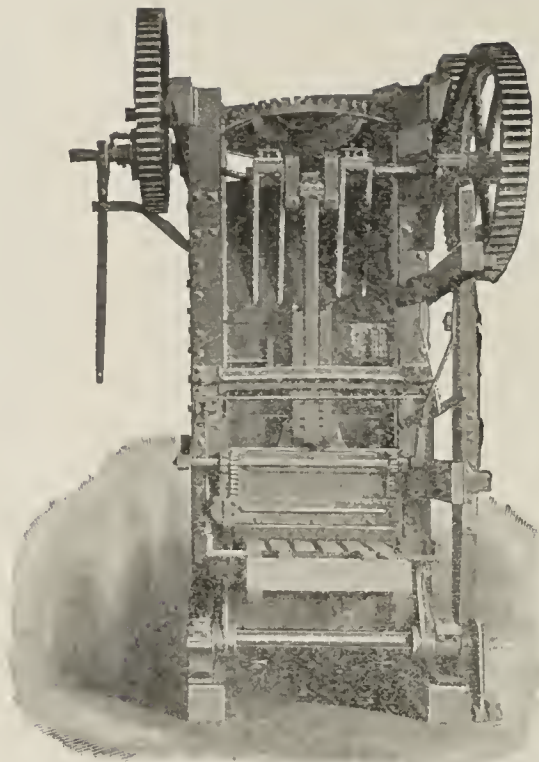
A cheap dryer to erect, as well to operate.

The Best and most Complete Dryer on the Market.

Let us tell you about it.

C. & A. POTTS & CO., Indianapolis, Ind.

Mention The Clay-Worker.



MARTIN'S CLAY WORKING MACHINERY & SUPPLIES

OUR GUARANTEE GOES WITH
EACH OUTFIT OF

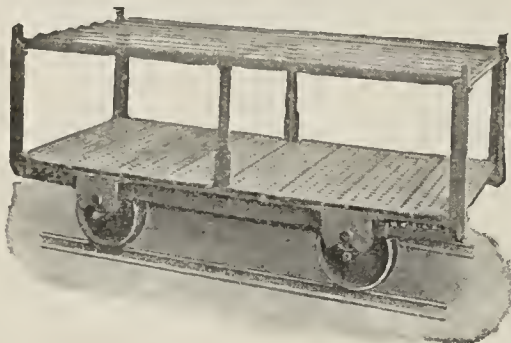
BRICK MACHINERY

AND OUR EXPERIENCE OF NEARLY HALF A CENTURY

ASSURES EVERY PURCHASER OF A MODERN

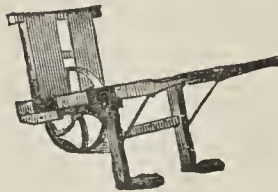
"MARTIN"

OUTFIT OF HAVING THE VERY BEST
THAT CAN BE HAD



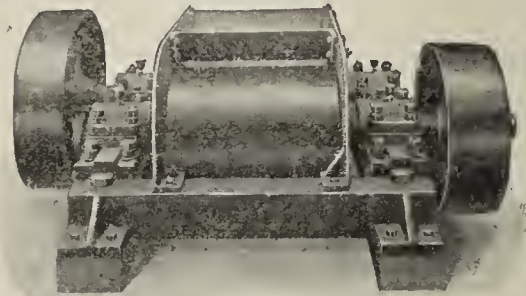
DRYER CARS & CLAY CARS

WE
FUR-
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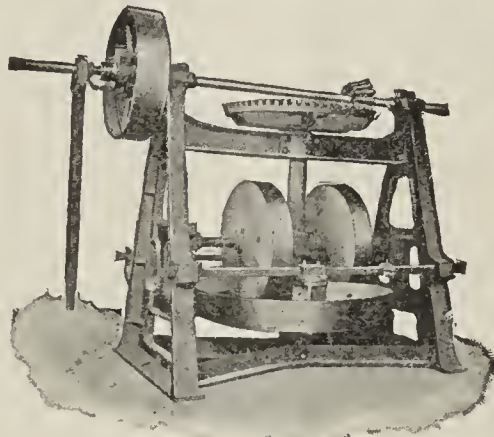


BARROWS & TRUCKS
BUILT FOR THE WORK

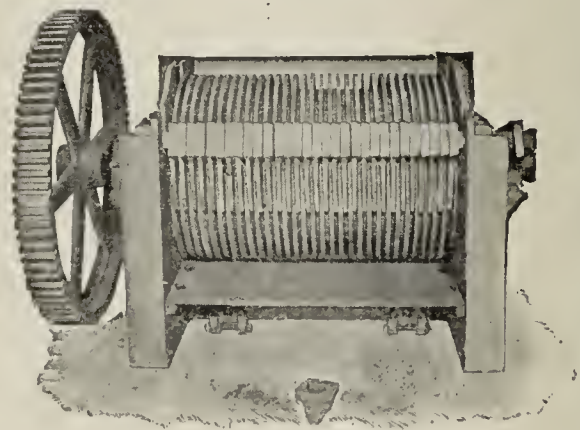
LET US FIGURE WITH U?



HIGH-SPEED DISINTEGRATOR



DRY OR WET PANS



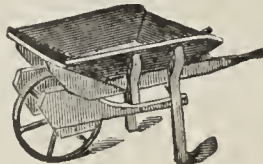
CLAY SCREENS



MARTIN'S SAND DRYER

W
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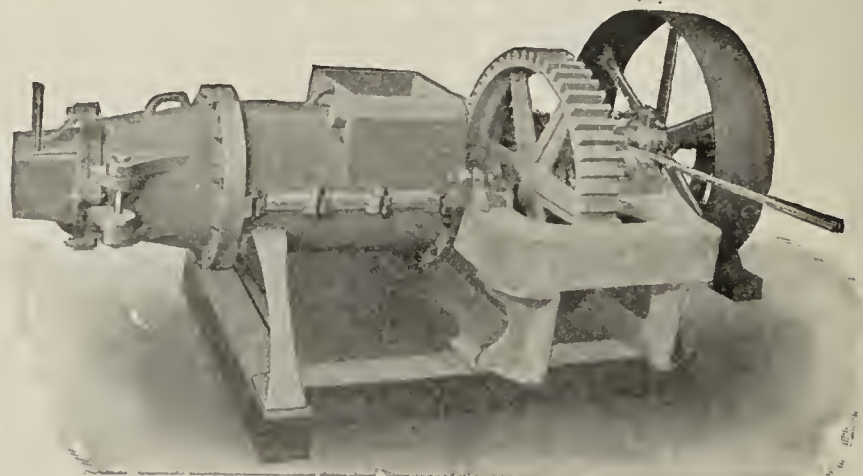
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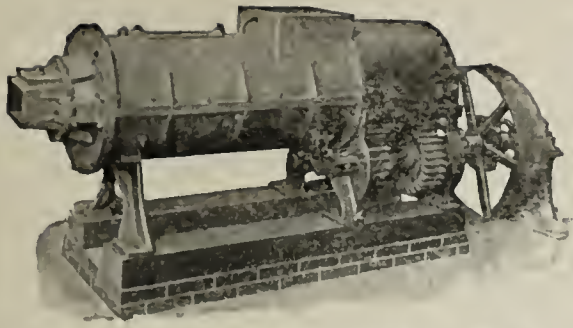


YARD SUPPLIES OF ALL KINDS

LET US KNOW
YOUR REQUIRE-
MENTS

THE HENRY MARTIN
BRICK MACHINE MFG. CO.
LANCASTER, PA., = U. S. A.





MARTIN'S STEAM BRICK "DRYER SYSTEM"

NOTICE

PATENTED

February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.

This Dryer and the design in arranging it are under the protection of the United States Government by virtue of patents granted. Patents also have been taken out in the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS.

Brick
Dried
In From
Six to
Twelve
Hours.

Building
Practically
Fire-
Proof.

Labor
Saving
Through-
out.
Good
Results.



No Fans
No Blowers
No Tunnels
No Cars

All Iron
And Steel
Construc-
tion
Excepting
Roof.

Can We
Dry Your
Brick—
Write Us
Today.

ADAPTED FOR SOFT MUD OR STIFF MUD BRICK.

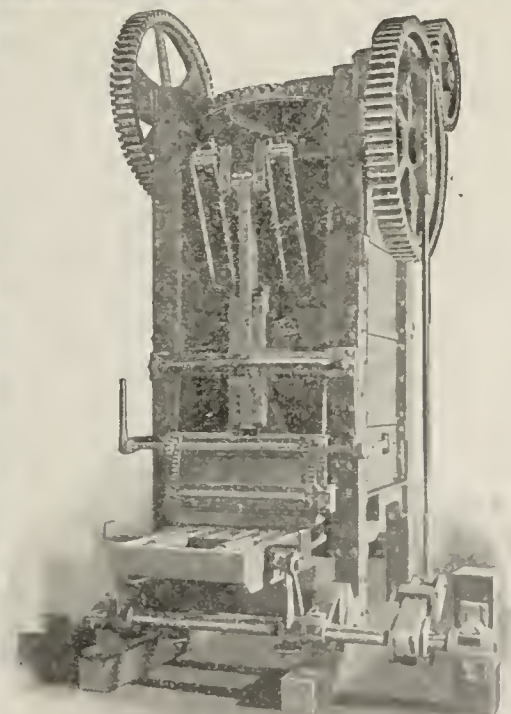
Superior in Every Respect to Any Other System—Labor-Saving Throughout—Dispenses With Truckers and Car Pushers—Pallets Automatically Returned to Brick Machine—Quick to Install and Low in Price and Takes Up Very Little Yard Room.

For further information address

The Henry Martin Brick Machine Mfg. Co.

(Incorporated)

Lancaster, Pa., U. S. A.



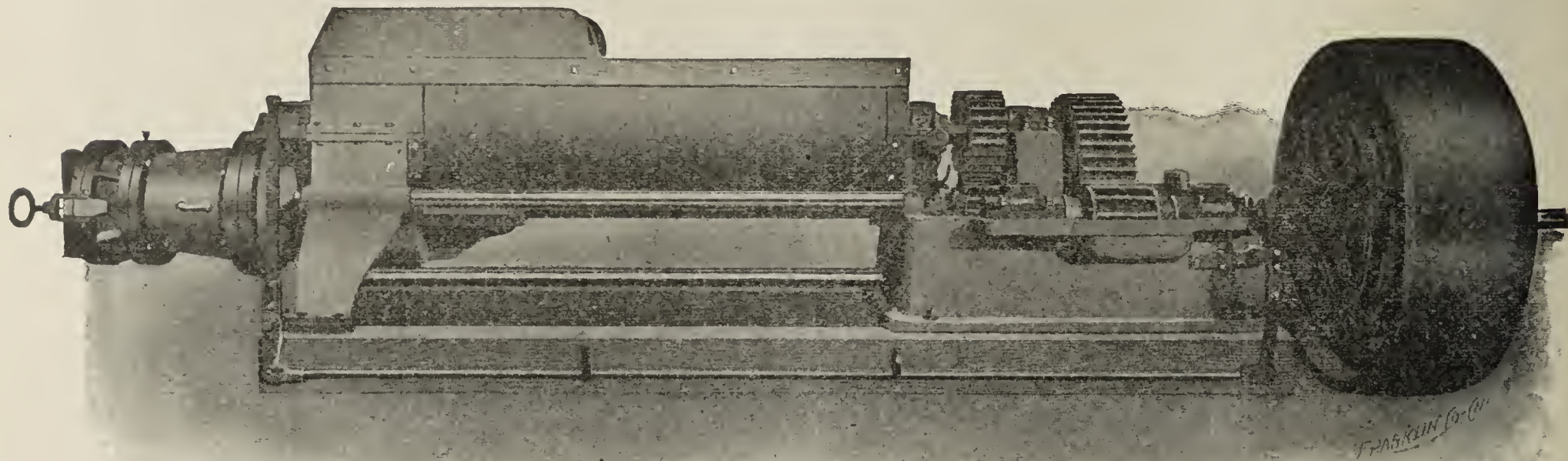


The J. D. Fate Co.

Richland County,

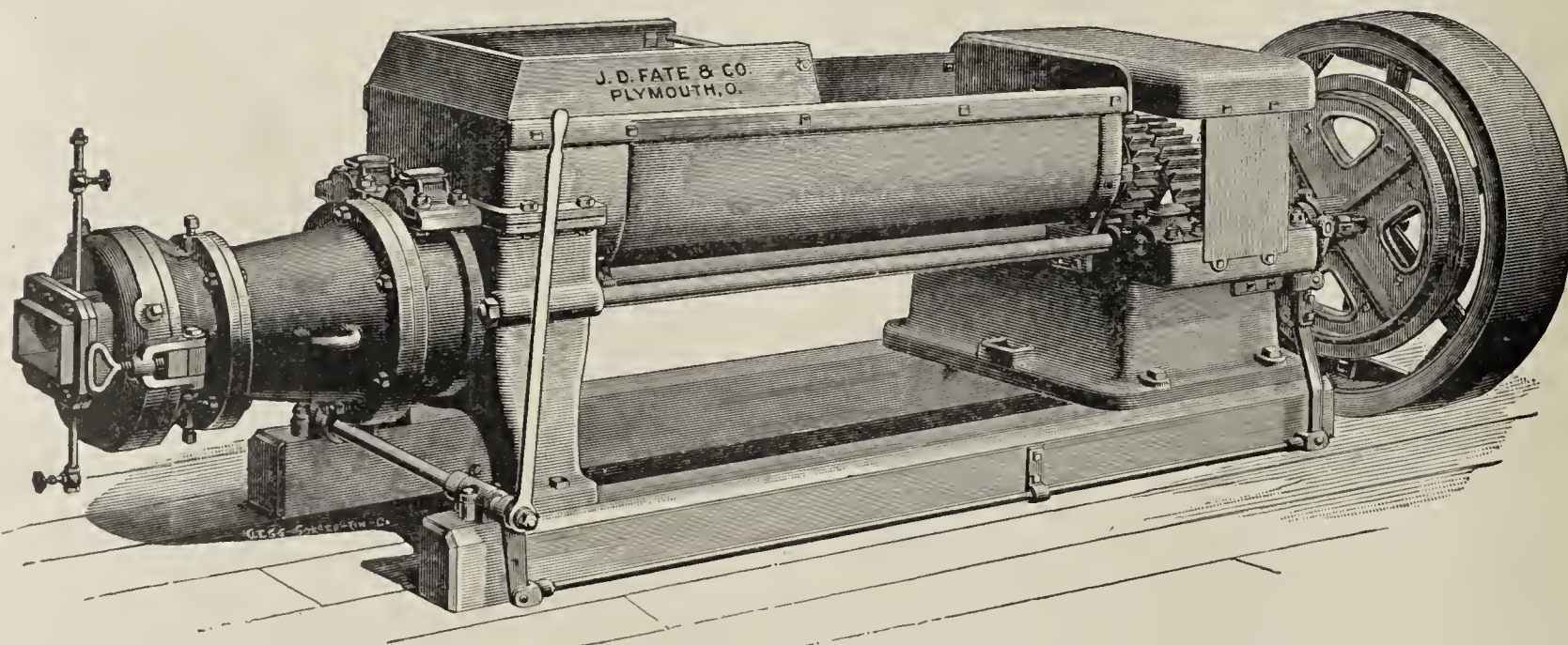
Plymouth, Ohio.

Imperial Combined Machine.

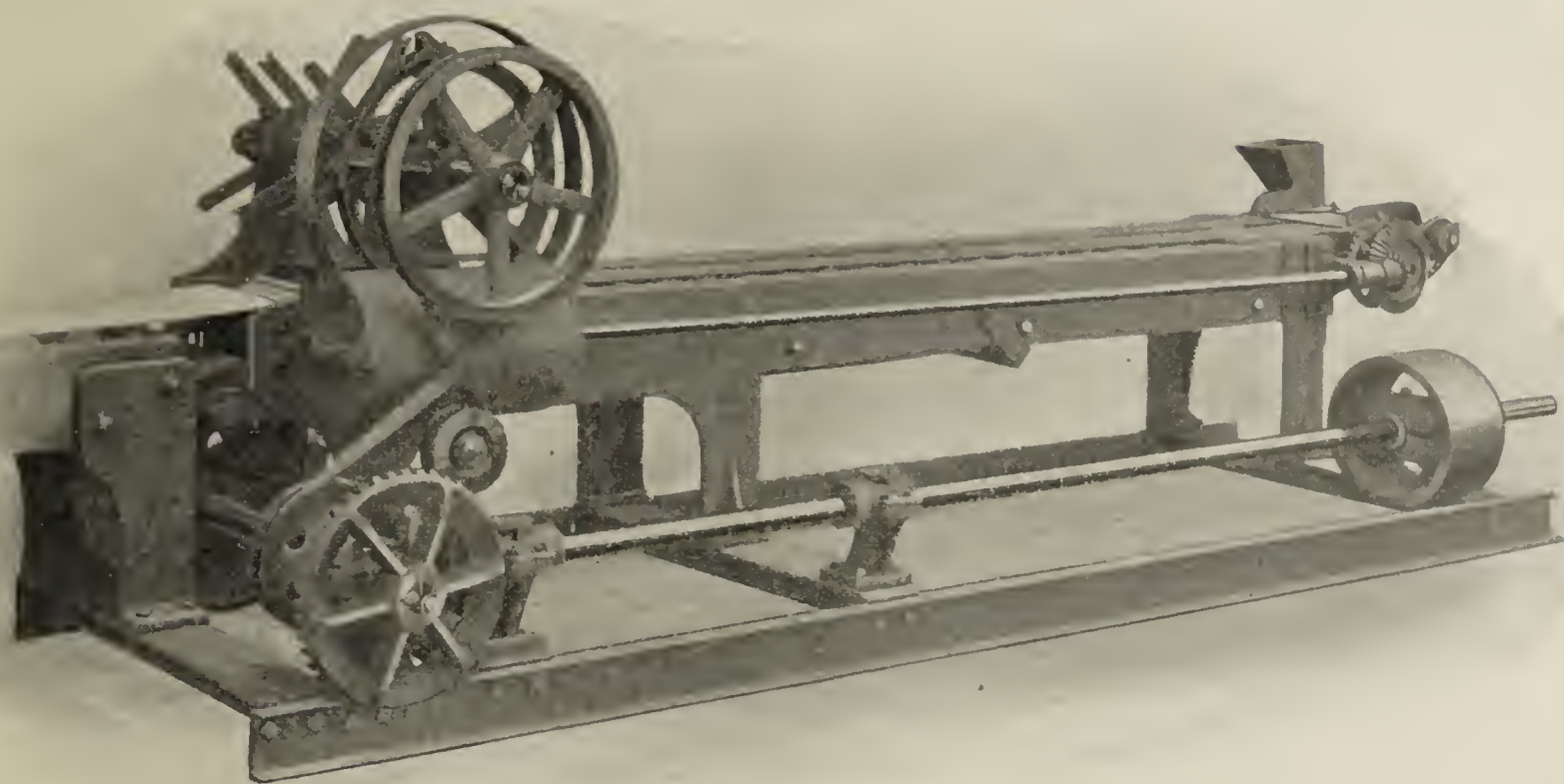


- This is our middle size Combined Machine and is a favorite with the brick maker who wants to make from 30,000 to 40,000 brick per day, and more so with the tile maker who wants very large capacity in drain tile, combined with the very finest quality. Look at the cut of this machine with vertical attachment.

Hummer Combined Machine.



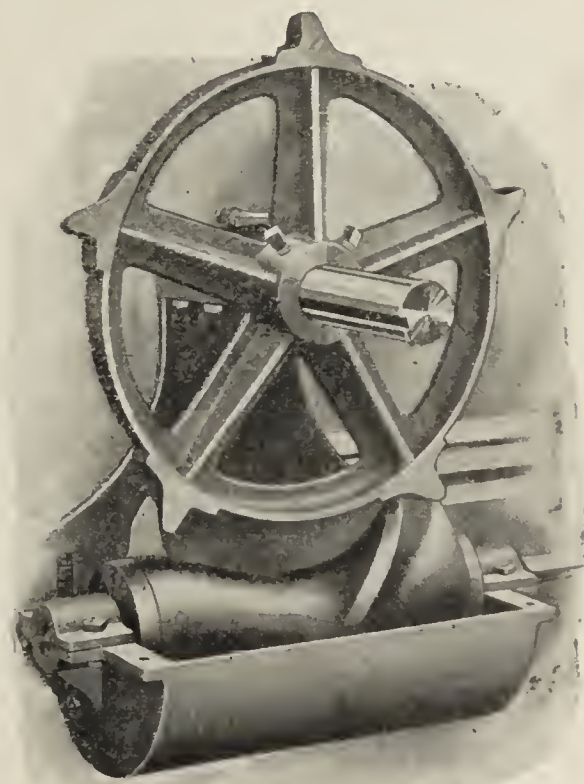
This was the first of our Combined Machines, and one of the best for the clayworker with a medium capacity plant, either of Brick or Tile, or both.



THE BREWER No. 14 AUTOMATIC BRICK CUTTER

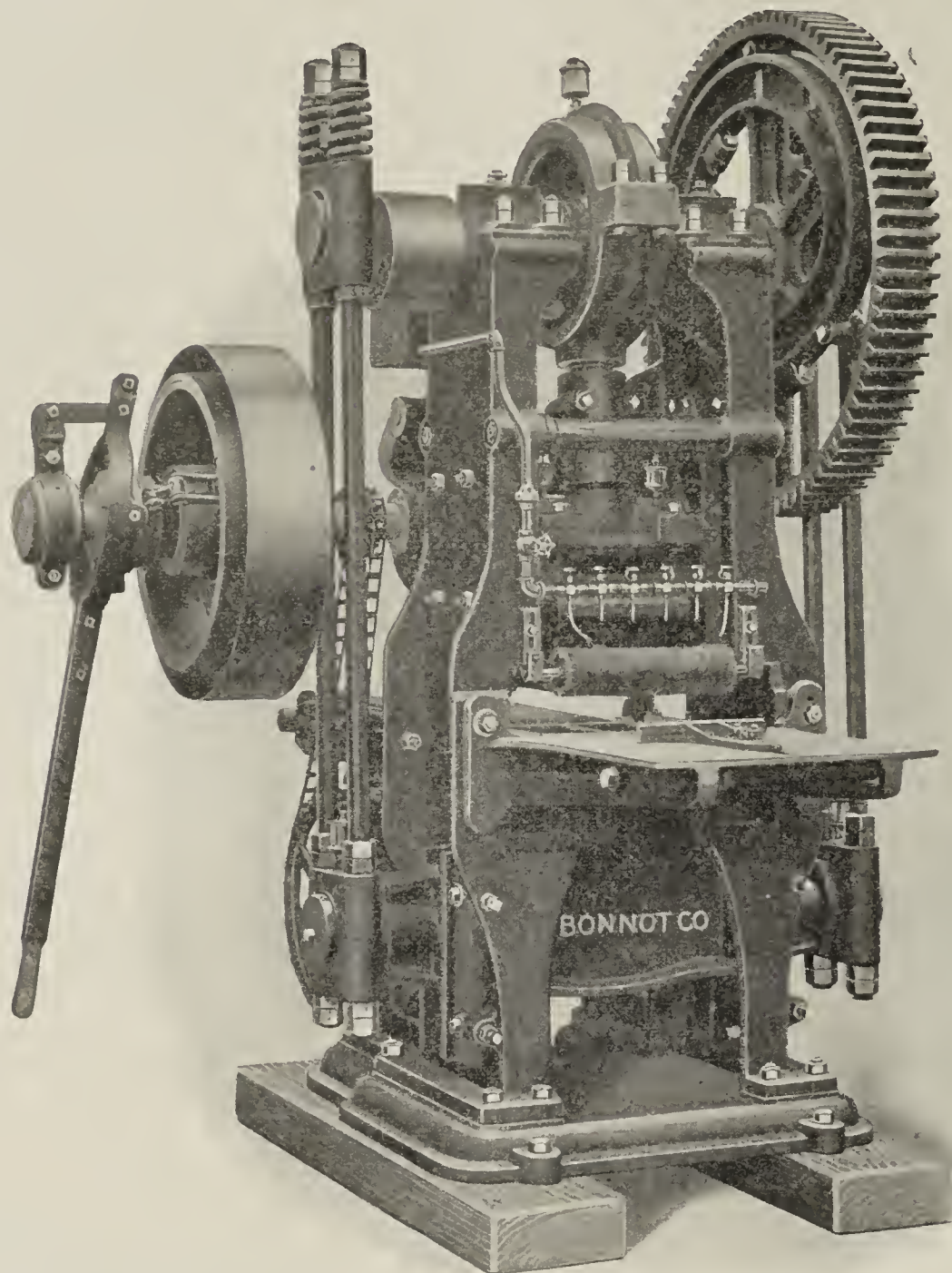
Is strong, simple, rapid and accurate. The wires are controlled by a spiral cam of novel form which has the advantage (over all other mechanical devices used for the same purpose) of taking up its own wear. Once set, always set until it is worn out completely. No adjustments. No rattle.

H. BREWER & CO.
TECUMSEH, MICHIGAN



DO YOU WANT THE BEST REPRESS?

The
Canton
Repress
has
fewer
parts.
No toggles.
Heavy
Pressure.
Convenient
Adjustment
for
Changing
Thickness
of Brick.



Pressing
strain
taken on
the heavy
steel
side rods.
Large
shafts
and
bearings.
No
wearing
parts
below
the die.

The Canton Repress

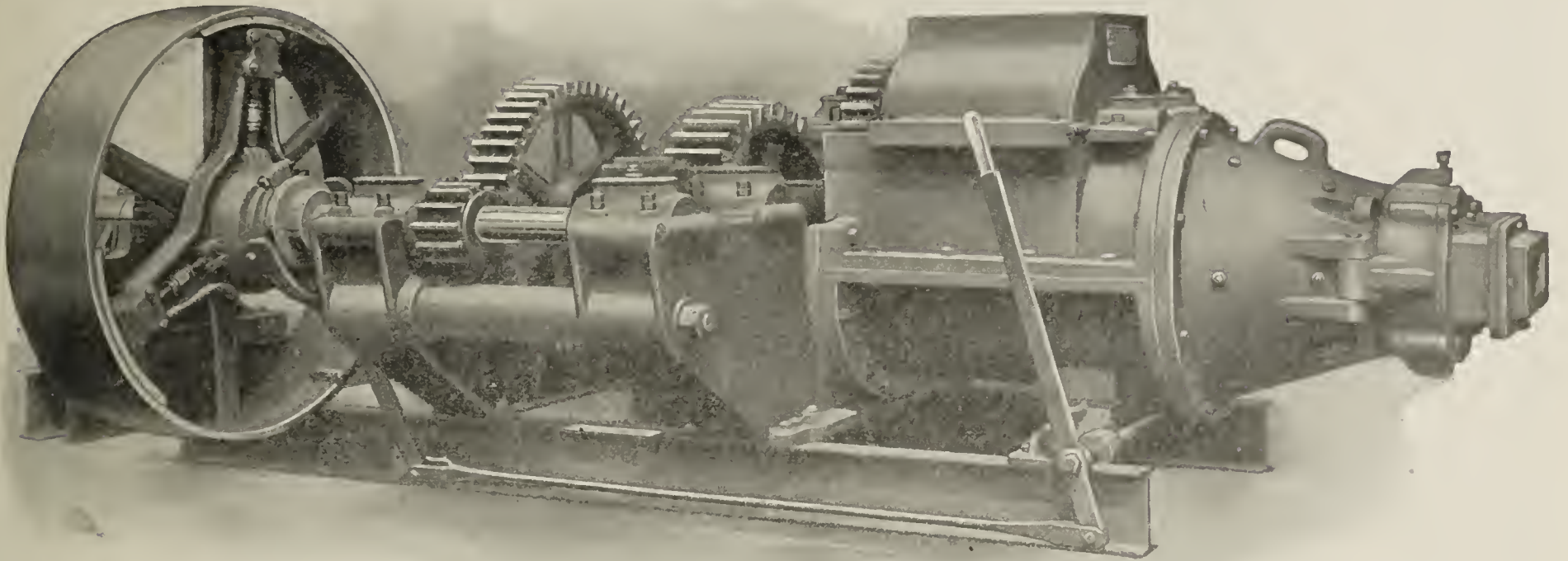
More points of merit than any other repress made.

THE BONNOT COMPANY,

Canton, Ohio, U. S. A.

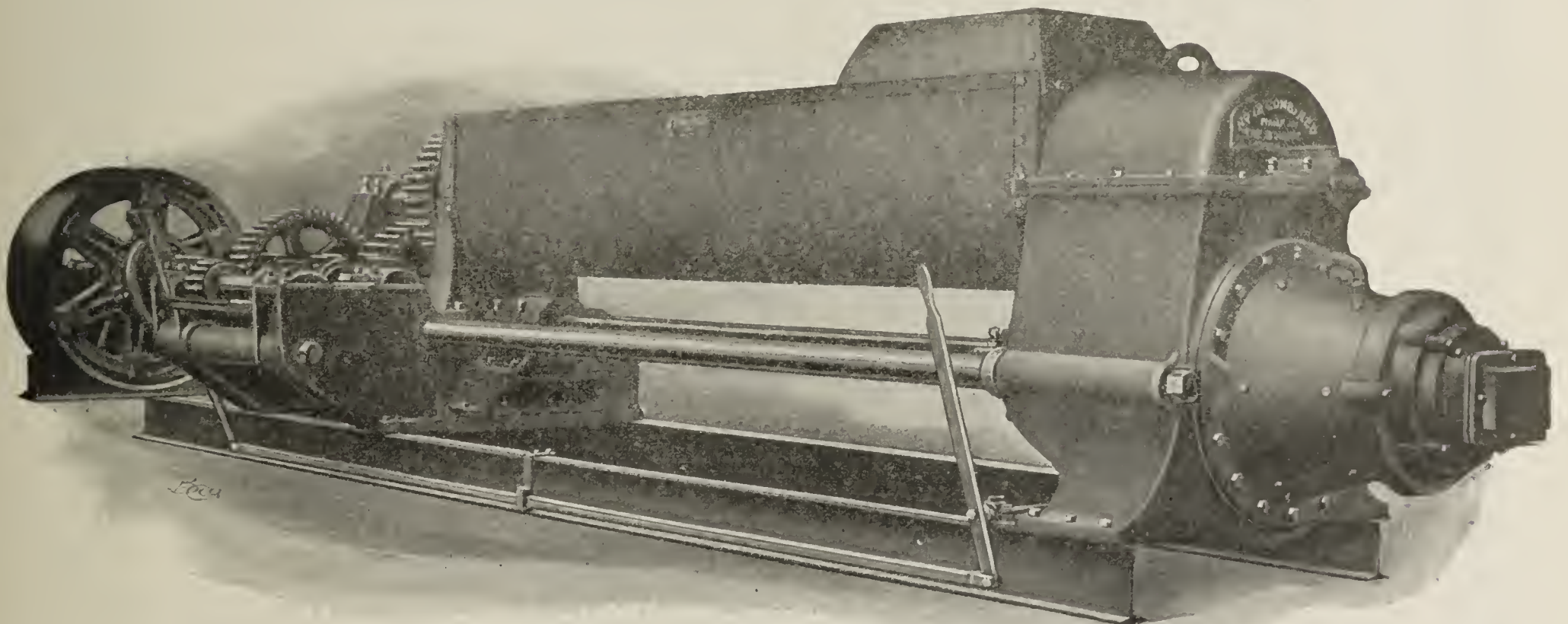
Write for our Circular No. 12, just issued describing the latest designs of brick machinery.

Modern Brick Machinery



No. 10 $\frac{1}{2}$ Auger Brick Machine.

50,000 to 75,000 capacity per day. Steel gearing, all wearing parts accessible. The best machine for those difficult clays.



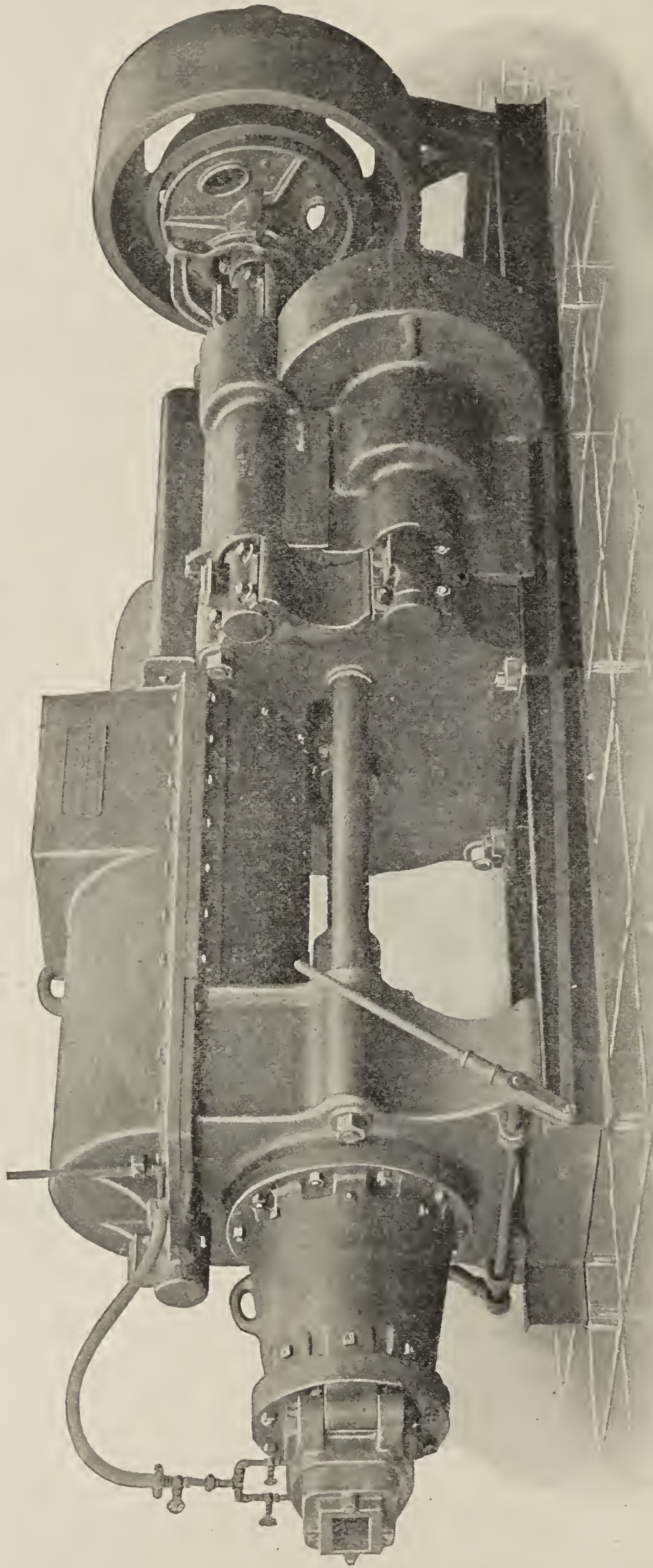
No. 12 Combined Brick Machine and Pug Mill.

All steel gearing and very heavy construction throughout. Main thrust bearing is outside of frame and can be rebabbited without dismantling the machine. Capacity 100,000 to 125,000 per day.

THE BONNOT COMPANY, Canton, Ohio.

To Lessen Your TROUBLES Use Our PIANO WIRE SCREEN.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

Size of hopper, 26-in. x 26-in.

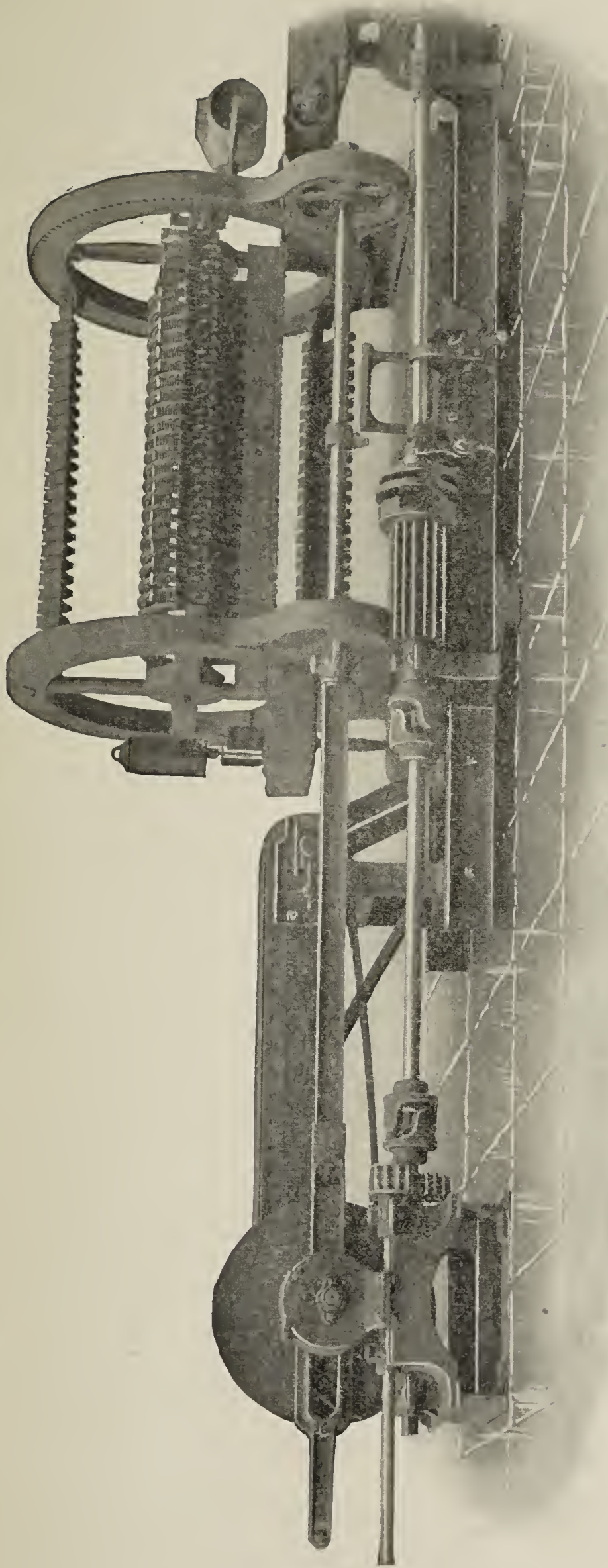
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.



SECTION OF UP-DRAFT KILN FILLED AND DRIED BY THE

Scott Kiln=Drying System

(Alex A. Scott Patents)

Our new catalogue explains the principles underlying the Scott Kiln-Drying System; illustrates methods of applying it to various types of kiln; discusses its first cost as compared with other systems; shows the saving effected by its installation,—in fact, describes in detail the system and its advantages.

A copy is yours for the asking—Specify Bulletin No. 213C.

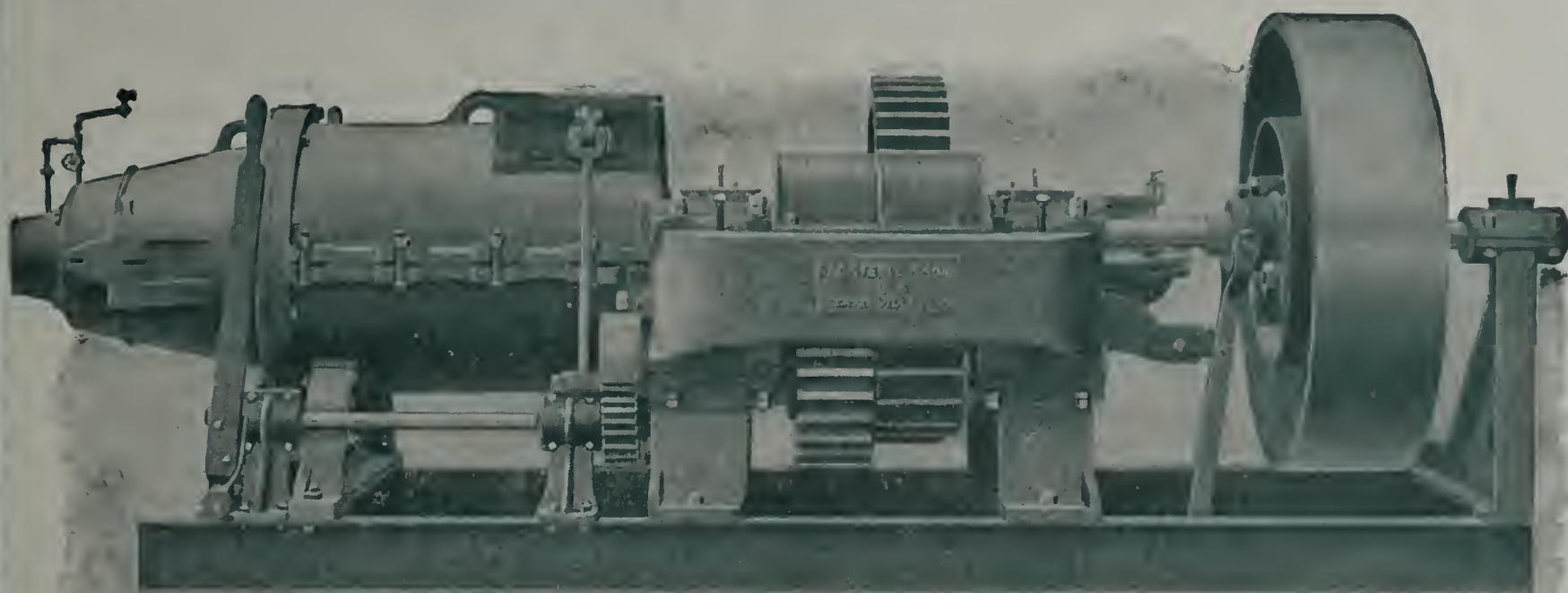
American Blower Company

Detroit, Mich.

141 Broadway
New York

Empire Bldg.
Atlanta

Marquette Bldg.
Chicago



**No. 5. CAPACITY 50,000 to 100,000
PER DAY.**

**Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.**

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen :—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

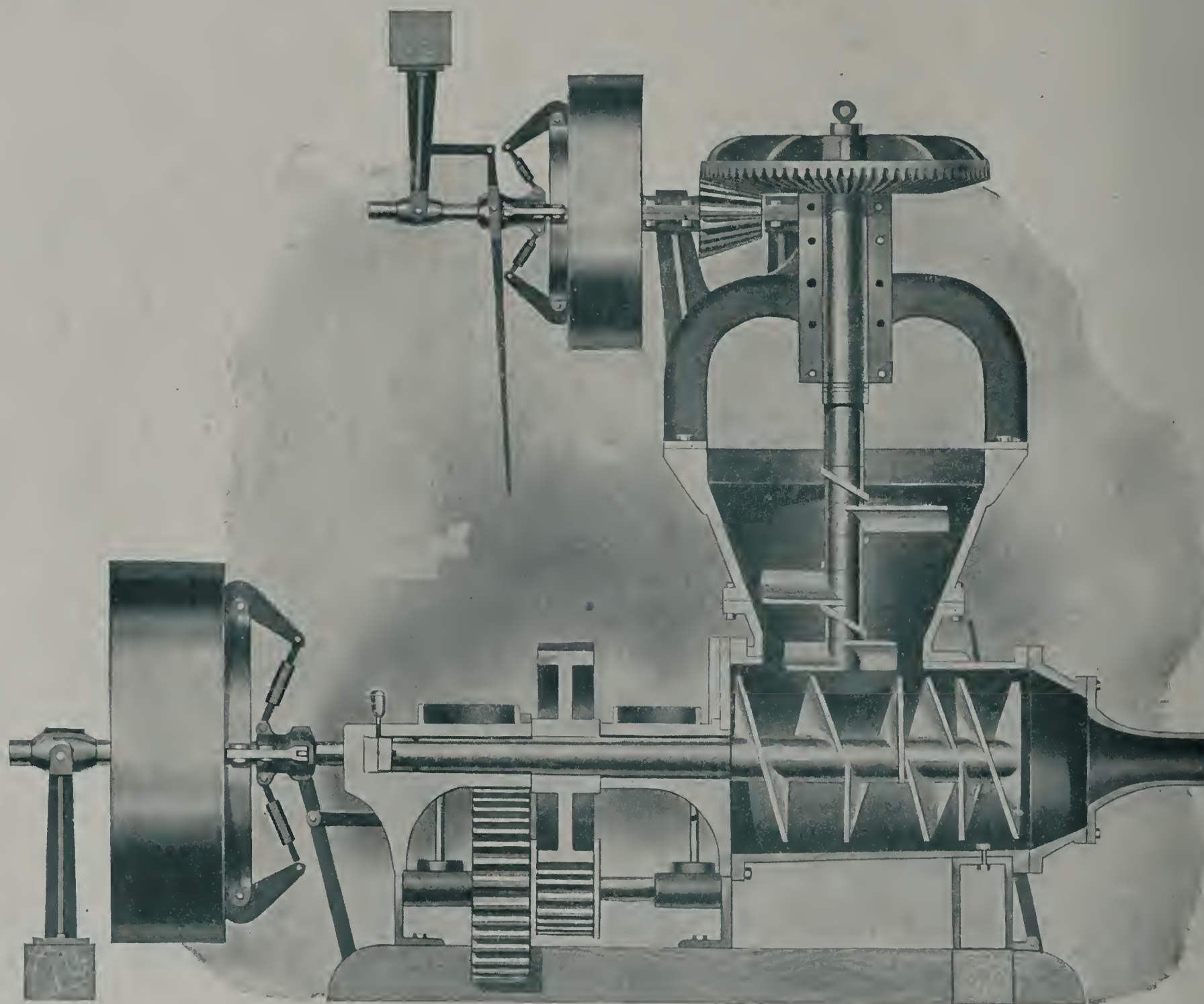
Success Brick Machinery Co., Memphis, Tenn., Western Agents.

OUR SPECIAL "ELI" BRICK MACHINE

LATEST IMPROVED.

Large Capacity. Runs Easy.

"Has all the merits of any machine and then some."

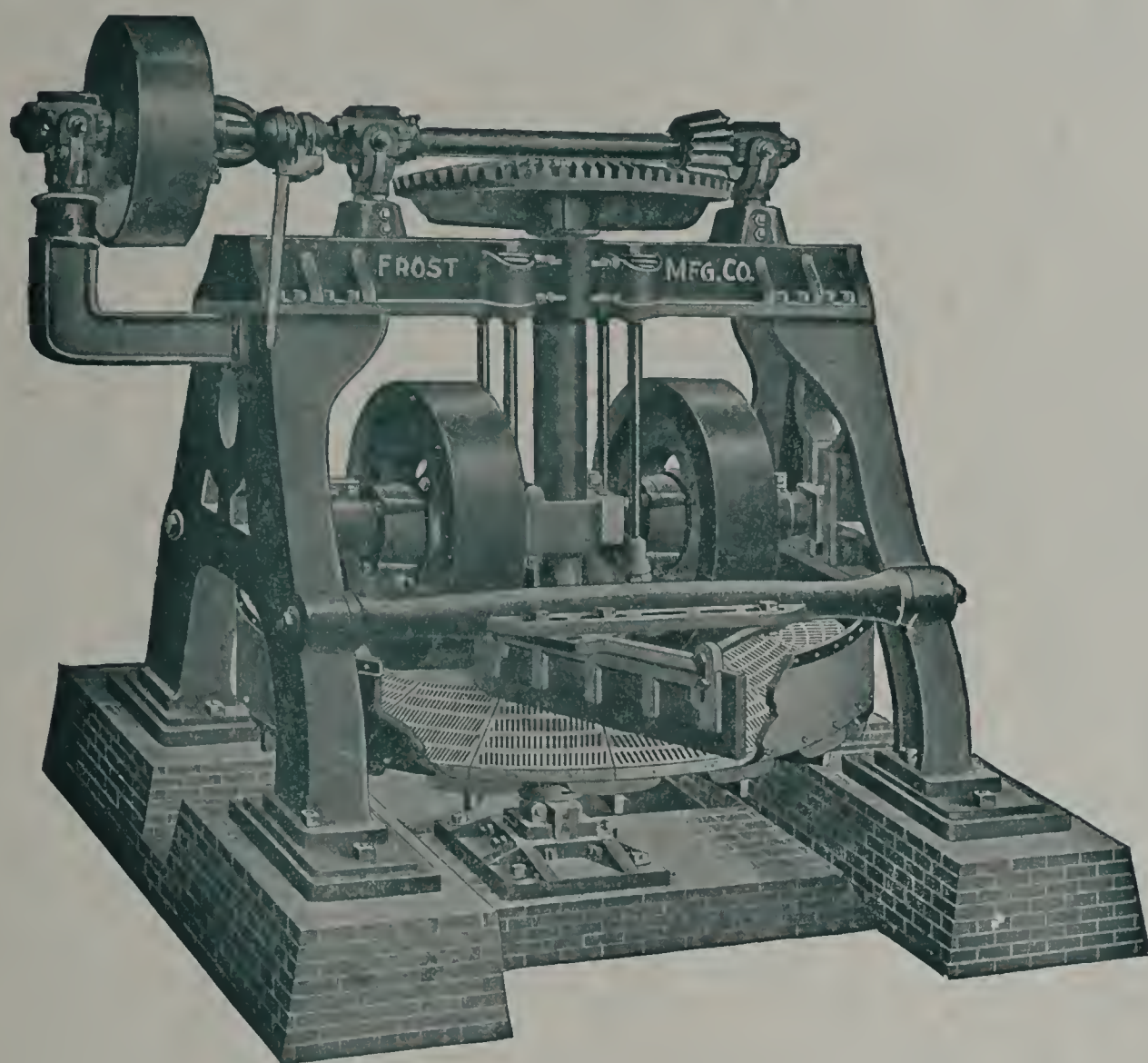


SPECIAL "ELI" BRICK MACHINE

Write for Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,
MORENCI, MICH., U. S. A.

FROST DRY PAN



When you buy a Pan buy a FROST Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.
SALES DEPARTMENT:
135 Adams St., CHICAGO, ILL.
Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN

which would otherwise be lost, is utilized for drying in the "ABC" Waste Heat Drying System.

With this system you can thoroughly dry bricks at a cost not to exceed five cents per thousand.

Shall we tell you how?

Ask for Catalog No. 159 C.

American Blower Co.
Detroit Mich.

The Perfect Clay Screen in a New Dress.



A piano wire plate that fits just the same as our perforated metal plates.

By using every third plate, you get more screening surface than is had with any other screen of this kind.

SPECIAL FEATURES. Short wires do not require high tension and are less liable to break. If a wire does break, take out the plate, put another one in its place. This can be done in an instant. If you want a piano wire screen without the frame and mechanical parts, four of our plates more than equal the area of any screen of this kind now offered. But with the mechanical features THE PERFECT CLAY SCREEN fills all requirements.

DUNLAP MFG. CO.,
Bloomington, Ill.

NEARLY COMPLETED



OUR NEW FACTORY

New machinery will be installed. Every detail of car work treated with scientific accuracy. If you have dealt with us in the past, you know that our product is reliable.

Write us for quotation on what you need, Dryer Cars, Dump Buckets, Dump Cars, Piano Wire Screens, Turntables, Trackage, Etc.

We build the Richardson Repress.

The Ohio Ceramic Engineering Co.,
CLEVELAND, OHIO.

THE CLAYWORKER

PUBLISHED MONTHLY BY
T O RADDOLL & CO
INDIANAPOLIS.



Table Contents, Page 56.

JULY, 1907.

Index to Ads, Page 67.



We Are Manufacturers and Consulting Engineers of
INDUSTRIAL and PORTABLE
— RAILWAYS —



This illustration shows the **CLAY MINES** of the National Fireproofing Co., Pittsburgh, Pa., with **KOPPEL'S COMPLETE INSTALLATION OF INDUSTRIAL AND PORTABLE RAILWAYS**, Portable Track and Switches, Turntables and Steel Dump Cars.

WRITE FOR CATALOG NO. 41

ARTHUR KOPPEL COMPANY

PITTSBURG
1607 Machesney Bldg.

NEW YORK
136 Morris Bldg.

CHICAGO
1639c Monadnock Bldg.

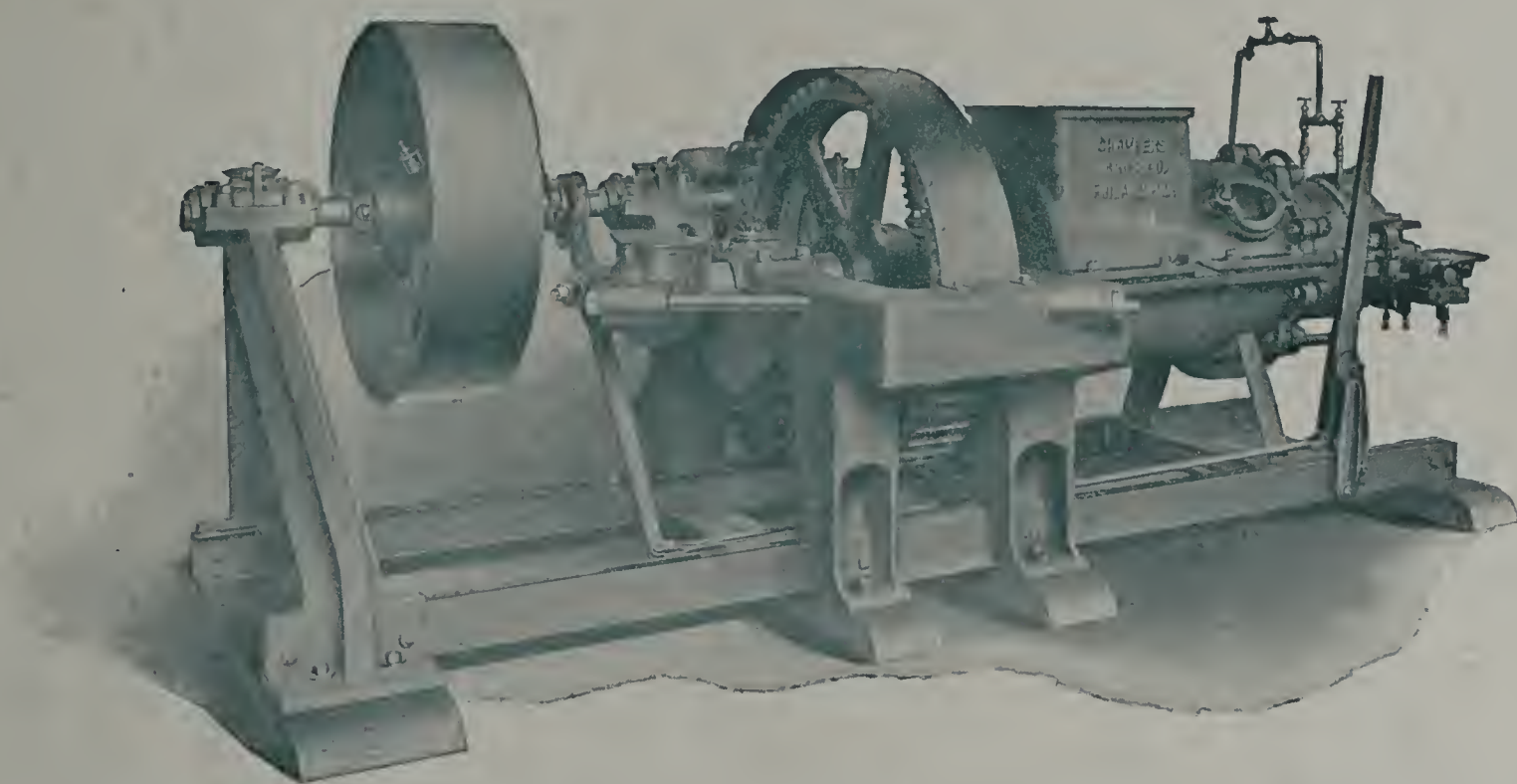
BOSTON
53 Oliver St.

SAN FRANCISCO
1515 Chronicle Bldg.

THE CHAMBERS BRICK MACHINERY

BRICK MACHINES

Of Various Sizes for Producing Sand Faced, End Cut and Side Cut Brick



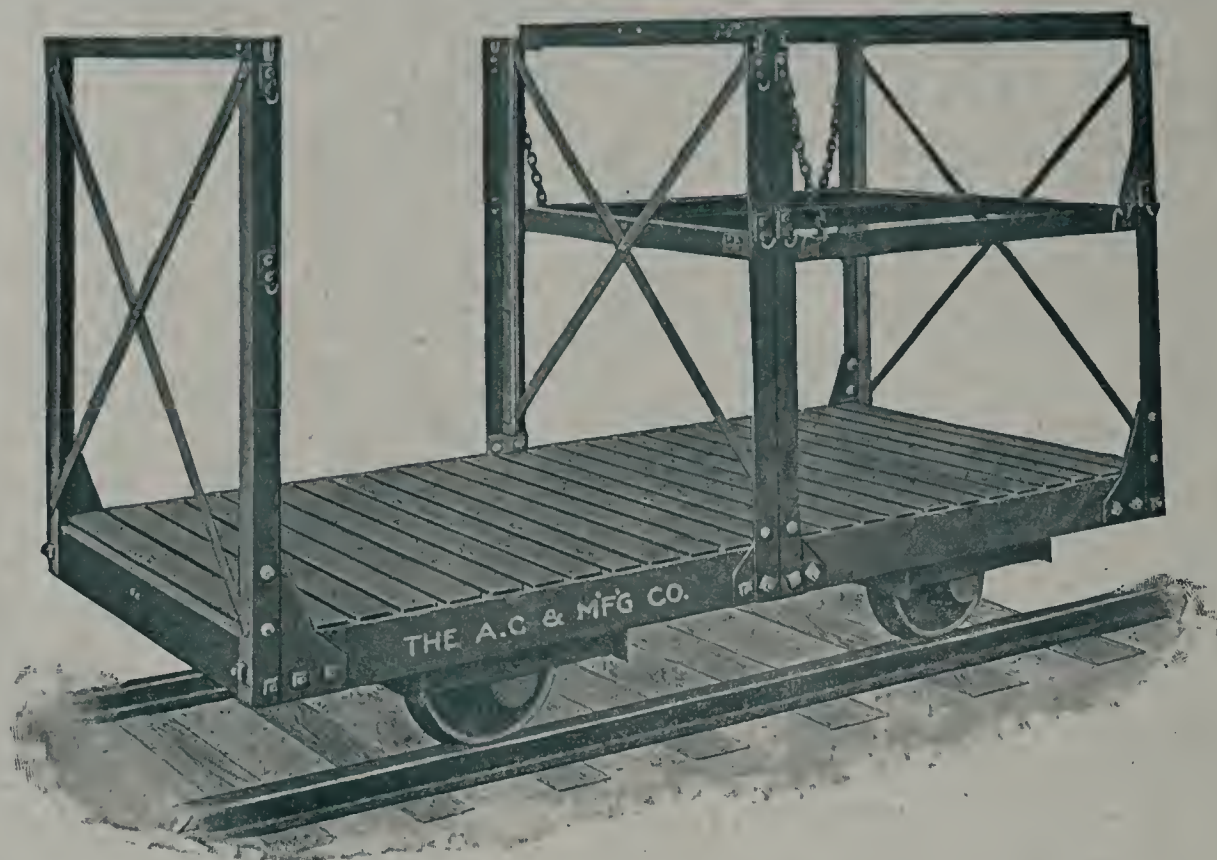
Strong, Heavy Machines with Steel Pinions and Shafts; Stone Extracting Crushers; Five Sizes Disintegrators; Dry Pans; Single and Double Shaft Mixers and Pug Mills; New Pattern Clay Elevators. ♡ ♡

Chambers Brothers Company

Fifty=Second and Media Streets :: :: PHILADELPHIA, PA., U. S. A.

59 West Jackson Boulevard, CHICAGO

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 61.)

G. E. LUCE ENGINEERING CO.,

601 Plymouth Building,
CHICAGO, ILL.

Practical Design and Supervision of Brick Plant Construction.

From our long experience in various clayworking fields we are able to offer suggestions which will bring your old plant to its highest efficiency or start your new one a little better than the best.

A careful study of the drawings we exhibited at the St. Louis Convention would convince you **OUR PLANTS MAKE BRICK**. If you were not there send for copy of one of the most complete Brick Plant drawings ever exhibited.

THE HARRINGTON AND KING PERFORATING CO.



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,
CHICAGO, ILL., U. S. A.



WHAT'S THE USE

of working hard every day for barely enough to pay living expenses, when the same amount of effort expended in the manufacture of brick, if combined with a

RODGERS WASTE HEAT DRYER,

could just as well be made to produce a good fat bank account?

WHAT'S THE USE?

L. E. RODGERS ENGINEERING CO.

Waste Heat Dryer Specialists,
Brick Works Engineers.

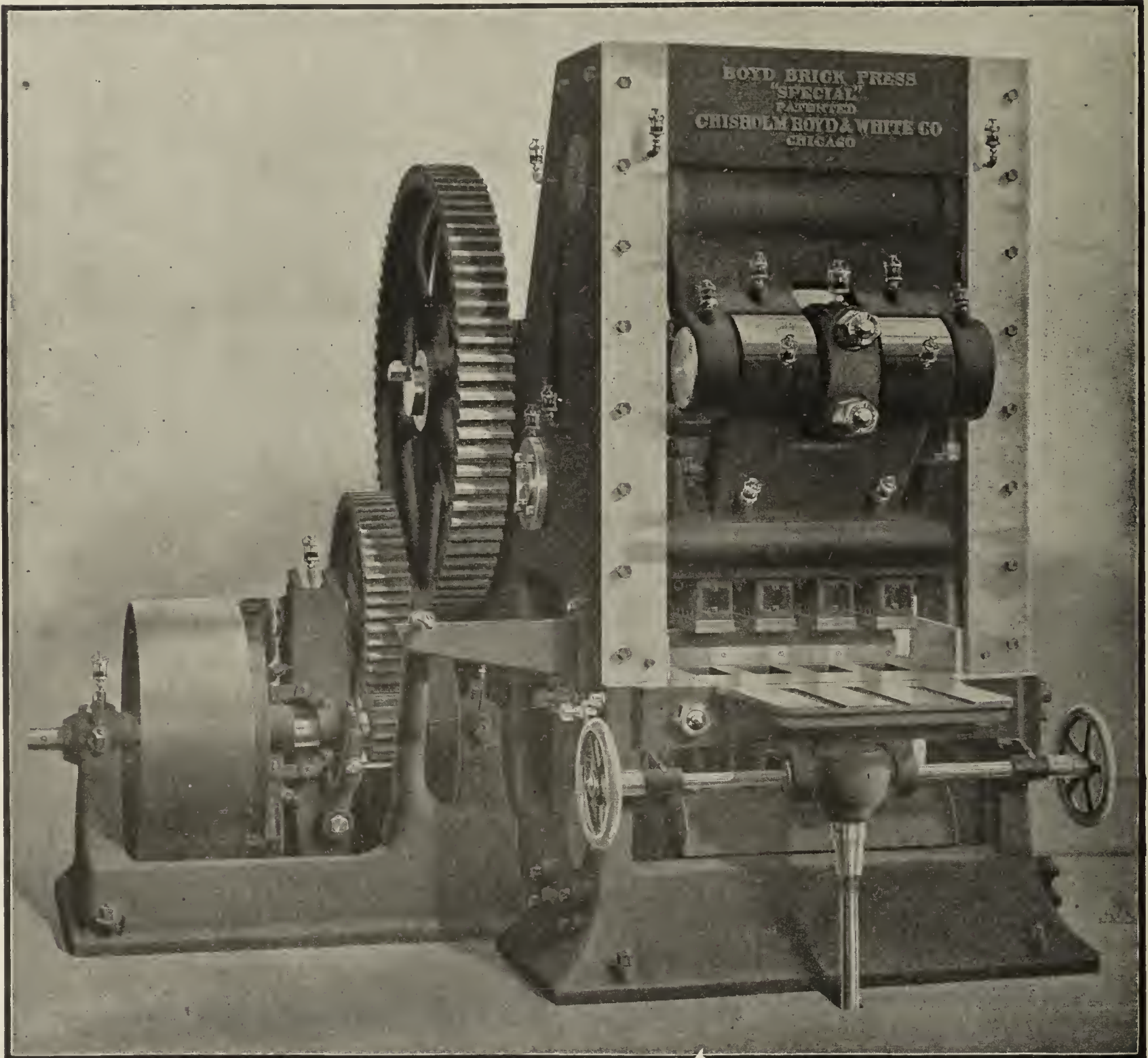
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Built in Two, Four and Six-Mold Sizes.



FOUR-MOLD SPECIAL.

BRICK PLANTS designed and complete machinery equipment furnished. Machinery and product guaranteed.

More Boyd Presses in use than all other Press Brick Machines combined.

The Boyd Press has great strength and endurance, great pressure and long dwell. Boyd Presses built 18 years ago are still in use and doing good work. Brick presses that last are the cheapest in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

C. C. WILSON, PREST.

ABRAHAM WHITE, CHM. OF BOARD

JOS. SHWARTS, V-PREST.

KAL SHWARTS, SECY. & TREAS.

TEXAS FIRE BRICK COMPANY

CAPITAL STOCK \$300,000

MANUFACTURERS OF

FIRE BRICK, FACE BRICK, ETC.

PLANT LOCATED
LASHER SWITCH
NEAR ELGIN, TEXAS

CORSICANA, TEXAS, May 30th, 1907.

Messrs. Chisholm, Boyd & White Company
Cor. Fifty-seventh & Wallace Sts.,
Chicago, Ill.

Dear Sirs:-

We are informed to-day from the plant that the Gear that they ordered from you had reached there.

We cannot overlook an opportunity to express to you our many thanks for the very prompt dispatch that you have responded to in forwarding the few little orders that we have given you, and which are a great convenience to us in operating our plant.

The writer is in charge of several large Texas Institutions, and transacts business in an aggregate sum of a very large amount; we have never though had anyone to pay as much attention to the quick dispatch of our business as your good selves.

We also wish to tell you that our present superintendent, Mr. C. T. Jackson, informs us that in his long experience he has operated fully a half-dozen presses of different makes other than yours, but for best results all the way round, none will equal the Chisholm, Boyd & White Four Mold Special.

It will no doubt interest you to know that the writer has secured four fairly good size orders for our brick out of five contracts he went after. We are expressing you some samples of our new Kiln #2.

Three or four Contractors have visited our plant and say that there is nothing equal to it in the South.

With assurances of our best regards and highest esteem, we remain,

Yours very truly,

TEXAS FIRE BRICK CO.

Per


Secy. & Treas.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

THE ONLY PERFECT BRICK PRESS

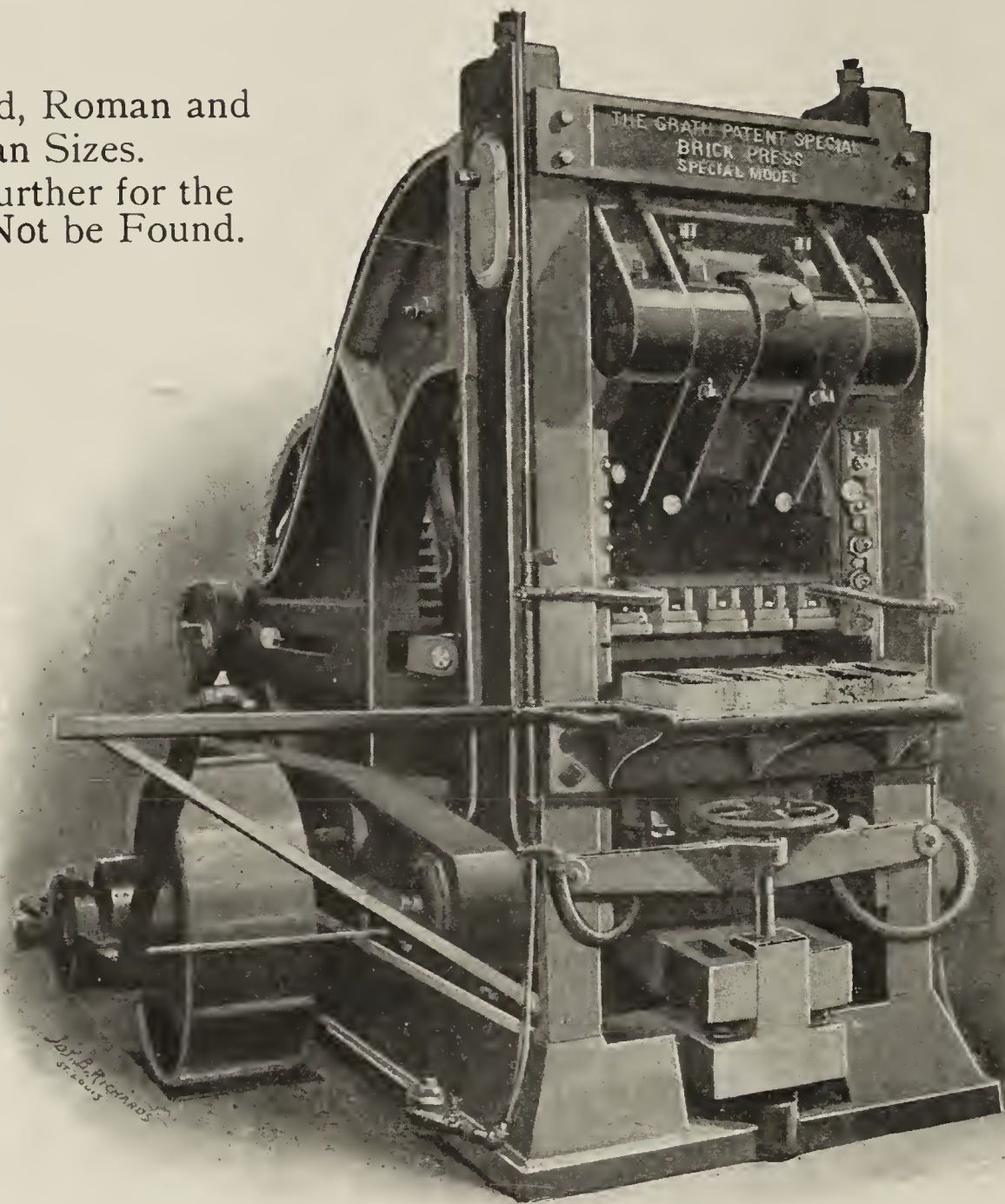
For SAND-LIME and DRY CLAY BRICK of Unequaled Quality.

Special Large Model Making Five Standard Size Brick.

For Standard, Roman and Norman Sizes.

Seek No Further for the Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufact-
urer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not too heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

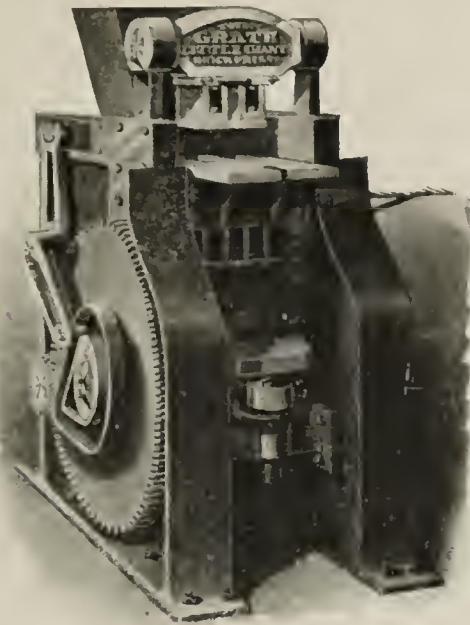
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

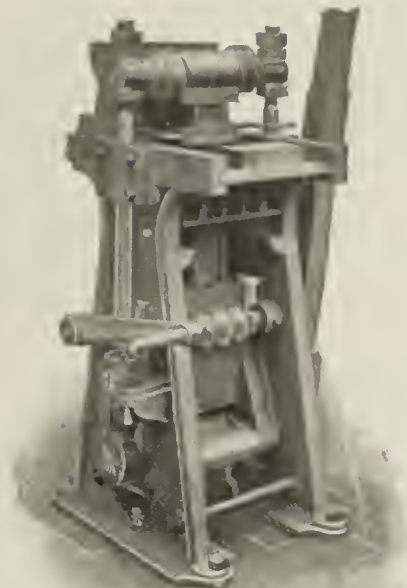
St. Louis, Mo., U. S. A.



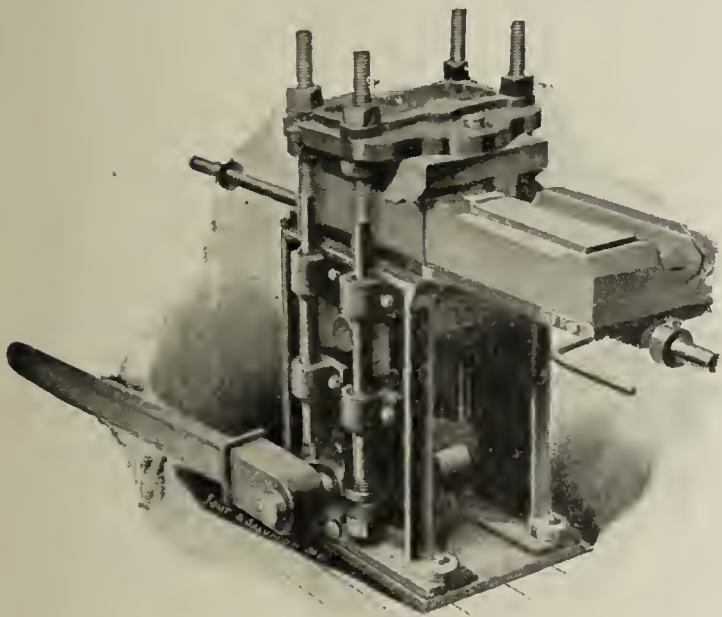
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



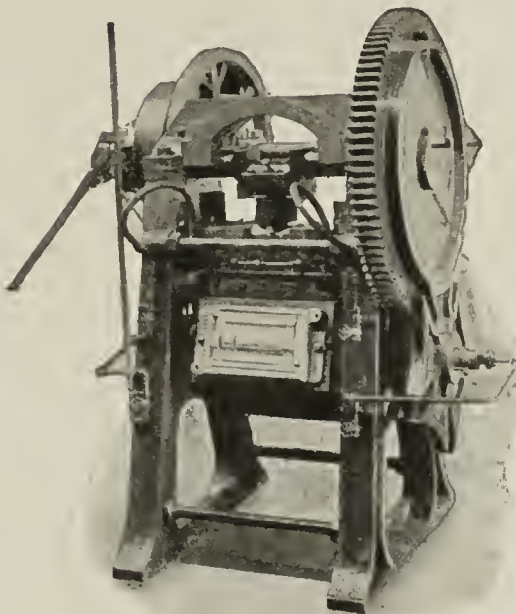
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



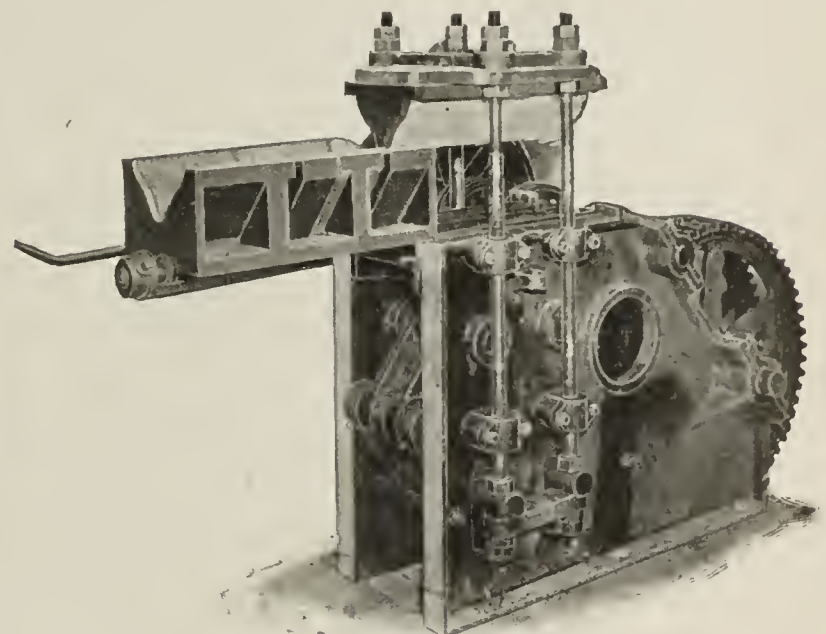
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

The New Grath Down-Draft Continuous Kiln.

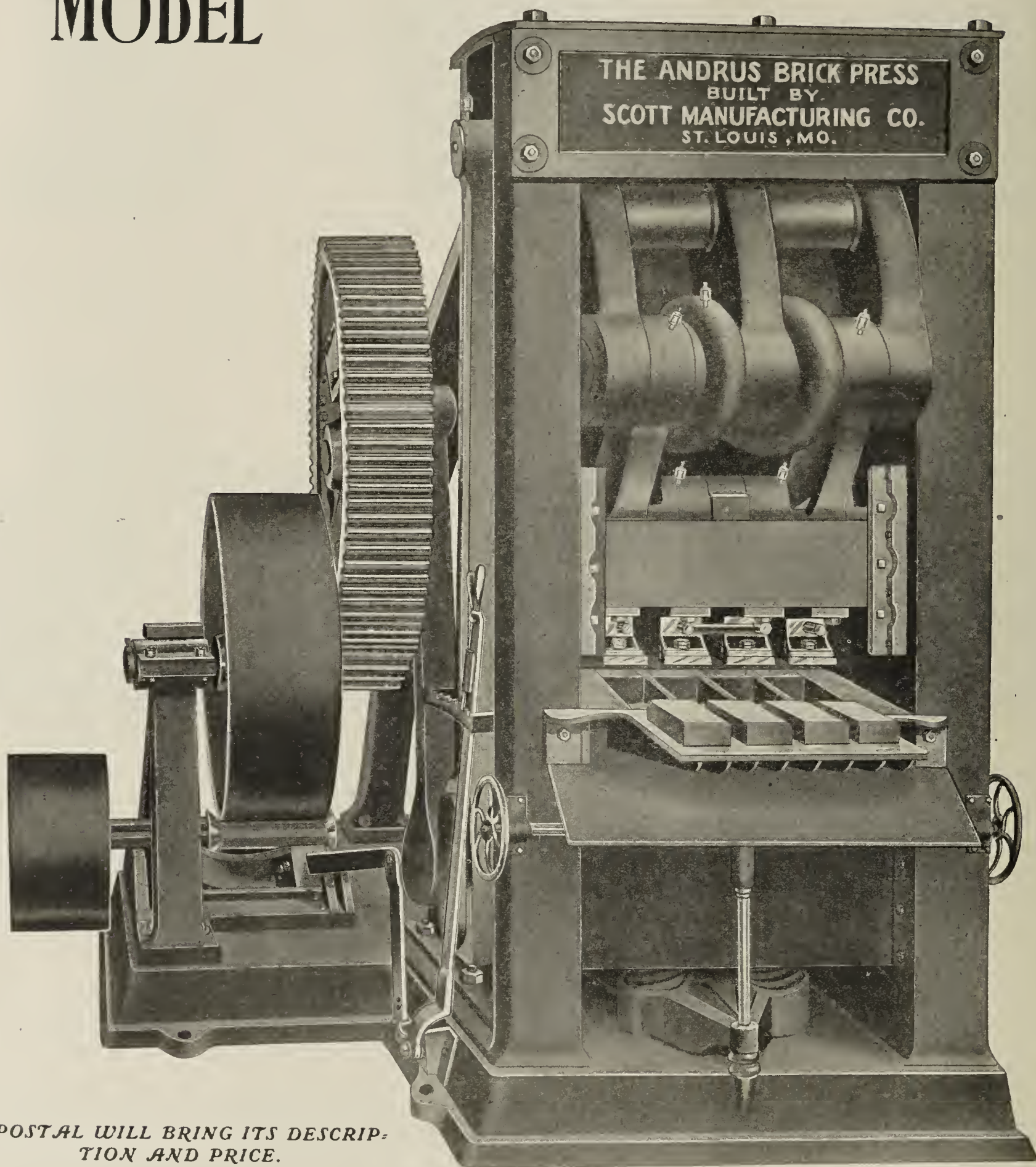
Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the *ordinary single* down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get *advantage* of all *waste* heat from your burning chamber, which you *lose* and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in *same* manner as the direct, through the furnaces up the bag and down through the ware. *Simple* and *sure* in operation. GUARANTEED.

Lieber's Code,
Cable Address
GRATH, St. Louis.

Illinois Supply & Construction Co.,
HOLLAND BLDG.. ST. LOUIS, MO.

Long Distance
'Phone,
Bell, Main 235.

OUR LATEST MODEL



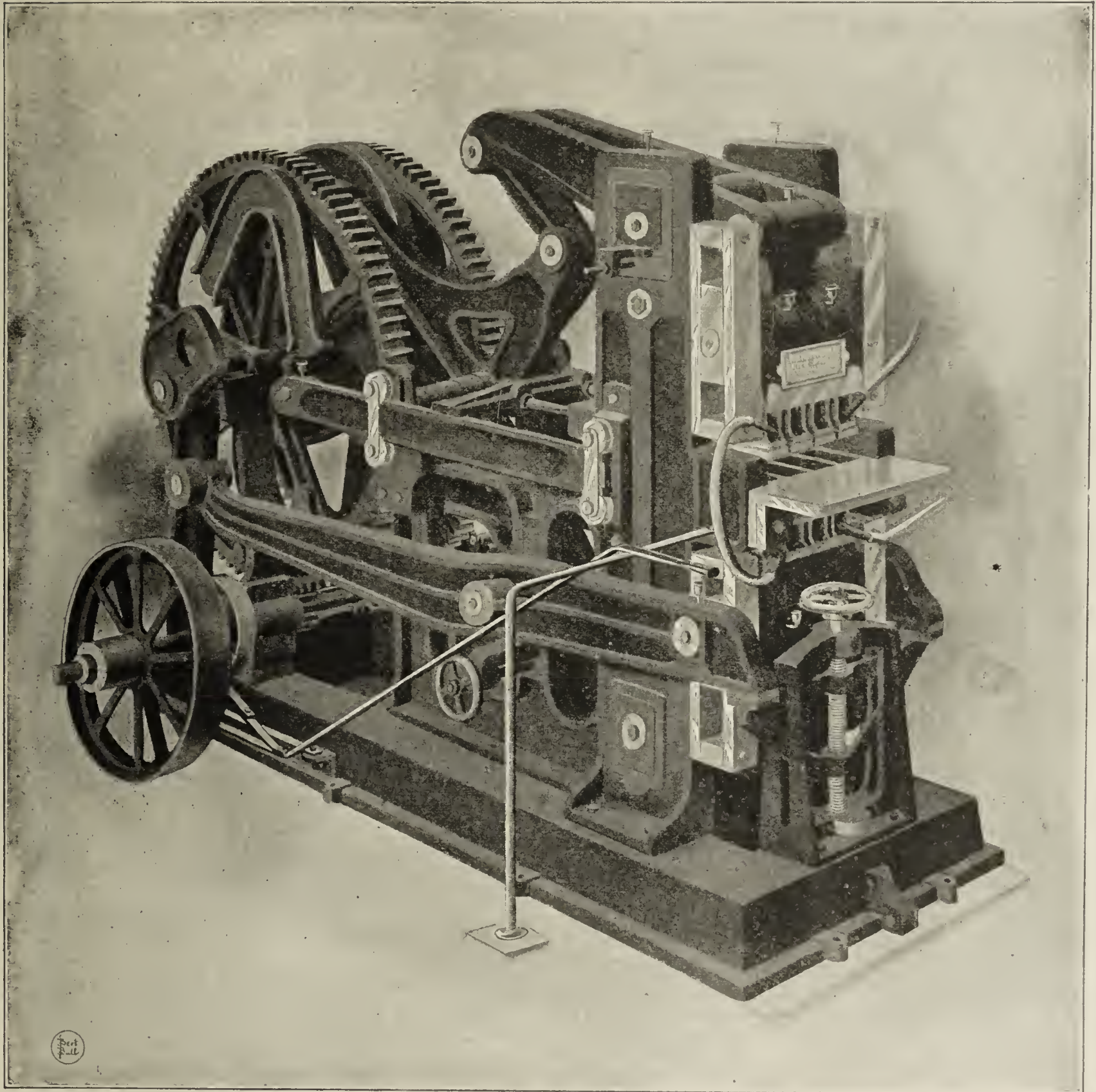
A POSTAL WILL BRING ITS DESCRIPTION AND PRICE.

THIS IS THE PRESS THAT SCOTT BUILDS.

Scott Manufacturing Company,
421 Olive Street, St. Louis.

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.

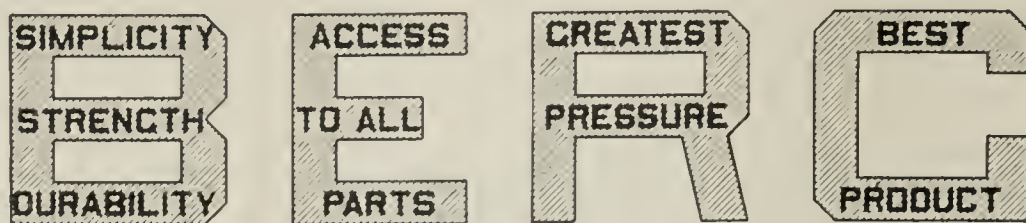


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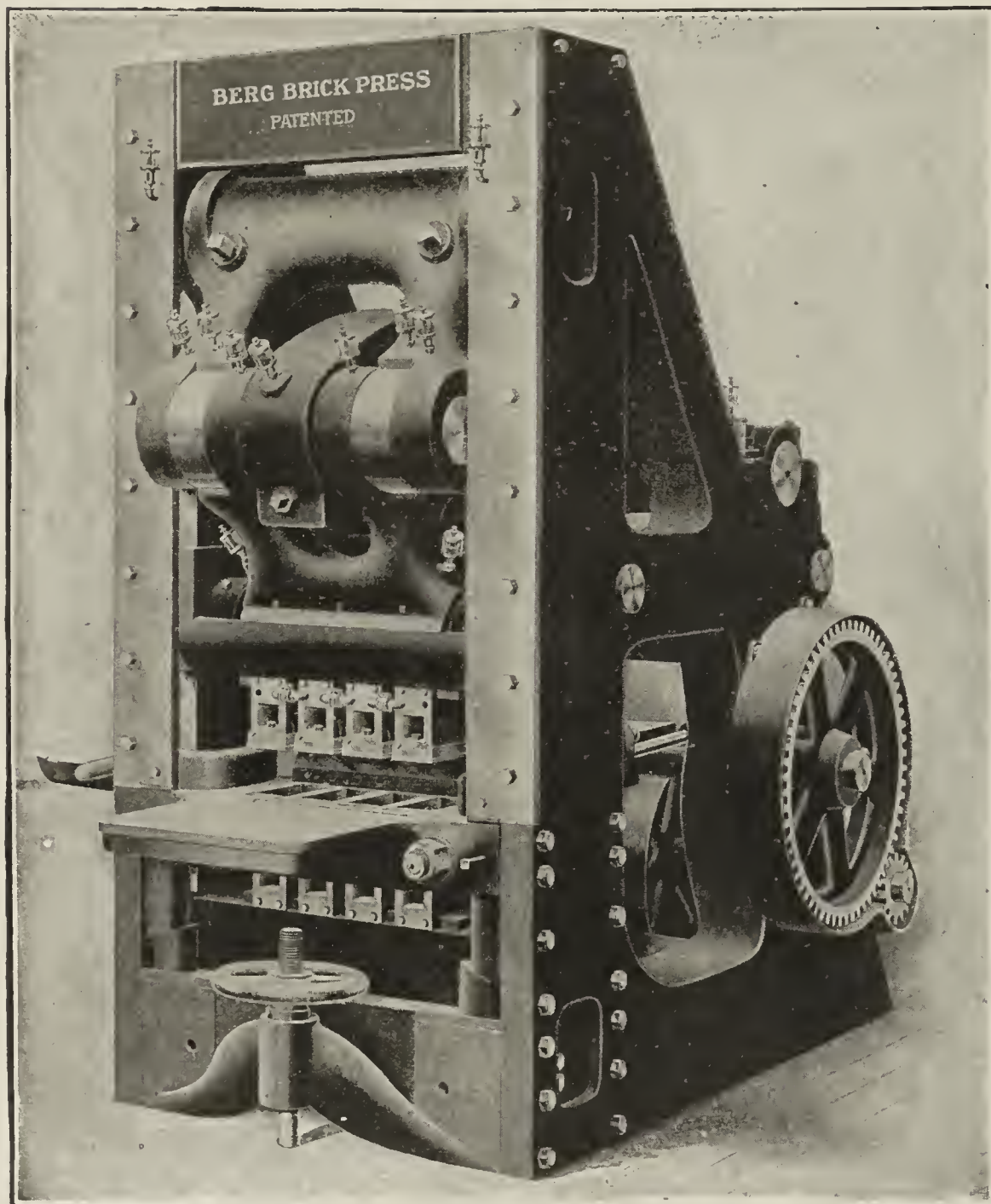
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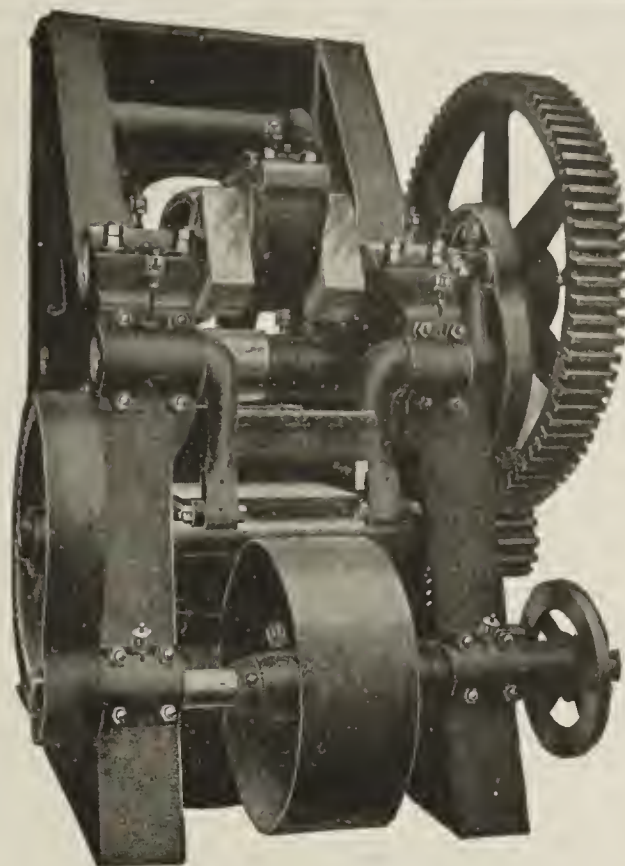
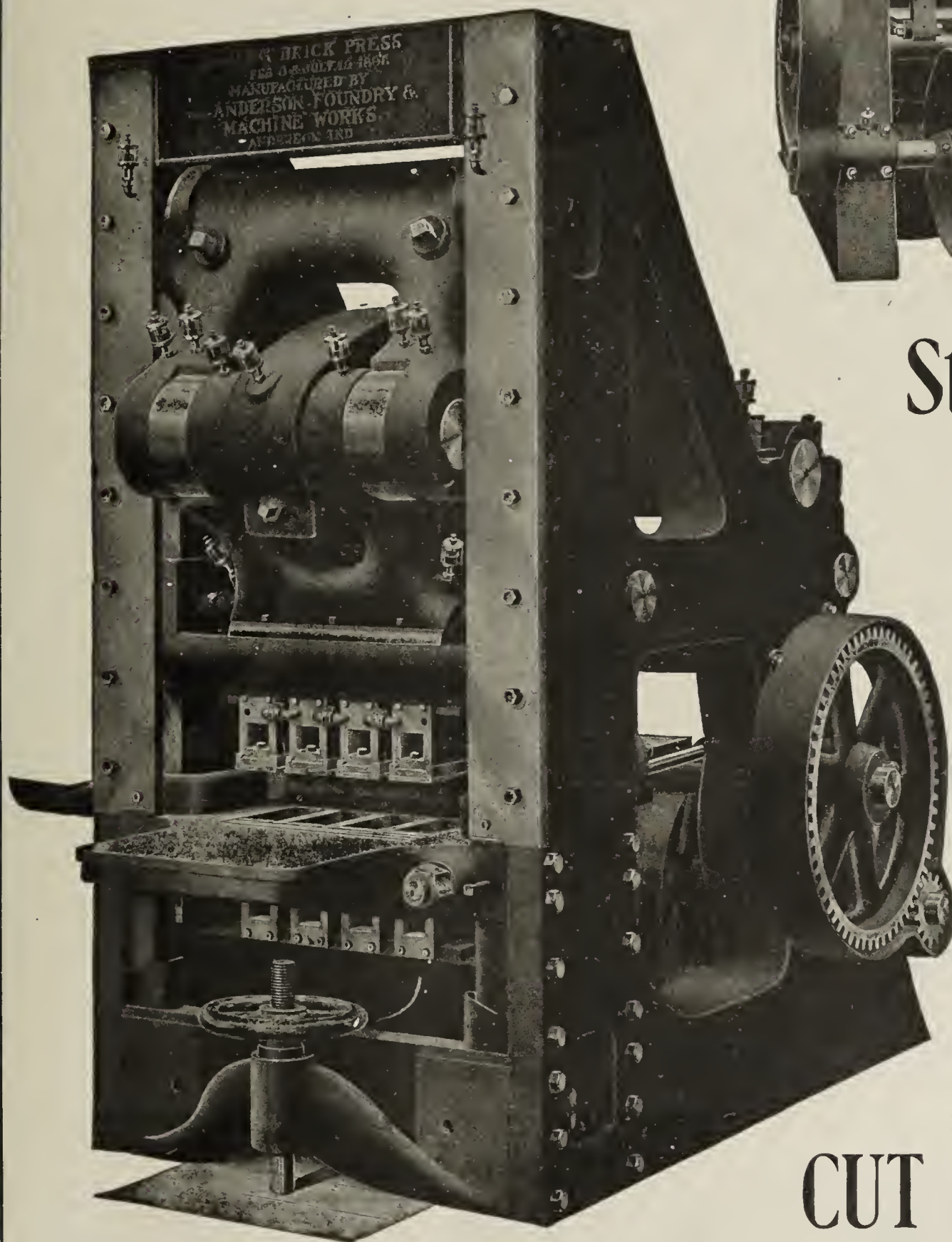
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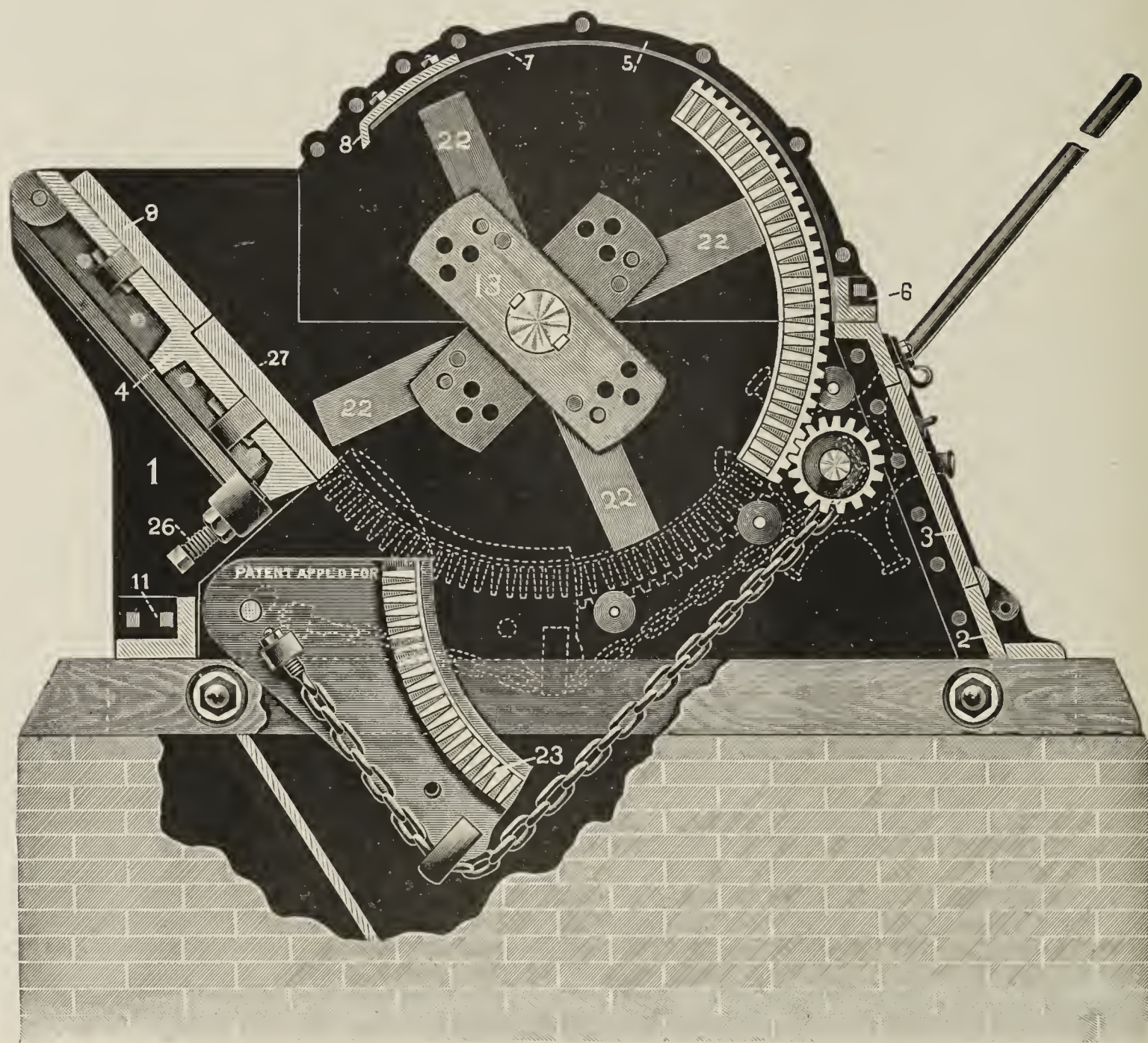
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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVIII.

INDIANAPOLIS, IND., JULY, 1907.

No. 1.

Written for THE CLAY-WORKER.

HISTORICAL SKETCH OF DECORATIVE TILE WORK.

By Charles James Fox, Ph. D.

IN SKETCHING THE HISTORY of decorative tile work, it is impossible to begin at the beginning because the art of baking clay into tile ante-dates our oldest historical records. The British Museum contains a memorial tablet on a

later became the teachers of their Roman and Turkish masters. The warlike Saracen carried the art into Spain, from whence it passed into mediaeval Italy. The Dutch tile-makers, learning the art in Italy carried it to Holland, and their successors establishing themselves in Lambeth, introduced the art into the British Isles, from whence it naturally came to America. Thus introduced around the world the tilemakers' craft has reached its highest development in those localities where suitable clay deposits, favorable en-



Tile Decorated House of the Tragic Poet, Pompei, a Relic of the Eighteenth Century.

tile made in Babylon about four thousand five hundred years before the Christian era. All through the early civilization of Babylon and Egypt the modern archaeologist finds indelible traces of the ornamental tilemakers' craft. Arts are more easily learned than invented, and it is generally believed that the Asiatic tilemaker, migrating to Egypt, taught his craft to the Egyptians, who in turn passed it on to the Greeks, who

environment and artistic propensities are found to the greatest advantage; while in countries where stone and marble abound and clay deposits are scarce, ceramic products in building materials are rare.

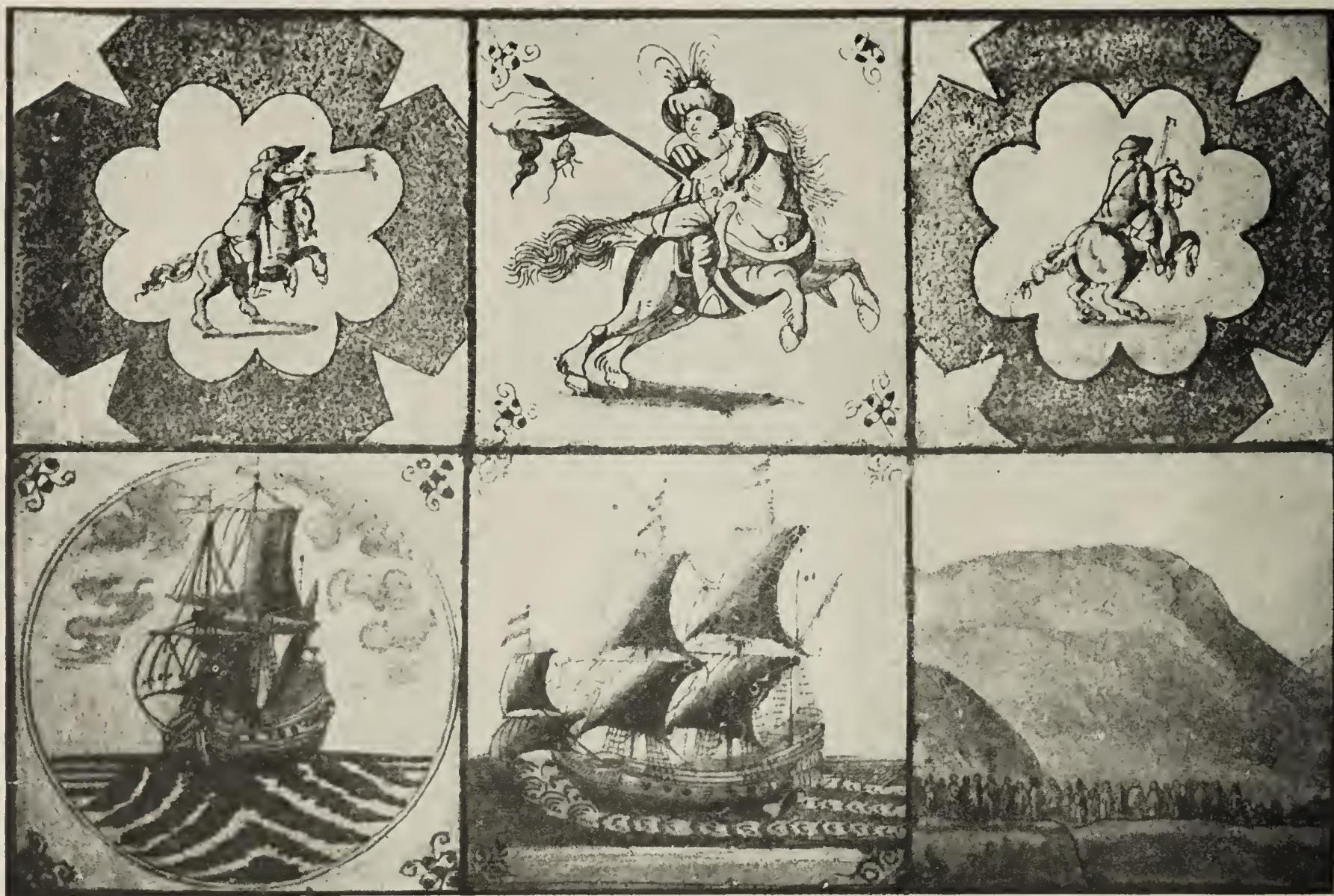
Babylon has been aptly described as architecturally and artistically a creation of the potter. Excavations around Babylon have brought to light many examples of tile work

remarkable for its age, its beautiful geometrical design, its remarkable brilliancy of color and its extreme durability. A famous comparison of the durability of Babylonian ceramics with that of stone found in the same locality was made possible a few years ago by the discovery of a colossal stone lion among a pile of bricks and tile. All the sharp angles of the stone were worn and the features of the animal and of the human form beneath his paw were completely obliterated; while the sharp and clear angles of the bricks or tiles made them look as if they had been removed from the kiln but yesterday, instead of four thousand years ago.

Although in Assyria clay was comparatively scarce and stone plentiful, the Assyrians having learned the ceramic art from their Babylonian neighbors, practiced it rather extensively in their buildings. Wall tiling especially was frequently used in houses. Among the discoveries of Assyrian ceramics one of the most remarkable was that of some highly colored glazed bricks which have retained all their brilliancy

It is generally regretted by ceramic artists that the early Greeks who brought every craft they attempted to the perfection of a fine art should have utterly neglected ceramics. To the early Greeks tiles were practically unknown, and when this remarkable people finally turned their attention to ceramic art they had already passed under the dominion of Rome, and many of them as Greek colonists on the shores of Italy became at once Roman subjects and Roman teachers.

Imperial Rome gave to the world the most prodigal example of architectural magnificence. Superluxurious buildings, lavish with extravagant interior embellishment, became a passion of patrician and plebeian alike. To the decorative tile maker the most striking feature of Roman architecture was the magnificence of their elaborate mosaic floors and pavements. Among hundreds of examples of these remarkable mosaic pavements is a mosaic known as Pliny's Doves, taken from Hadrian's villa near Tivoli, and now to be seen in the Capitoline Museum, and a large mosaic taken from



Delft Tiles; Examples of Ware Made in the Seventeenth Century.

to this day, notwithstanding the lapse of twenty-five centuries.

The most ancient predynastic antiquities of Egypt date back to about 5000 B. C., yet even among the ruins of this remote period are found evidences of the use of glazed tile work. Although the indications of the early practice of decorative ceramic art in Egypt are meagre, their significance is none the less important. One of the oldest examples of an Egyptian tile is that belonging to Dr. Petrie in England. It is a small tenoned tile covered with a turquoise-blue glaze. It dates from about 4700 B. C. The new museum at Cairo and many European museums and private collections have numerous specimens of decorative glazed tile work made by the ancient Egyptians. Like all other ancient tiles, they are remarkably well preserved, retaining even their extreme brilliancy of color.

the baths of Caracalla representing fighting gladiators, now on exhibit in the Lateran Museum. The miraculously preserved mosaics of Pompeii, as well as numerous ones found on the floors of Roman villas in France, Germany and England, all give positive proof of the remarkable degree of perfection attained by the Romans in the making of mosaic floors. From the ceramist's viewpoint it is a noteworthy fact that in these mosaic floors the marble portions are decidedly worn, while the tesserae of baked clay used to form the red, buff and brown of the floors were in almost perfect condition.

The art of decorative tile making, originating in Babylon, or perhaps in Egypt, seems to have spread eastward into Persia. Several remarkable ceramic friezes have been found among the ruins of ancient Persian cities, but their striking similarity to others found in Babylon suggests that these

friezes may be the spoils of Persian warriors, rather than the creation of Persian artists. About the twelfth century of the Christian era there was an artistic awakening in Persia, which found noteworthy expression in Persian ceramics.

Today the museums of Europe abound in examples of Persian tiles dating from the thirteenth century, which, owing to their superiority of materials, delicacy of design, beauty of coloring, and perfection of finish are declared to be the most beautiful ever made. These tiles were generally used for the decoration of mosques, shrines and tombs of saints of the Mohammedan faith. Around the central figures were usually borders consisting of written passages from the Koran. The golden tint pervading the whole surface, often combined with a shade of blue, gave to the designs a peculiar softness and charm. The mediaeval Persian art of making tiles is unfortunately lost.

Syrians, Saracens, Arabs and especially the Turks have given the world some beautiful examples of ceramic art, each displaying more or less the national characteristics of the artist.

The warlike Moors, described by Washington Irving, as



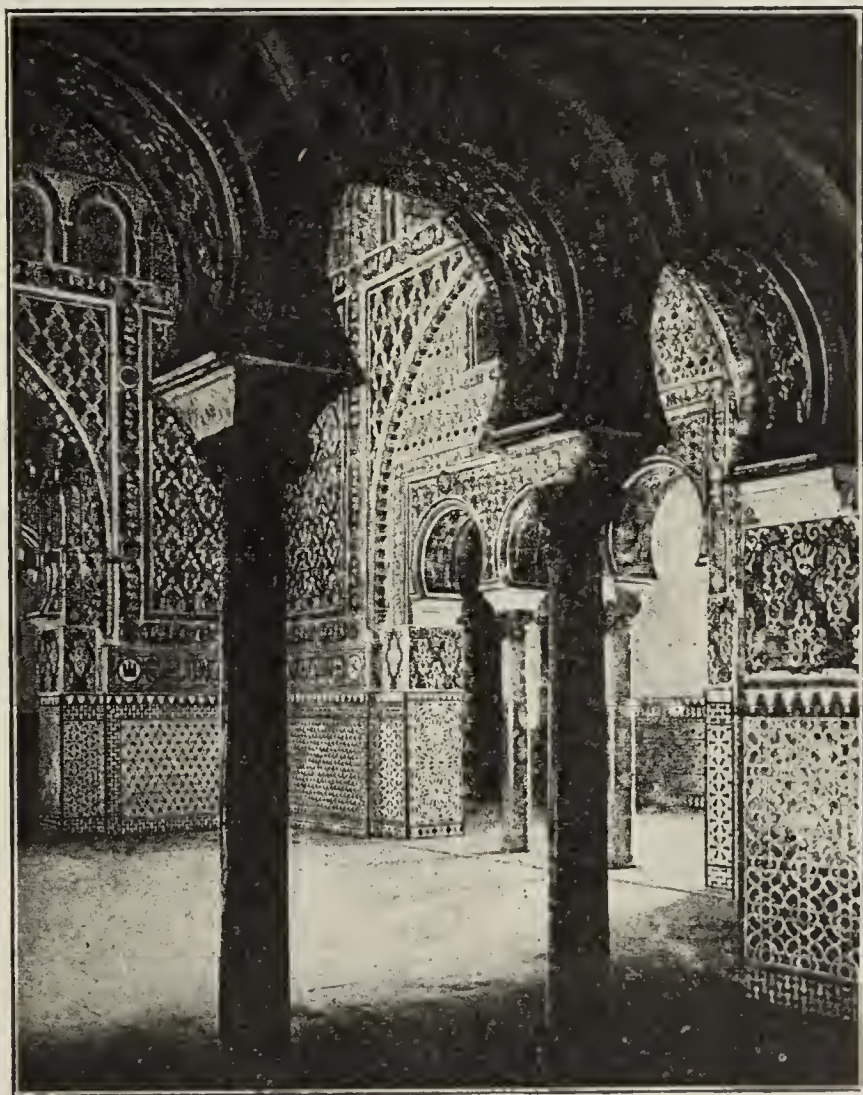
"Beware the Dog," a Mosaic from Pompeii.

a nation without a legitimate country or a name, a remote wave of the great Arabian inundation cast upon the shores of Europe, brought with them to Spain an intimate knowledge of the ceramic arts. The world famous Alhambra is noted for its gorgeous mosaics, which are striking examples of the Hispano-Moresque art.

Among the mediæval crafts of Europe that of the tile-wright held an important place. In England during the thirteenth, fourteenth and fifteenth centuries, ornamental tiles, known as monastic, encaustic or Gothic tiles were used extensively for pavements in the interior of English abbeys and churches. Many of the monastic establishments had kilns for burning these encaustic tiles, upon which the monks traced armorial, pictorial and symbolical designs. The zealous industry, immense wealth and exquisite taste of the Norman prelates in England had much to do with the development of this art.

The Italian mediaeval and renaissance periods are rich in exquisite ceramic productions. The crusades of the Pisans against the Balearic Isles in the early part of the twelfth century, together with the commercial relations of Florence and Genoa with the Moors of Spain, brought the Italians under the influence of the Moorish artists, and it was not long before the Italians were importing, imitating and emulating the ceramic as well as the silken productions of the Moors. In a short time the Italian tilewrights began to impress their national characteristics upon their craft. With the advent of Luca della Robbia, sculptor and ceramist, born about 1400, the craft was raised to the dignity of a fine art. Della Robbia's ceramic creations as well as those of subsequent members of the family, held the admiration of all Europe, for a century and a half.

In Germany from the twelfth to the sixteenth century most of the tiles in use were mainly square, unglazed, monochrome tiles in which the surface designs were formed by simple line indentations. The designs were elementary, but had usually symbolical or heraldic significance. Later ornamental glazed tiles were extensively used for stoves, and



Hall of the Ambassadors in the Alhambra, Granada, Spain.

the famous glazed tile stoves of Nuremberg became famous throughout Europe. The museums on the continent contain many examples of these artistic stoves.

In mediaeval days in France a kind of ceramic art was employed in the manufacture of varnished pottery tiles for use similar to the English monastic tile. At Caen in Normandy a tiled floor of a convent belonging to William of Normandy was discovered just previous to the French Revolution. These tiles were of baked earth, and although the rooms had been used as graneries for nearly four hundred years, neither the dampness of the wheat, the turning or shifting of the grain, nor the wooden shoes and spades of the peasants constantly employed in bringing in and cleaning the wheat, had in the least degree damaged the floor or worn off the painting of the tiles. In the actual process of making the tile the French artists copied the Italian, but in the style and the composition of the ornamentation their work

was essentially French. The greatest name in French ceramics is that of Bernard Palissy, who was born in 1580. His acquired technical skill, his natural artistic inclinations, and his thorough knowledge of natural history combined to make him the most noted ceramist of his time. He was employed by King Henry II to decorate the chateau at Ecouen, which is today the most elaborate monument to this artist's skill. Having embraced the principles of the Reformation, the great ceramist died for his faith in the Bastille. Palissy's work was characterized by figures and ornaments upon historical and allegorical subjects, represented in relief and unusually bright colors.

In the seventeenth and eighteenth centuries the Delft tiles of Holland became famous throughout Europe. Early in the seventeenth century Herman Pieters started their manufacture in Delft. In 1620 there were eight factories in the town and half a century later there were twenty-eight. The decoration on these tiles was usually blue, but often violet brown,



Babylonian Memorial Tablet of About 4500 B. C

and the subjects were frequently religious. Polychrome tiles were uncommon. Glazed Delft tiles were used extensively for decorating fireplaces and walls. The general superiority of Delft tiles over others made by the same Dutch workmen was due to the excellence of the mixture of clay adopted there, which gave the body of the ware the right porosity to deposit the proper thickness of enamel, and produced a contraction during firing which was in absolute sympathy with the enamel, thus avoiding all cracking or crazing.

Certain Dutch makers of Delft tile came to Lambeth, England, in the early part of the seventeenth century. One of them, Van Hamme, was granted letters-patent to make tiles; to him the beginnings of the modern English tile industry may be traced. These tiles were known as English Delft, and were made in Fulham, Bristol, Liverpool and in other English and Irish cities.

Little or nothing was done in the tile industry in England

during the first quarter of the nineteenth century, but from that time on, owing to several technical improvements in the manufacture of tiling, combined with the business skill of several Englishmen who devoted all their energies to building up the industry, the present large tile works, located in the districts where clay and coal are plentiful, were founded and their products given out in response to an ever-increasing public demand.

The American tile industry is of far more recent date, and can trace its beginnings back little more than one generation. Owing to the great demand for its products, it is rapidly assuming the proportions characteristic of our American "Infant Industries."

With the rise of the modern industry our story passes from the historical and artistic to the eminently practical and useful. Although Babylonia, Assyria, Egypt, Persia, Spain, Italy and France have produced remarkable examples of the architectural use of tiles, there is no period in the past where the use of decorative floor and wall tiling has been so gen-



Mediæval Tilemaking, From an Old Print.

eral as at present. Decorative tiles and faience are no longer reserved exclusively for palace, mosque, or cathedral, but are found in one form or another in every public or private building worthy of the name in Europe and America. The decorative, durable and hygienic features of the tile have forced themselves upon the attention of the architect, and what was but a few years ago looked upon as an artistic luxury, is now regarded as an architectural necessity. Tiles are now a building material, rather than a mere decoration

DRAWING THE LINE.

Architect—"And about the drawing-room, sir?"

Newrich—"Now, look 'ere, I've let yer put in a billiard room when I can't play billiards, and a reading room when I don't like reading; but when it comes to putting in a drawing-room, when I can't draw a line, I object. It's a bit too thick; I want a house, not a home for artists."—Carpenter and Builder.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



THE BUILDING situation in San Francisco looks better than might have been expected in view of the financial stringency. This applies principally to the loaning of money for the purchase of real estate and for the erection of buildings. As high as 9 and 10 per cent. has been paid recently by local business men who had to borrow money in order to carry out their building projects. There is naturally a great deal of money in circulation in a city where many thousands of mechanics are working at the highest rates of wages paid in the United States, but when large sums are needed for new buildings or business projects it is not as easy to secure the coin. J. D. Phelan, ex-mayor of San Francisco, has returned from an eastern trip which resulted in over \$4,000,000 of money from the East being loaned for the purpose of constructing buildings in this city. The new Phelan building, which is being erected on the site of Mr. Phelan's old office

ago, but the nominal price is still about \$15. A few contracts for brick are held up owing to the inability of some contractors to secure from the banks the money needed to pay for the brick. The brick manufacturers are now very cautious about taking contracts for brick on this account, but they are not slacking up on the work at their plants. They are confident that all of the brick they can turn out this season will be needed sooner or later for the rebuilding of San Francisco.

Railroad transportation in the territory surrounding San Francisco Bay has improved of late, and good dispatch is given from San Jose, Richmond and other points to the city. Water transportation is now used considerably, and there is more room for brick on the wharves than formerly.

The Carquinez Brick and Tile Company's fine new plant at Eckley, Contra Costa county, is now in commercial operation, and is doing very well. A fine quality of common red brick is being manufactured at present from shale. A plant for the manufacturing of terra cotta will be installed later.

The Sacramento Brick Company has been shipping heavily by water to San Francisco on old orders, but is holding off in regard to taking new orders until building conditions become more settled.

The Alexander Brick and Terra Cotta Company has been



Tile Setters in the Sixteenth Century.

building, on Market street, between Grant avenue and Stockton street, will cost nearly \$2,000,000, according to estimates.

The construction of new buildings, aggregating possibly \$8,000,000 in cost, has been temporarily held up on account of tight money, high wages, etc. The strike situation has improved, however, and prices of building materials have already declined considerably. Instead of over 30,000 men being on strike, less than 4,000 are now out. The street car strike is practically broken and will not last much longer. The iron workers are again in the shops and there will be no interference with building work from that source.

The management of the Standard Portland Cement Company and the Santa Cruz Portland Cement Company, with a combined capacity of 8,500 barrels of cement per day, have announced a cut in price to \$1.75 per barrel, f. o. b. factory, as against a price of \$2.25 a short time ago.

The retail lumber dealers have officially ratified the \$10 decline of fir lumber from, say \$32 to \$22 and \$20 a thousand feet.

Brick are not in so great a demand as two or three months

in operation for several months, and the plant at South San Francisco is being enlarged very rapidly. The present output of the works is 75,000 bricks per day. These include common brick of very superior quality, stock brick and clinker brick. The latest modern machinery is being installed and the most approved methods of manufacturing are being adopted. When the additional equipment that is being installed and under contract is in operation the brickmaking capacity of the plant will be increased to 200,000 bricks per day. A Fate machine is used among others. A pressed brick machine has been installed but is not used at present. The new Hoffman kiln, which is being erected, will have a daily capacity of 65,000 brick, making it the largest kiln in the state. A Raymond 999 special brick machine has been ordered. The company will have 600 dryer cars when the remaining 250 of a recent order for cars have been completed. There are 30 drying tunnels in the plant besides a number of open kilns, in which oil fuel is used for burning. The main plant is arranged so that either oil or coal can be used. Oil and screenings are in use now. The output of the company is

sold ahead for some time. Deliveries will be commenced soon on an order of \$2,000,000 brick for lining the granite exterior walls of the new five-story Custom House in San Francisco, which will cost about \$1,500,000 when completed.

An order of 2,500,000 brick is being filled for the new plant which is being erected by the Selby Smelting and Lead Company at San Bruno, Cal. This concern is now controlled by the Guggenheims of the American Smelting and Refining Company.

Enormous quantities of brick and architectural terra cotta will be required during the remainder of this year for the erection of the buildings that are already under contract, and millions more for those in plan which will be commenced as soon as the industrial situation improves.

The new Tourist hotel, which is to be erected overlooking Lake Merritt, in Oakland, will require a great deal of brick. A syndicate of bankers has raised the funds for this enterprise, amounting to about \$2,000,000 in all. The new Palace hotel on the old site in San Francisco will also call for a large outlay for brick. It will cover a very large city block to a height of eight stories, and will cost about \$3,500,000. The excavating for the foundations has been completed. A portion of the massive brick foundations of the old Palace will be utilized, but many concrete piers will be put in.

To give an idea of the great demand for clay products here, it may be mentioned that two car-loads of enameled tiling and firebrick were brought out from the East this summer for use in setting up some new bake-ovens. The freight amounted to \$200 per car, and yet the oven builder says that he saved money by ordering the materials in the East. Prices here have dropped a little since then, but the local manufacturers of firebrick and tiles are sold ahead. SUNSET.

San Francisco, Cal.

THE HISTORY OF TRADE SCHOOL EDUCATION.*

By Anthony Ittner, St. Louis, Mo.



HIS IS THE FIRST general gathering in this country in the interest of industrial education through trade schools, and as such, should mark an epoch in our country's history; and let us here resolve that henceforth industrial education, as given in trade schools, shall be as universal, unlimited and free as our common school education now is.

Knowing how important it is to be brief on account of the many speakers that are to address you, I will confine my remarks to but one phase of the subject—that of the proper kind of industrial education and the importance, after it is once inaugurated, of its being continued in such a way as to accomplish its purpose and insure the fullest measure of its usefulness.

In keeping with this idea, we will first proceed by pointing out the lamentable failure made by the Commission on Industrial and Technical Education appointed by Governor Douglas in May, 1905, and of which so much was hoped and expected.

In what we have to say we shall confine ourselves to the record and quote from their own printed report, submitted to the Senate and House of Representatives of the State of Massachusetts May 24, 1905. We quote from pages 6 and 7 of said report, as follows:

The Commission was not able to learn that even the people who are most interested in industrial education have any definite ideas as to its proper scope or method. One or two carefully considered plans were presented, and some practical suggestions were offered by Mr. Charles F. Warner, principal of the Technical High School in Springfield, whose communication is appended. With these exceptions, when the question was asked, "Have you any plan to propose for meeting the need of which you speak?"

* Paper read before the Citizens' Trade School Convention, held at Indianapolis, Ind. June 11, 1907.

The answer was, "I have not thought so far," or "I leave that for the Commission to decide."

The Commission early became aware that its purpose and work encountered the suspicion and hostility of many of the labor unions of the state. This was expressed by individual members and by accredited representatives, and was evidently due to misapprehension. It was suspected that the Commission was created to formulate a plan for trade schools supported at public expense. The opposition to such schools is based on the fear that they would furnish workmen in numbers sufficiently large to affect the labor market, and bring about a lowering of wages. These schools are also opposed on the ground that they might furnish workmen ready to take the place of union men during the existence of a strike. "Scab hatcheries" is the significant term by which such schools are characterized. To such schools the labor unions declare themselves totally and unalterably opposed.

The objection urged by the unions is fully met by the closing paragraph of Sir William Mather's address?

"Please take notice of what I said about the avoidance of teaching a trade to the extent of causing a lad to say, after leaving the industrial school, 'I am a printer,' 'I am a cotton spinner,' 'I am a me-



Anthony Ittner, St. Louis, Mo.

chanic or a carpenter.' In the first place, it is detrimental to the lad's own interests. He becomes somewhat conceited before he has got through the proper training by actual practice. It tends to deterioration of skill and intelligence in trades, which can only be fully acquired through work done on a commercial scale. It will tend to discredit industrial education."

"To technical schools in distinction from trade schools the Commission found little opposition. In fact, many of the union men expressed themselves heartily in favor of schools which would offer to men already engaged in industries the opportunity to broaden their knowledge of the principles of their trade. This would tend to increase the efficiency of the workers in a given trade, while the closed door was maintained against outsiders."

"The Commission was not able to learn that even the people who are most interested in industrial education have any definite ideas as to its proper scope or method." It is quite evident from this paragraph that the Commission did not reach out beyond the confines of their own state, and that it was careful to keep in close touch with closed shop unionism throughout the period of its labors, and that they did not reach and did not try to reach "the people who are most interested in industrial education."

Again the Commission in speaking of regular Trade

Schools, says: "These schools are also opposed on the ground that they might furnish workmen ready to take the place of union men during the existence of a strike. 'Scab hatcheries' is the significant term by which such schools are characterized. To such schools the labor unions declare themselves totally and unalterably opposed." This is perfectly awful, isn't it? Just think of the terrible situation and the great crime of foisting "scab hatcheries" on an innocent and unsuspecting people! And now, please note how the members of the Commission throw themselves into the breach and come to the protection of the unions. They say: "The objection urged by the unions is fully met by the closing paragraph of Sir William Mather's address,"—the remarkable paragraph which we have quoted. What was this but a complete surrender to closed shop unionism? Sir William's plan would divest industrial education of every trace of practical value in order to allay the unalterable opposition of labor unions.

Again, "To technical schools in distinction from trade schools, the Commission found little opposition." The wonder is that there should have been any opposition, for so far as we are advised, no method or system of industrial education, except that which is intended to turn out finished skilled workmen, as in the case of regular trade schools, has ever met with opposition from labor unions; but to this latter kind of industrial education they will not consent. To use the language of the Commission, "To such schools the labor unions declare themselves totally and unalterably opposed."

Were it not for the fact that this gathering is wholly and solely in favor of just such schools as this, I would not be here today. So far as preparatory industrial schools, such as technical and manual training schools are concerned, they are fully and amply provided for under the educational system of our principal cities, and by the liberality of some of our public spirited citizens, and to them there is no hindrance or opposition from any source.

But what we are interested in, is "Trade Schools,"—trade schools pure and simple, wherein the youth of our country can be taught trades, and from which they can be graduated fully fledged, finished mechanics, prepared to enter the skilled industries and hold their own creditably alongside of skilled workmen from anywhere and everywhere.

We might quote further from the Commission appointed by Governor Douglas, such sentences as "We anticipate the active co-operation of organized labor in our plan," and "two years of training which will shorten the apprenticeship;" "preparatory schools," etc., etc.,—but why quote further? What good, pray let us ask, will preparatory schools and two years' training do the boy when the opportunity to finish his trade through an apprenticeship in the old way is closed against him, as under the present limitations on apprenticeships enforced by labor unions not more than one in a hundred could possibly secure the opportunity to finish his trade, so that the time spent in the preparatory school would be worse than wasted.

We do not wish to say anything unkind toward this Commission, but candor and honesty impel us to declare, far better were it for practical industrial education had the Commission never existed. Let no one speak a word or do an act in the interest of practical industrial education unless he expects to incur the total and unalterable opposition of organized labor. It behooves every one who enters upon this grand and good work in the interest of the American boy to know what he is up against, and just to the extent that those engaged in the furtherance of practical industrial education through regular trade schools meet with the opposition of organized labor, can they be assured that they are working along right lines, and feel encouraged to continue in the good work.

There is another feature in connection with labor union opposition to real trade schools that should be mentioned here since being forewarned is being forearmed, and that is the disposition of organized labor to place trade schools on the low level of penitentiary, in fact a lower level than some of our penitentiaries, in that a student in such schools is not allowed on convenient and special occasions where it may be agreeable to the parties interested, to do work outside of the schools in the regular industrial pursuits, nor is anything made in the schools allowed to be sold for use outside of

the school. I mention this in shame and mortification for my fellow countrymen.

In this connection it may not be out of place to make the inquiry—Is this a free country? And me thinks I hear someone answer, "If the above statement be true and such a condition really exists, then I consider the country too free; for any condition that permits or allows one class of our citizens to tyrannize over and enslave another class is not in harmony and consonance with the institutions of our country, and can be enjoined and estopped by a resort to the courts of the land, established for the protection of every citizen in his constitutional rights." These questions will have to be met, and it is well to know where we are at, and this is my purpose, as I have said, for mentioning them here.

It would be much pleasanter not to have to mention these matters, but the truth of history, however unpleasant, must be written by some one, especially when it is so important in our relation to the future of our country, and the welfare of the young men who are to compose our future citizenship.

Since writing the foregoing, I have been favored, through the courtesy of Prof. C. R. Richards, Secretary of the National Society for the Promotion of Industrial Education, with the report of the Commission on Industrial Education appointed by Gov. Guild, of Massachusetts, August 31, 1906. I have read the report over carefully and find that the tenor and trend of their report is along the same lines as that of the Commission appointed by Gov. Douglas in May, 1905. I shall give a few short extracts from this report to show how nearly it harmonizes with the views of the Commission appointed by Gov. Douglas:

"The present Commission has entered on its duty without fixed motion as to the form which industrial education should take throughout the state, and is taking pains to develop such schemes of industrial education as precise needs and local conditions call for."

"The present commission finds itself in substantial accord with the conclusions reached by the preliminary commission."

This reference, of course, is to the commission appointed by Gov. Douglas, of which the Hon. Carroll D. Wright was chairman.

"As to the attitude of the employes in our industries throughout the state, the commission feels that while on the one hand there is a feeling of doubt and even distrust in the minds of many of them with regard to some of the aspects of this movement, yet, as a result of efforts made by the commission to reach the workingman's point of view through full consultation, the members of the commission are unanimous in the belief that all that is vital and essential to a proper scheme of industrial education for Massachusetts can be and will be brought about not only without opposition on the part of organized labor, but in many cases with the active and interested co-operation of its representatives."

This shows conclusively the deep solicitude the Commission has for the friendship, aid and co-operation of organized labor in their work. Strange as it may appear, it is nevertheless a fact, that in no part of the report proper does the designation "trade school" appear in connection with industrial education, or in any other relation or sense. In Appendix "D," giving a description of industrial continuation, schools for jewelers and gold and silver workers apprentices of Munich, Germany, the name of "trade school" is used, and nowhere else.

So long as the Commission confines itself to the line of work mapped out by it and its predecessor, it need have no fear that it will not have the sanction and co-operation of organized labor; but let it once indicate its purpose to work for the establishment of trade schools with a view of producing finished, skilled workmen—and its members will not be long finding out where they were at, and what they were up against, and perhaps be better able to judge what employers generally, who insist on being free men in a free country, have to contend with.

There is no place in the act passed by the Massachusetts

legislature approved June 11, 1906, where the name of trade school appears, so that it would seem that organized labor has, up to this time, had as complete control of the legislative branch of the government of that state, as it has had of both commissions created by its authority.

Let us hope, however, that in due course of time the people of the State of Massachusetts will come to a realizing sense of the true industrial conditions and needs of their state and the country in general, and operate along rational lines to secure to the young men of our country a real, genuine system of practical industrial education that will give to every American boy with the desire and ambition to learn a trade, the fullest and freest opportunity to do so.

What I had mapped out to say on this occasion was largely formulated before receiving the announcement and program on the 5th inst., at which time I was made aware that the subject on which I was to speak was "The History of Trade School Education." Of course, we assume this means "Trade School Education in the United States," which is as yet in its infancy, but in Germany and other countries of the old world it has existed and been in successful operation for several generations.

The first trade school in this country, designated as such, was established by Col. Richard T. Auchmuty in 1881, and is known as the New York Trade School. This school was supported and maintained by Col. Auchmuty entirely at his own expense until 1892, when J. Pierpont Morgan made an unsolicited and voluntary contribution to the endowment fund of \$500,000. The school is laboring under some disadvantages on account of organized labor, and besides, in our opinion, does not meet the needs for such a school by reason of its being closed six months in a year; and if we take account of Christmas and New Year's holidays and other special occasions, the actual school period is only about five months, which, in our view, is not time enough for it to fulfill the purposes of a real, genuine trade school.

In a letter from Mr. H. V. Brill, general manager of the New York Trade School, written in 1905, he has this to say in regard to the action of labor unions against graduates of his school:

"If a trade school graduate made application and it was known that he attended a trade school, he would stand no chance whatever of securing admission. As you are probably aware, it is the aim of the unions to keep the number of workmen at a minimum, and in many of the trades apprentices are now debarred altogether."

The Hampton Normal and Agricultural School was opened in 1868 under the auspices of the American Missionary Association, and in 1870 it was chartered by a special act of the General Assembly of the State of Virginia, and then became independent of any association or sect, being a private corporation controlled by a board of seventeen trustees representing different denominations. This school was started for the purpose of providing a practical education for the children of ex-slaves. In 1878 it opened its doors to Indian pupils and has since that time devoted itself to the training of Negro and Indian youths.

In California they have two schools, both located in San Francisco—the California School of Mechanical Arts and the Wilmerding School of Industrial Arts. Both have regularly equipped trade school branches. The former was endowed by James Lick, a citizen of California who earned his living as a mechanic. In September, 1875, he executed a deed of trust by which he conveyed to certain trustees large amounts of property for various purposes, \$540,000 of which was to found and endow this school. The execution of this particular portion of his trust was delayed by litigation and it was not until January 3, 1895, that the buildings were completed and the school formally established.

The Wilmerding School of Industrial Arts was endowed by J. Clute Wilmerding, a prosperous merchant of San Francisco who died in February, 1894, and among other things in his will, provided for the endowment of this institution in the following words:

"I give, devise and bequeath, to the regents of the University of California the sum of \$400,000, upon

the following trusts and conditions, to-wit:

"To establish and maintain a school to be called 'The Wilmerding School of Industrial Arts,' to teach boys trades, fitting them to make a living with their hands, with little study and plenty of work."

Other features of the will empowered the regents to purchase lands and erect workshops and equip same with machinery, tools, etc., etc., and further providing that such expenditures should be kept within such bounds as that a portion of said \$400,000 thereafter remaining shall be able to produce an income sufficient to forever maintain and support the school; also authorizing said regents to invest said surplus funds in some reliable interest bearing securities.

These two schools are established on sites adjacent to each other and co-operate as far as possible. Both are now in charge of the same principal.

The trades taught at the Wilmerding school are carpentry, bricklaying, plumbing, architectural iron work, clay modeling and artificial stone work, wood carving, cabinet making, electric and architectural drawing. The Lick School is devoted mainly to the machinery trades, pattern making, model making, forge work, molding, machine shop practice, electrical construction, machinery and ship driving. During the current school year of 1903-4 a three-story brick addition, 40 by 90 feet, was built for the institution and all the work on it was done by the boys of the Wilmerding School. This is a complete refutation of the argument sometimes advanced by the opponents of the trade school system that the training received in such schools is not practical. It is a living monument to the wisdom and value of the system.

I wish to call your attention especially to the following language in the conditions of the trust made by Mr. Wilmerding: "To teach boys trades, fitting them to make a living with their hands, with little study and plenty of work." This statement of purposes on the part of Mr. Wilmerding was certainly not intended to underrate the value of theoretical education or to discourage any from acquiring it who are so situated as to be able to do so. But inasmuch as the essential purpose of a trade school is to teach boys trades, it was not his purpose to allow the institution founded by himself to dissipate and scatter its energies in the teaching of branches which belong to institutions of another kind. He therefore took especial pains to bring out clearly the distinction between book-learning and actual manual training, and left no doubt that it was his purpose to found an institution devoted solely to the latter kind of instruction.

This view expressed by Mr. Wilmerding harmonizes entirely with our ideas of conducting a trade school, and in inaugurating a system of trade schools throughout the country I would advise a strict adherence to this policy at the outset, in order that the greatest possible number of worthy young men might be afforded the opportunity to learn trades. Later on, when such schools have become universal and are able to accommodate all who desire instruction in the field of skilled labor, it might be well to unite a certain degree of theoretical instruction with the training of the hand. But this is a matter of detail which coming generations must work out for themselves in the light of the wide experience which the general establishment of such schools will afford. But the crying need of the present day is for schools which will devote themselves to the training of skilled mechanics who can step out of the school rooms into positions in which they can at once earn a livelihood.

The Pratt Institute, Brooklyn, New York, established in 1887, is an institution devoted mainly to art and science and higher education, but also teaches mechanical trades in its night classes, which classes are largely, if not altogether, attended by young men who are serving apprenticeships in some branch of their special industry during the day.

The Williamson Free School of Mechanical Trades, Williamson School P. O., Pa., also predominates in the arts and sciences and higher education, but in a three year day course, eleven months each year, carpentry, pattern making, bricklaying, steam fitting and electrical and steam engineering, and machine trades are taught. Whether it is intended to graduate finished workmen in these lines of the skilled industries, we are not informed, but from the length of time the boys are indentured—three years—and the continuous appli-

cation of eleven months each year, we should conclude that finished workmen of a high order would be graduated; in which case, to the extent numerically that this school graduates young men annually, it should be classified with the trade schools of our country.

The Baron de Hirsch Trade School, New York City, is a purely trade school, but does not presume to give anything more than a preparatory education, leaving the graduate to complete his trade in the regular industries—if he is fortunate enough to secure employment. The applicant for admission into this school must be sixteen years old, able bodied and a Jew. If after two weeks trial the candidate is found satisfactory, he will be enrolled as a regular pupil. The full course in this school is only five and a half months.

The Tuskegee Industrial Institute, Tuskegee, Ala., was established by Booker T. Washington, and is, as we understand it, intended for the use and benefit of young negro men and women only. This can also be classed among regular trade schools. Agriculture, domestic and mechanical trades are taught, in two and three year courses, and all graduates, both boys and girls, are graduated as complete and full fledged artisans in their respective lines. Mechanical courses for boys consist of carpentry, blacksmithing, wheelwrighting, carriage building, carriage trimming, harness making, painting, machinery, plumbing, printing, shoe making, bricklaying, brickmaking, saw milling, tinsmithing and tailoring.

The Boston Trade School for Girls has courses in dress-making, millinery, machine operating and straw hat making. The average length of time is one year. There is no division of labor, therefore all the pupils learn the various processes and on graduation are considered complete and perfect in all four of the lines taught.

The Massachusetts Charitable Mechanics Association Trade School, Boston, Mass., was organized in 1795 and incorporated 1806. Applicants for admission must be of good moral character, from seventeen to twenty-four years of age, and be able to read and write. All courses require three terms, covering a period of three years, with the exception of plumbing, which may be completed in two years of seventy evenings each. This class is largely dominated by young men who are serving apprenticeships in the plumbing industry. We have a letter from Mr. John W. Wood, Jr., director of the school, under date March 1, 1905, in which he says: "Trade unions in Boston and vicinity oppose trade schools as a unit. Some of our boys go to work as journeymen, while others do not. I cannot make any general statement as to this. Some of the finished work is retained by the boys, some is kept for exhibition; the remainder is destroyed."

We surmise that this school, like the New York Trade School, is largely dominated by the un-American and blighting influences of organized labor.

The trade school branch of the Winona Technical Institute, located in this city, established some two years ago, has gained quite an enviable reputation in this short period being designated in some sections as "the best Trade School in the United States." However true this may be, we will not now stop to question or argue, but speaking for myself, I am pleased to say it deserves and is entitled to be ranked among the best.

I had the pleasure of visiting this school last month, and was shown through the different departments in turn by Dr. Dickey and Prof. Smith, and am pleased to bear witness to the excellent work that was being done by all of the classes and especially by the boys in the foundry department, of which I feel myself more competent to judge, having had as a manufacturer, so much to do with castings in connection with needed repairs to machinery. I take pride in bearing witness to the excellent castings that were being turned out by the boys, and being informed by the foreman of the moulding shop that of three and a half tons of castings that were turned out on the day of my visit, not a single one was lost, all were good, and further, I can say with truth, that I never saw cleaner and finer castings turned out by any regular foundry with which I have had occasion to do business.

Dr. Dickey and Prof. Smith may well be proud of their

school, and the public be assured that it will be found among the leading Trade Schools of our country.

The Milwaukee Trade School.

This school was established and opened up during the past year under the most favorable auspices, largely through the energetic and untiring efforts of Mr. F. W. Sivyver, of Milwaukee. The school does not claim to turn out journeymen mechanics. The course in each trade is ten months, with the exception of plumbing and gas fitting, the course in which is five months. It is the aim of the school to place students in conditions as nearly allied as possible to those he will meet in actual practice. Boys applying for admission must be sixteen years old and have a common school education.

It affords us pleasure to state that the first distinctively trade school legislation enacted by any of our legislatures, was passed by the General Assembly of Wisconsin and received the signature of the Governor of that state in the latter part of last month.

The Philadelphia Trade School opened up in the latter part of last year. In a letter under date of the 1st ult., Mr. Wm. H. Odenatt, principal of the school, makes the following statement:

"Answering your question in reference to turning out finished workmen, permit me to say such is my purpose, so far as present facilities will permit. For instance, in carpentry and bricklaying, we cannot, in our present building, give the young men practice in scaffolding, but this is a very small matter.

"In the event of having a new building erected for use of the trades school, it will without doubt be so designed as to offer every facility to prosecute the studies of each trade in its entirety. With ample surrounding ground we may erect our own additional buildings as becomes necessary, thus presenting a practical field in which all trades taught in the school may be prosecuted under conditions such as the young men will find upon securing employment after graduation.

"I firmly believe a graduate of a trade school as compared with a young man just out of his apprenticeship will be the better man of the two, and the one who will be more in demand."

It will be noticed that it is the purpose of the management of this school to turn out finished workmen.

The man, who, above all others, deserves most of the credit for the Philadelphia Trade School being the first distinctively city trade school established in any of the cities of the United States, is Mr. Murrill Dobbins, a member of the Board of Education of Philadelphia, Pa., which had the honor of incorporating industrial education as a regular feature of the public school system of that city, to be supported and maintained out of the general school fund in the same way that other schools are maintained.

This, so far as we are advised, includes all of the schools that can be properly mentioned under the classification of industrial trade schools, or schools under any other name or names, wherein mechanical trades are taught. It may be possible that some that ought to be mentioned have been omitted, but these are all of whose existence we have learned.

A HERO IN A CLAY BANK.

The lives of several workmen at a Zanesville, Ohio, plant recently were miraculously saved by the bravery of the foreman, J. W. Casey.

The foreman was superintending operations in a shale bank, in which three or four workmen were engaged in digging out the shale.

There was a big rock weighing some hundreds of pounds, overhanging one ledge. The workmen were digging under this when the rock started to fall. The workmen never noticed it, but Casey did, and shouting a warning at the same time jumping to the rock. The workmen ran but they would have been struck and probably killed had not Casey, with rare presence of mind, thrown all his weight against the rock, and veered it from its course, so it missed the men underneath by only a hair's breadth.

Casey's hand was caught and badly injured. One finger was broken and several others were badly crushed.

Written for THE CLAY-WORKER.

TEXAS FIRE BRICK COMPANY, CORSICANA, TEXAS.



THIS IS A new company, organized last year by the Shwartz Brothers, of Corsicana, Abraham White and C. C. Wilson, of New York, to develop some exceptionally fine and varied clays in the lignite region in Bastrop county. Messrs. White and Wilson are prominent in the financial district of New York. The Shwartz Brothers are well-known business men, who have already successfully embarked in manufacturing. Their cotton mill at Corsicana is making money and they believe that there is a future in the manufacture of brick as well as of fabrics. So they have not only been quick to see the possibilities in the remarkable beds of clay on the land which they have leased near Elgin, but they have determined to spare neither effort nor expense to make their plant an efficient modern establishment in every detail, believing that it will pay them to have first-class equipment throughout. Nor do they expect to confine themselves to brick alone. The clays at their disposal will be found—so their chemical composition promises—suitable for many purposes, since one of them is an excellent quality of blue clay, another is a ball clay of unusual merit, another is a kaolin of high grade, another is said to be a shale which will vitrify readily. Manganese,



Texas Fire Brick Company's Plant at Lasher's Switch.

so useful in producing the mottled face brick, popular just now with many builders, is found in large quantities on their land; and there is a bed of lignite exposed here, too, which will be utilized later on.

This region has long been known to be rich in clays and lignites. At Elgin, a successful pressed brick plant has for many years turned out face and building brick which sells readily all over the state, and at McDade and Butler, pottery and furnaces for charcoal are also made. The land leased by the Shwartz Brothers is a tract of 2,000 acres belonging to Capt. C. Lasher, and lying about six miles east of Elgin on the Missouri, Kansas & Texas Railway of Texas.

Here, at "Lasher's Switch," a plant has been erected on a spur of the "Katy," and two kilns of brick have been burned in temporary adobe kilns, by way of testing the upper stratum of clay, and furnishing material to begin the construction of the permanent down-draft kilns. A machinery building with corrugated iron roof, a clay shed, an office, and a boarding house for the workmen, have been put up, and half a dozen houses and a blacksmith shop are in course of construction. Only one press, with its necessary equipment of dry pan, etc., is as yet installed; and from the (No. 1) buff-burning clay found just below the surface, a superior quality of face brick

has been burned. But it is the intention of the company to put in, almost immediately, a hand press (Raymond No. 3 Perfection brick press) suitable for making key, arch and wedge bricks, such as they will themselves need in the construction of the down draft kilns, and to make use of the most up-to-date modern inventions for saving labor in handling the brick.

Then just as soon as the kilns are ready, they propose to install machines for making hollow fireproof building tile, drainage tile and roofing tile, for they see a great future in these lines of products, which only a few plants in this region have as yet begun to make. No question, there will be a great demand, as Texas cities build up tall modern office buildings and hotels, for fireproof tile and terra cotta lumber, and at present there is, I believe, no plant in Texas to manufacture such products.

That they have the material necessary to make these valuable products, the Texas Fire Brick people feel assured. A report made on their clays by Mr. A. J. Kautz, of Chisholm, Boyd & White, says:

"The No. 1 clay burns a beautiful buff, is suitable for making a high grade buff brick and by adding the different minerals can make any mottled brick desired. Tests made from this clay have demonstrated no white or green



Mexicans Unloading First Kiln of Brick at Lasher's Switch.

effervescence shows on the brick through moisture. This bed of clay is about 400 yards wide and about one mille long, with an average depth of 43 feet.

"The clay marked No. 2," he goes on, "is chemically the same as No. 1, but taken deeper; this clay is more solid, and will," he predicts, "by burning or calcining in a greater heat, produce an excellent fire brick, suitable for iron foundries, boiler settings, etc."

The black clay, which he numbers 3, is a very pure ball clay, and burns a pure white. It is, of course, very valuable, since it is found in only a few places in America, and is usually shipped to our potteries from England or Italy. He estimates the vein here to be six feet thick, and to cover a space of six to ten acres; a sufficient supply to operate a large plant for many years to come.

Nor is this all. Sample No. 4 he found to be a fine grade of kaolin, very high in silica and suitable for making the very highest grade of refractory fire brick. It covers a space three-fourths of a mile square. A plant of large capacity, he esti-

mates, could run for a hundred years or more from this bed, and an excellent fire brick can be made by mixing with this clay some from the first bed, the buff-burning surface clay.

Finally, specimen No. 5 is a very high grade of shale, suitable for making front buff building brick, street paving brick, sidewalk brick, terra cotta lumber, machine made terra cotta. This material vitrifies readily and retains its shape, the principal body is aluminum and silica. This vein of clay is very large and inexhaustible.

Beginning then with the topmost strata of buff-burning clays, the Texas Fire Brick Company has already produced, even in an adobe kiln burned with wood alone, some very pretty samples of brick. Most of it proved to be a rich buff as expected, but where the heat was more intense the iron manganese, known to exist in certain parts of the bed worked, has been developed by the fire to produce as effective a mottled bronze as any I have seen from Kansas or elsewhere. It is, to my taste, a much handsomer brick than any of the artificially tinted manganese mottles on the market, for the color is more artistically mingled with the body and one can imagine the joy with which an architect would use these rich and varied materials—for the buff combines with the mottled bronze most effectively.

The clay beds now in use lie within 100 yards of the



Clay Plow at Texas Fire Brick Company's Plant. Oil Tank in the Distance.

plant. Clay plows and Quincy harvesters, made by the Central Iron Works, are used to gather it. It is stored in the sheds, which are 60 feet by 170 feet.

To prepare the clay, which is molded semi-dry, a Chisholm, Boyd & White dry pan of 20,000 capacity, is used, and a perforated screen, $\frac{1}{8}$ -inch by $\frac{3}{4}$ -inch and 1-16-inch. by $\frac{1}{2}$ -inch, which is provided with a canvas covering to keep the dust in.

The system of elevators is a convenient one, bringing the clay up to the third story and down to the press. This is a four-mold Boyd press, capacity 20,000 a day.

The kilns in present use are 15-arch temporary kilns, their sheds 60 feet by 28 feet. But the intention is to erect eight large down draft kilns with 60-foot chimneys, at the earliest date practicable. These will have a capacity of 560,000 bricks.

Mexican labor is used in most of the brick plants in this section, and is found very satisfactory, for these men are clever and deft in setting brick. The kiln just burned at Lasher, the day of my visit, had been set "8 over 3"—which

gives, the men say, a stronger draft than the common method of setting "5 over 2." Wood was used for watersmoking and oil for engines and burning. A Higgins patent oil burner, an inside mixer with a revolving spray, had been selected and could be used either with a gravity feed or with direct pressure. Oil from the Powell field in Corsicana is the fuel used. The engine is an Atlas of 125 h. p., so is the boiler, and it is run at 100 pounds pressure. Oil is used for the engine as well as for the kilns.

The plant was begun only last fall and is already receiving many inquiries for its products. As in this climate it is possible, with proper clay harvesting machinery and sufficient shed room, to run a brick plant every month in the year, the company anticipates a busy future for the plant they are putting in. About 40 men are now employed at the works.

The officers of the company are C. C. Wilson, president; Abraham White, chairman of board; Jos. Shwartz, vice-president; Kal Shwartz, secretary and treasurer. Their capital stock is \$300,000.

The opinion of Mr. Kautz, the clay expert already quoted, as to the future possibilities of this enterprise, is expressed in this statement:

"My experience in clayworking covers a period of forty years and in the last eighteen years I have been an expert on clay and have tested practically more than seven thousand different kinds of clay, so that I have handled and examined and tested more different varieties of clay than any other man



Texas Fire Brick Company's Temporary Kiln.

in the world. I have constructed some of the largest brick plants in America, Canada and Mexico, and from my long experience I have never come across a better location, where the natural product was so plentiful and the qualities so valuable, as variously described herein, and from my observation there is no reason whatever why your business should not grow to be one of the largest and most profitable of its description on the continent."

ETHEL HUTSON.

A Brick Motor Car.—A motor car used for the delivery of brick to buildings has in the last few months made its appearance on the streets of Berlin. The automobile has demanded a great deal of attention in as much as it is the first motor car using electric power which has been used for hauling heavy loads. The car has a capacity of 2,000 brick, weighing about 12,000 pounds, and the speed at which it can be operated is five miles per hour. The storage batteries are so arranged that the same can be interchanged, and will take about ten minutes to make the change. The automobile has so far given perfect satisfaction, and the company operating the same has given orders for additional equipment.—Bauker-amik, No. 18, 1907.

Written for THE CLAY-WORKER.

METHODS OF LAYING BRICK PAVEMENTS.

By A. S. Atkinson.



HE POPULARITY of vitrified bricks for pavements in some parts of the country is probably due as much to the methods employed by the contractors and engineers in laying them as to their quality. In half a dozen cities visited by the writer where brick pavements had been tentatively used and then abandoned, the fault was found to be with the laying rather than with the bricks themselves. Inexperienced contractors frequently get the jobs of laying bricks for pavements, and one such experience is often enough to convince the people of the inadequacy of the bricks to meet requirements. In the effort to reach a standard vitrified brick for pavement purposes, the very best results must be negated unless some attention is given to the methods of laying the bricks in a workmanlike way. Work of this character should fall to the lot of experienced municipal engineers and not to general contractors, who may build a sewer today, pull down old buildings tomorrow and dig trenches the next day.

One of the best examples of bricklaying I have examined may be seen on the Main street of Helena, Montana, and several of the adjoining streets. In 1905 over 18,000 square yards of vitrified brick pavements were laid down on Main street, but as the street railway company had to pay for some of the area, the total amount paid for by the city was 13,000 square yards. The cost to the city amounted to \$43,700, including the material and work, but not the engineering. This made an average of \$3.15 per square yard, which was divided up as follows: Brick pavement and sand cushion, \$1.79 per square yard, excavation 65 cents per cubic yard, removing old blocks, 2 cents per square yard; filling joints, 20 cents, and rolling roadbed, 10 cents. The concrete cost at the rate of \$5.75 per cubic yard. The bricks were made from a shale within the city limits, and cost \$20 per thousand delivered. Fifty-eight bricks laid one square yard of pavement.

The method of laying the bricks was to place them on a sand cushion of clean sand which cost 80 cents per cubic yard delivered, and then to roll them with a 2-ton horse roller before the joints were filled. At first a filler of equal parts of pitch and tar was used, but as this hardened too rapidly owing to the excess of pitch in it, a better filler was made of one barrel of pitch to three of tar. This was boiled for five hours until a proper consistency was obtained. The pitch thus obtained was hard and tough when applied to a brick, and not brittle when cold as frequently happens in a filler with too much pitch added. The pavement proved eminently successful when put down, and is in fine condition today.

Not far from Main street some one thousand square yards of brick pavement were laid on Sixth avenue in 1898. This pavement placed down nine years ago, was examined when the new pavement was laid on Main street. The surface was found in excellent condition, with few bricks broken, and the records showed that it had received little or no repairs. The only noticeable wear was on some of the edges, and this was not sufficient to warrant any renewal. Now this old pavement was put down substantially as the new pavement except that a sand filler was used instead of one composed of pitch and tar. If such good results could be obtained with a sand filler how much better must follow with the improved filler used today?

In comparison with these brick pavements in Helena the writer must contrast another laid in Bridgeport, Connecticut. In 1903 one thousand square yards of pavement were laid of vitrified bricks in one of the leading streets of that city. The contract was given to the lowest bidder, who had never before

laid brick pavement. Two years later the bricks showed such poor condition that repairs were made, and in 1906 the bricks were taken up entirely. When the pavement was removed an examination showed that the chief trouble was not with the bricks, which were of good material and properly made, but the foundation and manner of laying were the cause of the poor results. Only a sand filler was used, but that alone would not have caused the trouble. It was the foundation and the sand cushion. It was apparent that the foundation was improperly made, and the sand cushion had evidently never been rolled, or if so, it was the work of a novice. The bricks separated, cracked and chipped under use. The water formed depressions and gullies, and the whole pavement gave way. That single illustration brought discredit upon brick pavements in one city. It demonstrated more than anything else the need of a more standard method of building brick pavements which will make for popularity of this form of work.

A good engineer needs no information on how to lay good brick pavement. If he is skilled in his work he understands the necessity of forming a firm and lasting foundation on which the bricks can be placed. But the general contractor who bids for almost any kind of a city job should be made to conform to certain absolute rules of construction. A good many city street departments draw up specifications binding the contractor to do this work properly, but others have very loose rules regarding the improvement of streets and highways. It is in such towns that the manufacturers of vitrified paving bricks should make a stand which will in the end work to their advantage. They should in the interest of their cause require that the bricks be laid in a specified way or refuse to sell their stock to ignorant contractors.

Here is an illustration of a stand taken by an honest manufacturer of paving bricks in a small city of middle New York: There had been some spasmodic attempts to introduce brick pavements in the city, but all of the jobs were done by inexperienced contractors. The result was that bricks were getting into bad repute as a pavement. They constantly needed repairs, and some streets were abandoned after the pavements had been down a few years. Finally, in desperation, the manufacturers of the bricks appeared before the city authorities and offered to lay three blocks on a main street at no cost for the labor or engineering. The city simply had to pay for the bricks, sand, concrete and filler. With this went a five year guarantee that the pavement would prove all that the manufacturers claimed. At the end of the five years the pavement was found in excellent condition. The popularity of the pavement became general, and the manufacturers were petitioned to lay more "demonstration blocks." But they were not in the business for the love of the thing, and they made a counter proposition to lay all the pavements on a cost-plus-fixed-sum contract. That is the bricks, sand, concrete and pitch and tar were supplied at the market rates, and the labor of putting down the pavements charged according to prevailing wages. The company received for its work a certain percentage on the actual cost. This method proved so satisfactory to all concerned that the company has now the contract to build enough pavements to utilize the whole output of their brick factory. They do the work thoroughly and scientifically, for they know that upon the success of the pavement depends the future market for their bricks. They do not skin the city or attempt to drive hard bargains with labor. They employ the best material and the best labor. And yet the cost to the city is considerably lower than what the authorities were paying private contractors to do poor work.

If the merits of vitrified bricks as a pavement are to be brought to the attention of the public it must be through some method which will insure good work. No good pavement, whether of cobblestones, asphalt, wooden blocks or bricks, can be made without a proper foundation. It pays better to spend a little more at the beginning than to have to repair the street every few years. Good vitrified bricks

laid properly will outlast almost any other form of pavement. It will be doing good service years after asphalt has failed, and its life, compared with wooden blocks, is about five to three. But the concrete foundation in turn depends for its success largely upon the grading or substructure. Where there are subterranean springs and perennial wet places in the sub-soil it is essential that some sort of tile drainage system be installed. A great many brick and other pavements owe their short life to "sinking," caused by wet places giving way under the weight of the foundation and bricks. A contractor who is working a job only for what there is in it for him will seldom stop to drain any such wet places. They can be covered up and concealed temporarily from view.

In grading it is also essential that a smooth even surface be obtained without any soft spots in it. Careless workmen will often make such soft spots by cutting down in places with a spade so that even the roller cannot harden them

clean, sharp, dry sand and good hydraulic or Portland cement should be used, and that these should be completely mixed until thoroughly mingled. The most approved proportions for the concrete is three parts of sand to one of Portland cement, but two to one if hydraulic cement is used. The mixing of the concrete with water is not so important as for building purposes, but it is a work that should be done by a cement man or engineer, and not trusted to an ordinary day laborer. The proper consistency of the mass is a strong factor in the proper binding of the foundation. The plastic mass must not be too fluid and yet sufficiently elastic to work well into the whole mass of rocks.

The foundation should have at least thirty-six hours to set. Anything less than this will cause depressions. The sand cushion can then be laid, consisting of clean sand, and made two inches thick on the foundation. This should be smoothed over on the top and made to conform to the curvature of the



A Typical Brick Pavement. A Perfectly Sanitary, Smooth, and Comparatively Noiseless Pavement Which, After Ten Years' Use, is as Good as New. There is No Rumbling Noise When Driving Over This Pavement, the Expansion Joint Preventing That Trouble.

equal to the surrounding surface. In finishing off if these soft spots are properly filled in and compacted no harm will result, but a good deal of the poor work is due to carelessness in this respect. With proper underdraining where needed, and complete compacting of the surface throughout, the substructure will be in fine condition for receiving the concrete foundation.

In making a proper concrete foundation the greatest and most common fault is to use too large and uneven rock. A careless contractor will also admit loose pieces of dirt and foreign matter in the broken rock, and thus pave the way for trouble later. The safest way is to utilize only such clean pieces of rock that will pass through a two-inch ring and none small enough to go through a one-inch ring. In this way we have a standard method which any contractor living up to will do good work. It follows without specification that only

street. The importance of this is imperative to secure a proper surface level of the bricks. Unless thus made it will be necessary to sink the bricks near the curb deeper than in the center, and this will give an uneven compression throughout. A template formed to fit the curvature of the street is necessary to secure anything like a proper surface. An even thickness of sand over the full width of the street will make the work of laying the bricks comparatively simple and accurate.

Good vitrified bricks only should be used and they should be handled so that the edges are not chipped. Careless drivers, who do not cart and unload the bricks without scarring them, should soon be taught that their work is something more than handling lime and sand. A careless driver can ruin nearly 10 per cent. of the best bricks. Those with the rounded edges are more popular today than the sharp edges, and

they are less liable to fracture and chipping. The bricks should be laid in a true workmanlike manner. After a section is laid the surface should be carefully swept and inspected and the steam roller should not be permitted on them until this inspection has been made. A five-ton steam roller has been found best for this purpose. A heavier roller depresses the bricks too much and a lighter one fails to sink them deep enough for practical purposes.

The rolling is a matter which requires expert judgment. Frequent examination of the surface is necessary to see that no spots are omitted. The filler should not be applied until the roller has properly done its work. The matter of a filler is open to considerable latitude. The use of pitch and tar is common, and has given excellent results, but one consisting of one part each of dry sand and Portland cement is employed by many of the expert engineers. The amount of water to mix with this should be sufficient to form a rich, creamy substance. The filler must be swept into the joints evenly and rapidly to prevent any hardening before it can reach its proper position. Sometimes it is necessary to moisten the joints with a hand sprinkler just ahead of the filler. This permits the filler percolating readily into the joints and forming a homogeneous binder. Within half an hour after the filler is in place the street should be sprinkled and all particles left on the bricks swept into the joints. Every joint should be brought up flush to the surface of the street.

HOW TO OBTAIN A PERFECT PAVEMENT.

The article of Mr. A. S. Atkinson on "Laying Brick Pavements," contains many suggestions worthy of commendation, but some things are said that are liable to misdirect and ought to receive further notice. Some few things that are said cannot be sustained in the light of experience and practice. For instance, after advising the use of a five-ton roller, which is all right, Mr. Atkinson adds that a heavier roller depresses the brick too much, thus assigning a reason for the objection to the use of a heavier roller than five tons. The gentleman's conclusion is entirely wrong. The objection to the heavier roller is not that it depresses brick too much, but rather that you cannot depress them at all with one. Experience has shown that it creeps the brick and disproportions the quantity of sand under the brick and roughens rather than smooths the general surface.

The writer of these remarks has often witnessed the results of using a ten-ton roller. The longer the street was rolled the rougher it became.

I am surprised that Mr. Atkinson should say that the use of pitch and tar is common as a filler; much surprised that he says it has given excellent results as a filler, whereas, the truth of the matter is that it has neither given satisfaction nor is it in common use as a filler. All of the pliable fillers of any kind contract in very cold weather, leaving the condition of the brick in a street loose, and in warm weather the filler softens and the brick are loose with such a filler. These are conditions that prevail in case of the use of these fillers everywhere and they do not contribute to brick pavements at their best.

All of these details, in their minuteness, are carefully considered in Direction No. 1 for laying brick street pavements, as promulgated by the National Association of Paving Brick Manufacturers. It would be well for all persons interested in the paving question, and who are desirous of being informed as to the best method of construction, to write to the General Secretary, 205 Arcade Building, Terre Haute, Ind., for a copy of "No. 1 Directions for Laying Brick Street Pavements." This direction follows out the work in its minutest details and with its use it is impossible to have a failure if they are carefully complied with.

T. H. I.

Some people are so busy judging the acts of others that they do not have time to place any good acts to their own credit.

Written for THE CLAY-WORKER.

CEMENT CONSTRUCTION.



CLOSE RELATIVE to the brickmaker is the Portland cement maker in that he uses clay to make his product. Portland cement is made practically by fusing a mixture of limestone, clay and sand and later on grinding the said fused mass to a fine powder. In some cases, however, a marley (limey) clay is used which only necessitates the addition of a small proportion of sand or lime. The quality of the cement is governed to some extent by the thorough mixture of the component parts as well as by the fineness of grain of each material entering in its composition.

Modern science has shown that Portland cement is a chemical compound and therefore at all times during its manufacture should the proper or correct conditions exist, both in the character and proportion of the mixture as well as in the process of manipulation. Any quantity of its parts, either above or below its primary normal proportion, may cause the formation of undesirable products which may act later on as diluent or deterrent. One of the ordinary troubles is caused by sulphur in the coal, just such tribulations and trials as we experience in the brick business, in that the sulphur combines with the lime and thereby prevents the formation of the lime silicates. This sulphur-lime compound is very detrimental to the binding qualities of the cements, as when combining with water it expands and also has reactions with the iron portion of the cement, in turn forming sulphate of iron, which causes destruction of the cement, owing to disintegration and expansion. A very simple expansion test is as follows: Mix a quantity of cement with sufficient water to make a mortar and pour this mass into a thin glass and if the cement expands then it will break the tumbler. Another test practiced in Germany is as follows: Mix cement and water to a thick batter and let it spread on a piece of glass to form a cake about one-half inch thick. Place the glass in water and let it remain submerged about one-half to two hours for quick setting cement and up to 24 hours for slow setting cement. If, after a few days, crumbling and cracks can be noticed in the test piece, then such cement should be rejected. However, this lime-sulphate is sometimes added up to 2 per cent. to retard the setting of the cement. But when present up to 4 per cent. to 5 per cent. then serious harm can be caused by such excessive admixture. Neither brickmaker or cement maker can always turn out their product one time like another. The brickmaker sells his product for what it is and the buyer can readily see what he is getting. But what about the defective cement? The writer has been told about a large Portland cement works who had discharged their superintendent and manager. The new man was highly recommended, but had made thousands of barrels of defective cement before he discovered that his troubles were caused by the sulphur in the coal. But I never was told what became of the poor cement. If sold, then some one surely did not get a first class job. However, if the contractor had applied either one of the above simple tests, then he would have known about the defects in the cement and governed himself accordingly. When Portland cement is mixed with water it undergoes a change from the soft stage to a hard condition. This reaction is called setting, but as the cement gets older the bond gets stronger and such action is termed hardening, and may take from six months to a years time. As a matter of economy, sand and crushed brick or rock, are used as a filler and as long as such addition is not carried to excess then no harm will befall the resultant product. But if such additions are carried to excess then serious damage may occur, as there will then not be enough cement present to form and maintain a strong bond.

In doing good work with Portland cement, a great deal

depends upon the purity of the materials, as any foreign admixture has the effect of destroying the intimate contact of the particles absolutely necessary to obtain the highest possible efficiency as to bond and strength. A number of years ago a large so-called union station was being built which necessitated the use of large quantities of Portland cement, and in order to insure stability of erection a so-called testing station was created. A number of trial tests were made with standard sand, Portland cement and boiled and filtered water and the average, as well as the lowest admissible tensile strength test, were established. It was found that by using ordinary river water as it came from the hydrants at that time, that the loam or clayey impurities detracted between 10 to 20 per cent. from its strength. The same deficiency was noticed when using a loamy sand. It was also found that the ordinary crushed fine rock contained so much dirt and clay as to also seriously detract from the desired or anticipated strength. In taking all three of above factors into consideration, it is possible that a deterioration of from 30 to 60 per cent. may take place. To obtain the best possible results, good clear water, washed sand and clean rock should be used. But by complying with these last three named conditions, the cement concrete work will come so high that it cannot compete with hard brick laid in cement mortar, unless the washed sand and purified rock can be purchased at ordinary prices.

In the section of the United States where I am now located a contractor can buy either commercial crushed limestone or washed crushed limestone, the mechanics realizing that better work can be done with one grade than with the other. Contractors are human and desire to make all the money they can. Every little item added to the cost decreases the profit of the contractor. I have seen at buildings, the crushed rock as well as the sand, dumped on dirty streets, in fact the whole concrete mixture was made right in the street, dirt and all mixed in together. What kind of a job did the owner get? Not a very good one, I am sure. But these sloppy contractors for concrete work are good friends to both the brickmaker and the bricklayer, in that it causes condemnation of cement concrete and brick work will be substituted. In conversation with one of these rushing, sloppy contractors, the writer was informed that he would not make any money if he had to use and furnish boxes and troughs for mixing and platforms to keep sand and rock clean, as they should be.

Another peculiarity of Portland cement concrete is this: If a portion of such work is allowed to set for a comparatively short time then a portion of the water will come to the surface, and if this water is allowed to evaporate then there will be found a hard, white, milky-like substance covering the concrete job. This substance will prevent the bonding thereto of any concrete mixture placed subsequently on top of the same. Did you ever notice how concrete sidewalks would shell, that is, the upper layer peel off? The writer was present at a clayworks where large concrete storage sheds had been put up. Either by the foundation giving way or that the steel tie rods were not strong enough, two walls of the structure gave way. This wall broke up in laminated sections and the break took place on the line where new work had been placed where the old work stopped. If I remember right, the United States Government tried a series of elaborate tests in making irrigation pipes and water conduits out of Portland cement concrete, and it was found that wherever new work had joined old work, that there was a very serious leakage, which practically condemned this style and class of pipe construction. Besides it was found that these seams, if we might so call them, gave way under a very small pressure.

Of concrete building blocks, enough has been written in the trade papers to show their worth (?) and value.

Years ago Portland cement construction was lauded to the skies, yet to prove that it was not what was expected of it—now reinforced concrete is the proper caper. Especially

so in the larger cities. However, little notes here and there have told about these concrete building foundations giving way. Wherever electricity is used, leakage currents pass into the ground and have, as is well known, corroded water service pipes. In fact, the writer knows of one occasion where the water pipes had suffered from electrolysis, that the pipes bursted and flooded the basement of an office building, so that the fire department had to be called to pump the water out of the building to enable the mechanics to make the necessary repairs. Electrolysis is, as Webster defines it, "The act or process of chemical decomposition, by the action of electricity or galvanism," which statement is about the best concise one that can be made. Under the heading "Scientific Miscellany," was found the subjoint statement.

Electrolysis has been little investigated but now demands greater attention, as it appears that stray currents in damp soils may endanger buildings as well as the pipes under the streets. Experiments by A. A. Knudson, a New York engineer, at least go to show that the metal embedded in reinforced concrete is not as perfectly protected against corrosion as has been supposed. The tests were made on blocks of Portland cement sand concrete three years old and on blocks of Rosendale cement thirty days old, a piece of 2-inch wrought iron pipe being embedded in each block to a depth of eight inches. Blocks kept thirty days in unelectrified sea-water remained in perfect condition, the iron continuing quite bright; exposed to an electric current in sea water and in fresh water, blocks of the older concrete became badly cracked, were easily broken and the pipes were much corroded, and the blocks of the newer concrete showed cracks as early as the sixth day.

There can be no reason why iron concrete in buildings, located in a damp place, should not suffer from electrolysis the same as the above tests show in a smaller way, and if such change should be serious through long exposure, where, I ask, is the much lauded superiority of iron reinforced concrete? It does not then exist and seems also to be a very risky proposition anyway when one figures on the question of good cement, washed sand, clean rock and the laminated structure above referred to. The conservative, as well as the progressive builder, should and will pronounce a good hard brick laid in cement mortar as the better of the two methods or systems, especially so when electrolysis is taken into consideration, in that electrolysis always exists where electric street car lines are operated under existing conditions.

BRICK ROADWAYS FOR PENNSYLVANIA.

AN ANNOUNCEMENT that will be welcomed by the various manufacturers of vitrified paving brick is contained in the statement that was recently made to the local representative of THE CLAY-WORKER by officials of the State Highway Department of Pennsylvania, the substance of which was that it was the intention of that department to more generally use brick in the construction of the new stretches of state roads than has heretofore been the custom. There have been a large number of requests from the farmers for roads of this character, and while a few have been constructed, they have never generally come into use. Tests, however, have shown that those constructed and in use for some time are in far better shape than clay and macadam roads in the same section, and that the saving on horses and equipment is great. The clay roads in Western Pennsylvania become almost impassable in the winter and spring, a fact that is the means of causing great loss to the farmer depending on the roads to haul his early product to market. Brick roads have been agitated for some years, and it is now a certainty that a far greater proportion of them will be constructed during the coming few years than ever before.

To the present time the automobiles are consuming but a very small percentage of the alcohol which is being produced.

Written for THE CLAY-WORKER.

HAMILTON BRICK COMPANY, CHATTANOOGA, TENN.

THE PLANT of the Hamilton Brick Company is located about seven miles from Chattanooga, at Boice Station, on the Cincinnati Southern railroad, and was originally built and operated by the East Chattanooga Brick Company, who shortly after starting sold out to the Hamilton Brick Company, who at once rebuilt the plant, installed new and modern machinery with a capacity of 40,000 brick daily. It is now one of the most up-to-date plants in that section of Tennessee.

They have about twenty acres of fine clay land of an average depth of from eighteen to twenty feet laying along the Tennessee river, which very seldom overflows at this point. The factory site is on the same piece of property and about twenty feet higher than the clay land, and is withal a model location for a brick plant. The material is hauled to the plant up an incline in automatic side dumping cars by means of a gear and friction hoist, and is dumped into a hopper above a Raymond conical roll crusher and stone extractor, which is located about four feet above the floor. The crushed material is then conveyed to the pug mill, from which it goes through a Raymond 777 brick machine and rotary automatic cutting table.

The brick are dried on double deck cars in a six track Standard steam dryer and burned in large modern clamp kilns; three of these kilns are completed, and one in course of construction. They are preparing also to build four 30-foot

Written for THE CLAY-WORKER.

MINOR USES OF CLAY.



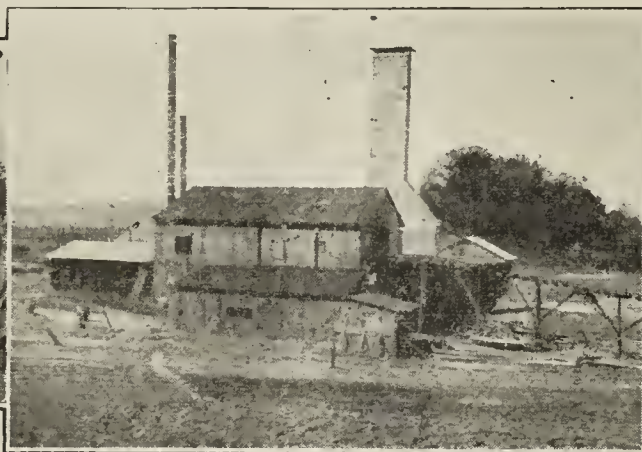
PERHAPS VERY FEW clayworkers have any idea of the great variety of uses to which clay is put, both in the burned state and as raw material. Aside from the more common uses of clay in the manufacture of the various kinds of building brick, pottery, sewer pipe and drain tile, terra cotta

and refractory wares, as fire brick, saggers, etc., a list of the less known and minor uses of clay is here given. The great variety of uses is due to the great variation in chemical and physical properties and modes of occurrence which clays have. In color, clays may range from pure white through all shades of yellow and red to black. And certain colors make a clay adaptable for certain uses. They exist from those fusible into glass at very low temperatures, as glazing clays, to the most refractory fire clays. They vary from very soft flour-like kaolins to very hard "flint" fire clays. They may exist as massive unconsolidated deposits, or may be bedded and laminated, as shales, or still further, may develop cleavage as clay slates. They may be almost pure silicate of aluminum or have every conceivable variation in impurities. Certain chemical properties or certain physical properties make the material peculiarly adaptable for a particular use.

Many of the uses given attain considerable commercial



Incline to Clay Bank.



Hamilton Brick Co.'s Plant.



Six Track Standard Dryer.

round down-draft kilns of the latest pattern. The entire machinery equipment was furnished by the C. W. Raymond Company, consisting of a 777 brick machine, No. 2 rotary automatic cutting table, ten foot standard pug mill, conical roll crusher, hoist, conveyors and dump cars.

The officers of the company are A. C. Foust, president and general manager; J. S. Lawson, vice president and superintendent; A. H. Rogers is secretary and treasurer. Both Mr. Foust and Mr. Rogers are Chattanooga business men, and Mr. Lawson is the practical brickmaker. Mr. Lawson has been in the brick business all of his life, is one of the best brickmakers in the entire south, and devotes his entire time to the plant. They have a ready sale for all the brick they can make.

Announcement is made that the National Fire Proofing Company, with general offices in the Fulton building, Pittsburgh, Pa., has established a sewer pipe department under the management of Mr. Samuel B. Goucher, W. B. Goucher and Samuel McAdoo, all sewer pipe manufacturers of Toronto, Ohio. The sewer pipe plants under the management of this concern are located in several states, one at East Palestine, Ohio, just recently put in operation. This plant was formerly used for the manufacture of fire-proofing material. The plants of the company are thoroughly and modernly equipped, and it is the object of the company to make additions to the several factories as soon as conditions warrant.

importance. The list of uses is as follows:

BURNED.—Railroad ballast; road metal; chemical apparatus; ink bottles; electrical porcelain; conduits; turpentine cups; playing marbles; fence posts; door knobs; emery wheels; porcelain lining for hardware; filter tubes; smoking pipes.

RAW.—Paper filling and coating; for clarifying oils; Portland cement; ultramarine; soap filler; alum; puddle; glazing; modeling clay; food adulterant; plaster; building material; packing for horses' hoofs; drug adulterant; use in cosmetics; fulling cloth; sizing cotton cloth; road material; paint filler; scouring soaps; polishing powder.

PAPER FILLERS.—The mining of clay for use in the manufacture of paper forms considerable industries in some localities. In the two states of South Carolina and Georgia, about 60,000 tons of paper clay are mined annually. The clay occurs in the Cretaceous formation and is a white plastic clay of sedimentary origin. Paper clay is also produced in Pennsylvania and Wyoming and in small amounts in other states. The total amount mined in the United States, as given in "Mineral Resources for 1905," was 76,339 short tons. The clay is used both as a filler and for coating purposes. It is not used as an adulterant as is sometimes erroneously supposed, for the quality of the paper is improved by its use. A clay to be suitable for paper manufacture must be white or nearly white, free from "grit," and soft. It should slake

easily and have the property of being easily held in suspension in water.

Since these clays are used in the raw state, the burning properties do not come into consideration. Whiteness is essential for use in the manufacture of the higher grades of paper, since the clay is frequently used to lighten the color of the pulp and when any certain tint is desired it is easier to get the effect from a pure white clay. Some light cream colored clays find a market and are used mainly in wall paper manufacture. Certain kaolins are found to come up to the requirements and are most generally used. There are some other clays however, that find a market for this purpose, as the Bentonite, which is mined in Wyoming. Bentonite, as described in Bulletin 285, United States Geological Survey, is a fine grained, gritless, plastic clay, belonging to the kaolin group, but having a higher percentage of silica



Interior View of Hamilton Brick Company's Plant, Showing Raymond No. 777 Machine.

and greater absorbent properties than the ordinary kaolins have.

ROAD MATERIAL.—Clay as a road material, both in the burned and the unburned condition, is being recognized as of great value in certain sections. The burned clay is used for railroad ballast, macadam, and walks, and the raw clay mixed with sand for wagon roads and walks. Throughout the coastal plain of the Atlantic and Gulf States and in certain sections of the Mississippi Valley there is an absence of stone for road purposes. The problem of good roads in these sections has been taken up by the Office of Public Roads of the U. S. Department of Agriculture and experiments with burned clay and mixtures of clay and sand have been made, and the results form the subject of a bulletin which has been recently issued by the department.

Fine grained plastic clay, having a high tensile strength and high shrinkage and the property of burning hard at low temperatures may be used in the construction of burnt clay roads. Such clays are usually of alluvial origin and are known as "gumbo" clays. On account of their high shrinkage they crack into gravel in burning. In some of the central states the burning of clay for railroad ballast is an established industry. In the sand-clay road, the clay is used to bind together particles of sand. Such roads are found in the Southern States and have proved successful. Any clay having good bonding power and which slakes easily in water may be used. Some clays occur in nature with the proper proportions of sand and clay.

PORTLAND CEMENT.—Enormous quantities of clay, consolidated, as shales, and unconsolidated, are used annually in the manufacture of Portland cement. Portland cement is made from a definite mixture which contains essentially silica, alumina and lime. Limestones form the source of the lime, while clays yield the proper silica and alumina content. When the annual output of Portland cement is considered, the use of raw clay in this industry becomes very important. Not all clays are suitable for use in cement manufacture. The clays should possess uniformity, and should have a low iron

and magnesia content, and should not be too high in alumina or silica.

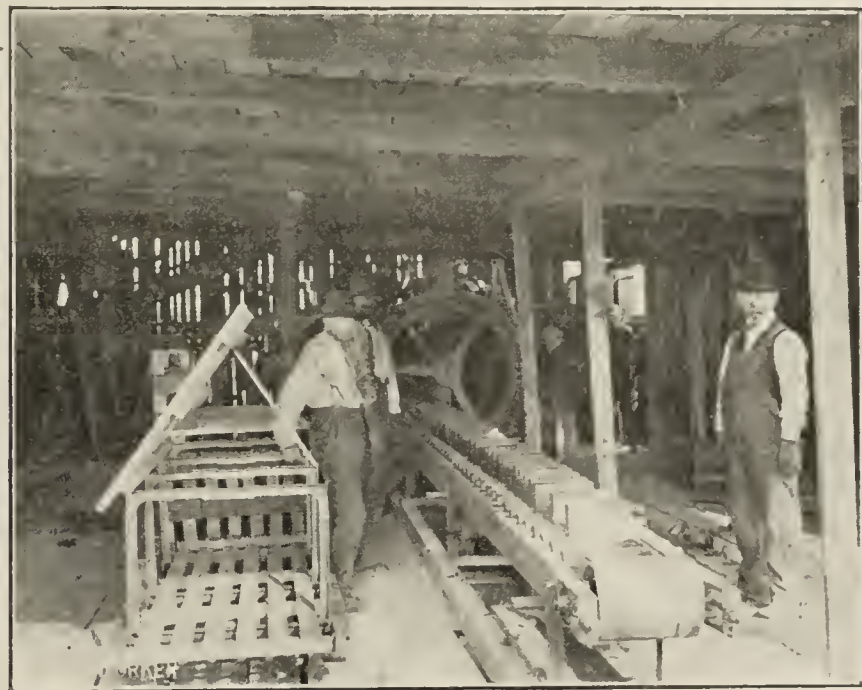
ULTRAMARINE.—Perhaps one of the most interesting uses of clay is in the manufacture of ultramarine. Ultramarine is a pigment formerly made by the fine grinding of the mineral, *lapis lazuli*. *Lapis lazuli*, or lazurite, is a comparatively rare mineral, consisting chiefly of silica, alumina, soda and sulphur, and has a beautiful blue color. Artificial ultramarine is now cheaply made by heating a mixture of kaolin, sodium carbonate, carbon and sulphur. There are several varieties of ultramarine pigment. One mixture from which ultramarine is made is as follows:

Kaolin	100 parts.
Soda	100 parts.
Carbon	12 parts.
Sulphur	60 parts.

Only the purest kaolins, and those as free from iron as possible, are used in ultramarine manufacture.

FULLER'S EARTH.—Clays of the nature of Fuller's earth are used extensively in clarifying mineral and vegetable oils and in the manufacture of soap. Fuller's earth is a clay having a low alumina content as compared with the silica, and a high percentage of combined water. It has more or less plasticity, and resembles ordinary clays in appearance, but differs from them in its high absorptive and filtering properties. In decolorizing kerosene, lubricating oils, and cotton seed oil it is largely replacing animal charcoal. Because of its absorption of grease it finds a large use in the manufacture of soap. 25,178 tons of Fuller's earth were produced in the United States in 1905. The chief requirements of a Fuller's earth are: High absorption; good filtering properties; freedom from excessive grit; and freedom from any substance which would have a deleterious effect upon the oils which pass through the earth. Alum, for example, is injurious.

CHEMICAL APPARATUS.—Both in chemical laboratories and chemical factories, clay wares are largely used. Evaporating dishes, crucibles, mortars, beakers and funnels made of clay are constantly used in chemical laboratories. Lately,



Raymond Automatic Cutter in Operation at Hamilton Brick Company's Plant.

the Charles Graham Chemical Pottery Works of Brooklyn, N. Y., has placed on the market stoneware exhaust fans for removing gases developed in chemical works. The ware is vitrified and is not affected by acidic vapors, and thus has an advantage over metal fans.

ALUM.—Clays may be used in the manufacture of alum and aluminum sulphate. The clays are treated in lead pans with sulphuric acid; aluminum sulphate is formed leaving a silica residue. Clays high in calcium carbonate are not desirable since the sulphuric acid is uselessly consumed. Plastic clays, as china clays, are first roasted to render them more porous. Alum is chiefly used by dyers. It also finds a use in the paper and leather industries. The manufacture of alum from clay is largely carried on in England, but in the United States bauxite, the aluminum hydroxide, is chiefly

used in the preparation of alum, on account of the low percentage of silica that it contains.

BUILDING MATERIAL.—Clay in the raw state, as a building material, does not attain economic importance except in the use of clay-slate, which is chiefly used as a roofing material. Slates are fine grained clays which have been consolidated, and through further metamorphism have developed cleavage. By virtue of this cleavage they may be split into thin laminae, enabling them to be employed for various building purposes. Chemical analysis show that slates do not differ materially in composition from ordinary clays. There is always an enormous waste in slate quarries and lately this waste is being utilized to some extent, in the manufacture of building brick.

ELECTRICAL PORCELAIN.—The manufacture of electrical porcelain can hardly be called a minor clay industry. The value of these supplies in 1905, according to the statistics from Mineral Resources for 1905, was \$2,253,061. White burning clays are required in the manufacture of electrical porcelain. The supplies consist of insulators, fuse boxes, knobs, rosettes, etc. The ware is both glazed and unglazed.

A. CRACKER.

Written for THE CLAY-WORKER.

THE ECONOMICAL GENERATION AND USE OF HEAT ON BRICK YARDS.

HEAT EFFECTS.



CHANGE OF TEMPERATURE is probably the best known of all the heat effects for the reason that it is, perhaps, the most apparent to our bodily senses. Its great usefulness to us is due to the fact that it constitutes the means whereby we are enabled to determine when a substance, or a particular

body, possesses a sufficient quantity or intensity of molecular energy; i. e., heat, to adapt it to the purpose to which we wish to apply it. From this it is easy to see that its value to the human race is almost incalculable, since in the course of manufacturing a great number of practical processes require, for their successful execution, the application of an accurately adjusted degree of heat.

In many cases the eye or the touch may be depended upon to give a sufficiently close indication of the heat intensity; and, indeed, experienced brick burners and many other men who have been trained to maintain temperatures by the color, can accomplish exceedingly uniform and accurate results in applying heat to their wares by observation alone.

The scale of temperature colors given in Table I will be found of considerable value in assisting to regulate kiln temperatures:

TABLE I.

Color, by daylight.	Temp. Fahr.
Red, just visible	932
Red, dull	1290
Red, cherry, dull	1470
Red, cherry, full	1650
Red, cherry, clear	1830
Orange, deep	2010
Orange, clear	2190
White	2370
White, bright	2550
White, dazzling	2730

For observing the white heat temperatures, a piece of cobalt blue glass should be used, as it absorbs the yellow rays emitted and renders the light less severe on the eyes.

For the most part, however, modern manufacturing processes require temperature determination of a far greater degree of exactness than it is possible to obtain by observation only, so that recourse is had to sundry mechanical contrivances variously termed thermoscopes, thermometers, pyrometers, thalpotasimeters, Seger cones, etc., some of which when carefully constructed and properly used, are

capable of indicating with great accuracy, the state of the molecular activity of a substance.

The most familiar instrument of this kind is the common thermometer, whose action utilizes the principle of expansion which we have explained elsewhere in this series of articles. It consists, as will be seen in Fig. 1, of a glass stem K, having a very small bore running through it, termed a capillary bore. At the lower end the stem terminates in a hollow bulb C, into which the capillary bore opens, the top end being closed as shown. The bulb is filled with mercury, alcohol, or some other expansible fluid until the fluid extends a short distance up into the stem. When heat is applied to the bulb the fluid within begins to expand and consequently rises in the tube. The hotter the temperature, therefore, the higher the fluid will ascend. Then, since the fluid expands an equal amount for equal changes of temperatures, by marking off a scale, either on the glass tube itself or on a paper or metal slip attached to it, we have a means of identifying the relative degree or intensity of heat to which the bulb is exposed. Metal scales should, however, be eschewed, as their own expansion introduces a considerable error in the reading of the instrument. Glass and paper also expand somewhat under the influence of heat, but their expansion is very small compared with that of the metals. The better grade of instruments invariably have the scales marked on the glass stem itself and allowance is made in the marking for the expansion of the glass. Naturally, such instruments are considerably more expensive and give more reliable indications than the cheap apparatus ordinarily supplied by dealers.

As it is desirable to have the thermometer scale indicate some definite degree of temperature, it must be based on some definite and unchangeable points of temperature. By universal consent, the two definite conditions of temperature that have been adopted for constructing a temperature scale are the freezing and the boiling point of water. These two points are exceedingly well-adapted for this purpose, and accurate experiments have shown that they are the same exactly the world over for equal pressures on the surface of the water.

To graduate the scale, the thermometer bulb is first immersed in a vessel of melting ice when the atmospheric pressure as shown by the barometer is 14.69 pounds per square inch. When the mercury of the thermometer has become stationary, a mark is made on the scale at the height at which it stands in the tube and this point is denominated the freezing point. After the freezing point has been determined, the instrument is suspended in the vapor rising from boiling water so that all but the top of the stem is enveloped by the vapor. The mercury now expands and rises in the tube until it has acquired the temperature of the rising vapor, when it again becomes stationary. Another mark is made on the scale at this height to indicate the boiling point of water.

Fahrenheit, who was one of the earliest thermometer makers on record, divided the space between these two points into 180 equal divisions and began numbering his scale, thirty-two of these divisions below the freezing point, at the temperature of an equal mixture of salt and ice, which he regarded as the lowest temperature possible to obtain by artificial means, and, therefore, gave it the distinction of being the zero point on his scale.

The old gentleman's conception in regard to artificial temperatures was years and years ago shown to be utterly erroneous, but his method of graduating thermometers endures to this day in common household use throughout the world of English-speaking people, who cling to it with a pertinacious conservatism worthy of the heathen Chinese, who dislike innovations, however worthy, and whose philosophy teaches that the ways of his forefathers are the ways for him, and walks, therefore, reverently and obediently in the paths they trod.

Among scientific men, however, the Centigrade scale is now used almost exclusively, owing to its greater conveni-

ence in calculations. In this scale the zero, or starting point of the scale, is taken at the freezing point of water and the space between that and the boiling point is divided into 100 equal parts. The scale is then carried as far above the boiling point and as far below the freezing point as practical considerations will permit, which is obviously not far, owing to the nature of the materials with which such apparatus is constructed, as mercury solidifies at 38 degrees Fahrenheit below zero, and boils in vacuo at 536 Fahrenheit above zero; while alcohol, which is frequently employed as the expansible fluid in thermometers, vaporizes at about 170 degrees above zero and solidifies at about 140 degrees below.

In practical work, the capacity of these fluids for expressing below zero temperatures is seldom exceeded, but for indicating the high temperatures frequently prevailing in dryers, kilns, furnaces, etc., it has been necessary to devise special types of heat indicators. Mercury thermometers, or pyrometers, are now made which will indicate temperatures up to 1,000 degrees Fahr. with a fair degree of accuracy. This type of pyrometer is made of a special grade of glass, and has an enlargement of the capillary bore above the mercury column which is filled with carbonic acid gas at a pressure of about 300 pounds to the square inch, in order to prevent the mercury from vaporizing at a temperature below that to which the instrument is graduated. A type of this apparatus as made by Schaffer & Budenberg, of New York, is illustrated in Fig. 2. This instrument will indicate the temperature for which it is graduated with great accuracy, but it must be remembered that special care must be taken with heat indicating devices of all kinds, not to expose them to extreme conditions if it is desired that they should continue to give accurate readings. It is also well to verify the calibration of their scales from time to time by comparing them with the readings of some standard instrument which is known to be right. The scale of temperatures given in Table II, will prove convenient for this purpose at times when a standard instrument is not available.

TABLE II.

Substance—Melts or Boils.	Temp. F.	Specific Heat
Alcohol—boils	170	0.7000
Ice—melts	32	0.5040
Water—boils	212	1.0000
Naptha—boils	424	0.4500
Tin—melts	455	0.0562
Lead—melts	637	0.0314
Cast iron—melts	2200	0.1298
Wrought iron—fuses	2912	0.1138
Steel—melts	2372	0.1165 (soft) 0.1175 (hard)
Copper—melts	2100	0.0951
Zinc—melts	770	0.0956
Sulphur—boils	833	0.2340
Silver—melts	1763	0.0570
Gold—melts	1949	0.0324
Platinum—melts	3236	0.0324
Mercury—boils	680	0.0333
Fire brick—fuses	3632	0.2000

For ascertaining temperatures higher than a visible red heat the mercury type of pyrometer is not available, so that other forms of heat measurers have been devised, some few of which give satisfactory readings.

Fig. 3 shows one type of calorimetric pyrometer called the Siemen's water pyrometer, which is often found useful and which will stand fairly well the rough usage usually accorded most apparatus on brick yards. It is, however, a very crude arrangement and gives only approximate results.

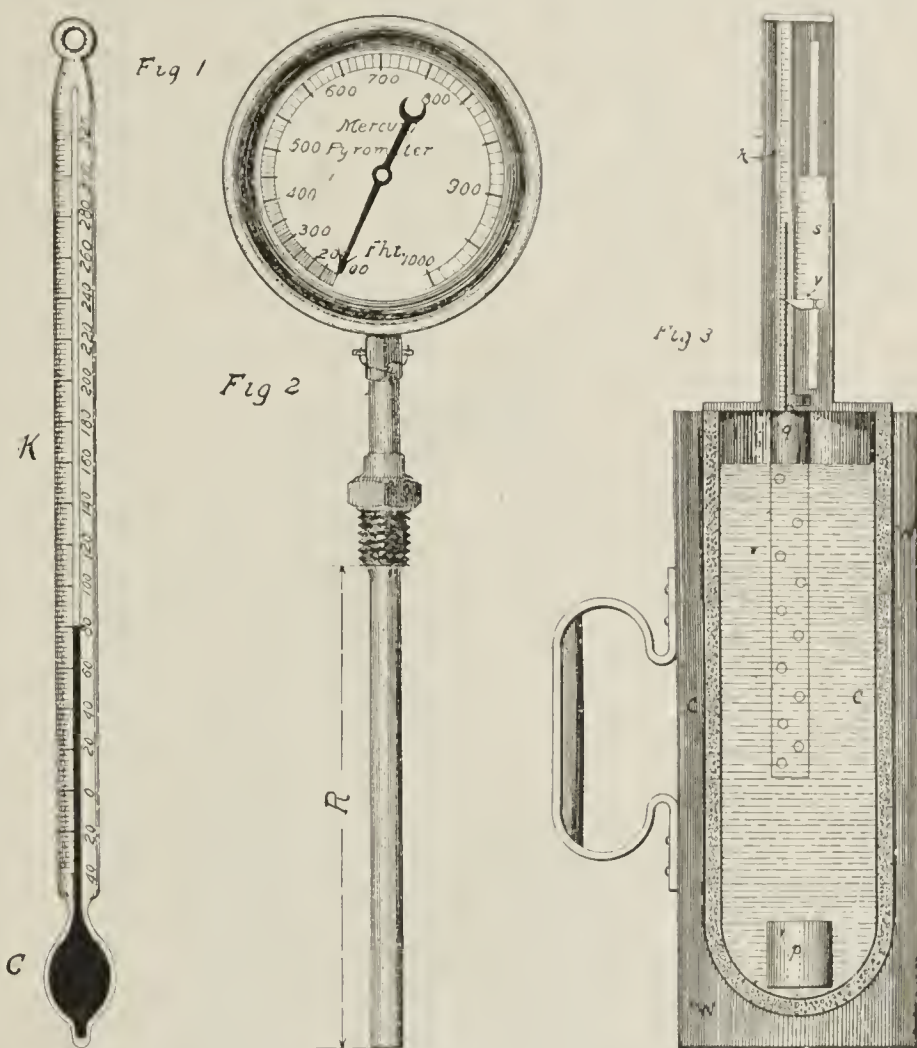
It consists of a copper vessel made with double walls, between which is a sawdust, asbestos felt, or other non-conducting filling to prevent radiation. There is an air space between the copper vessel and the outer casing WW. A thermometer k forms a permanent part of the apparatus, with its bulb and a part of the lower portion of the stem protected by a brass sheath q. At the side of the thermometer is a sliding brass scale s, with a small pointer d, attached at the zero mark and passing across the thermometer k.

To use this apparatus, a small quantity of water, usually about a pint, depending, of course, on the size of the apparatus and the weight of the metal cylinder p, is accurately weighed into the copper retainer. The brass scale is then adjusted so that the pointer d stands at the temperature of

the water. In the meantime the cylinder p has been placed in the furnace or other place, where it is exposed to the temperature to be measured. As soon as it acquires the temperature of the furnace, it is removed as rapidly as possible and placed in the water. The increase in the temperature of the water and the reading on the brass scale opposite the highest point of the mercury column will give the sought for temperature.

There is always considerable heat lost in transferring the cylinder from the furnace to the vessel and this loss is further largely increased by the formation of steam which floats away when the cylinder is placed in the water. Besides, the vessel itself takes up some heat and radiates more, so that it is perfectly clear that the reading given by such an apparatus is invariably far too small.

Where a general idea only of the temperature value is required, a good thermometer, a pail of water, a pair of scales, and an iron slug, or ball, will frequently answer the purpose. The slug is placed in the furnace and left till it attains the temperature to be measured. Meanwhile, the water is weighed and its temperature noted. The slug is then taken from the furnace and put into the water. After an interval, the increase in temperature of the water as shown by the ther-



monometer, is read off. Multiplying the weight of the water in pounds by the increase in its temperature gives us the number of heat units imparted to it by the iron, since it requires one British thermal unit to increase the temperature of one pound of water one degree Fahrenheit. Then, if we divide this product by the weight of the iron in pounds multiplied by its specific heat, and add to the quotient the final temperature of the water, the result is the temperature of the slug when it is removed from the fire. The weight of the iron should be taken after it is taken from the water, for if it is exposed to a very high temperature it may have wasted away considerably.

Suppose in such an experiment, the water weighs fifteen pounds with an original temperature of 60 degrees and a final temperature of 150 degrees. The temperature increase is then 90 degrees and the heat units imparted to the water is $15 \times 90 = 1350$ B. T. U. The iron ball weighs five pounds and its specific heat as given by Table II is for cast iron 0.1298. Then

the indicated temperature of the furnace is $\frac{1350}{5 \times 0.1298} = 2080$ degrees Fahr. A result that will likely be from 25 to 50 per

cent. too low, depending on the care with which the experiment is made.

Space forbids further discussion of the subject of pyrometers at this time, but those who are interested may obtain for the asking, I believe, of the Richardson-Lovejoy Engineering Company, whose advertisement appears elsewhere in this journal, a pamphlet on "Testing and Controlling Apparatus," which will give valuable information on various up-to-date pyrometers, among which is the Le Chatelier thermo-electric pyrometer, an instrument which will give the most accurate readings, perhaps, of any pyrometer up to about 3,000 F., a temperature, which is, from the nature of the materials necessarily employed in the construction of heat measures, about the limit of our attainment in this direction, as a consideration of Table II, will show.

Le Chatelier also devised a pyrometer of an entirely different sort, termed the luminous radiation pyrometer. In this device the temperature of a heated body is ascertained by comparing the intensity of the illumination given off by it with the brightness of a standardized lamp. With this form of instrument the temperature of the sun has been computed to be about 13,700 degrees F., the electric arc lamp, 7,400 F.; incandescent lamps, 3,250 F.; glass furnaces and porcelain kilns, about 2,500 F.

THEO. RIZER.

On June 1 the per capita circulation of money in the United States reached the greatest amount ever attained. On that date it was \$34.20, which is the highest point ever reached, and an increase of 4 cents during the month of May. The per capita on June 1 is based on an estimated population of 85,965,000 persons. On June 1 of last year the per capita circulation was \$32.45.

AS OTHERS SEE US.



Jno. B. Rose, of Roseton on Hudson, N. Y.

The beauties of the jack rose
Are feebly told in rhyme
But here's a Rose variety
That blossoms all the time:
He's the rosy Rose of Roseton.
Of Newburgh and New York,
He flourishes in either place
And blooms on hardy stalk.
In various activities
He spends each fleeting day

But mostly bends his energies
To getting "rocks" from clay.
His aspirations are immense,
His horizon is wide,
Not only in the U. S. A.
But on the other side.
His ventures are diversified,
His game is politics. [man—
He's a blooming Balmville states-
Apollo Belvedere of bricks.
—Mac, in Newburgh, N. Y., News.

ST. LOUIS AS A CLAY CENTER.

It is shown in a bulletin just issued by the Geological Survey, that St. Louis in 1905 produced and sold about \$5,000,000 worth of clay products, which was approximately one-thirtieth of the entire output of the United States. A very large proportion of these were made from fire clays dug in a single section within the city limits.

The bulletin is entitled "Contributions to Economic Geology, 1906." The description of the St. Louis district was written by N. M. Fenneman. It also contains references to available beds of shale and brick clay near the city and a map showing the locations of fire clay mines.

The following statements are taken from the bulletin:

The products include those of fire clays, dug in a single section within the city limits, and the production makes St. Louis one of the most important centers of the clay industry. In addition to fire clays the products are from shales and brick clays.

The area from which fire clays are derived has its center in a section of the city known as Cheltenham, lying south of Forest Park.

Clay for Many Uses.

The geological feature to which the presence of the fire clay within the area named is mainly due is a faint synclinal basin, whose center is not far from the southeast corner of Forest Park. North and northeast of this point there are no mines. The lowest level from which the clay is mined is 404 feet above sea level.

The choicest of the clay is sold for glasshouse use. At several of the mines the clay is assorted, that which is freest from impurities being sold in the raw condition for glass pots. Good clay which contains a small amount of impurity is washed and then sold for the same purpose. For brick it is not necessary that the clay be so pure. Much of the fire clay mined in Cheltenham is used without assorting for ornamental and facing bricks, or is mixed with various other clays to make sewer pipe.

About nine miles northwest of Cheltenham and three miles east of Creve Coeur Lake the St. Louis Vitriified and Fire Brick Company operates a mine and factory. The base of the fire clay bed at this point is nearly 90 feet below the upland level. The thickness of the clay is 12 to 15 feet, 12 feet of good clay being mined. It is practically certain that this clay is at the same horizon as that mined in the city of St. Louis.

Producing Field is Large.

In view of the wide separation of the points at which the Cheltenham fire clay sea is mined it is quite probable that it may be found at many places where no prospecting has yet been done. A characteristic feature of the coal measures near St. Louis is its very large proportion of plastic shales. These are largely used in the manufacture of vitriified paving brick, both in St. Louis and at points farther northwest, near Creve Coeur Lake. This shale is that which appears in the sections above the fire clay, but west and north of the city it occurs in thicker and more continuous beds, of uniform quality. At Castello and Malcolm stations almost the entire 40 to 55 feet intervening between the loess and the coal seam overlying the fire clay consists of workable shale, generally of a red or broken color, but with some blue shale at its base.

Similar clays from a place four miles northwest of Glencoe, a station on the Missouri Pacific railroad about twenty miles west of St. Louis, are largely used in St. Louis in the manufacture of terra cotta and sewer pipe though shales from this vicinity have also been used extensively for brick. Yellow and blue shales that occupy the same stratigraphic position are extensively mined at Prospect Hill, a few miles north of St. Louis, and used in the manufacture of Portland cement, being mixed for that purpose with the St. Louis limestone.

Many yards in and around St. Louis are making red brick from the loess which is commonly called "yellow clay." This is rarely less than 10 to 15 feet thick, and near the bluffs may be three or four times that thick. It differs in texture at different depths, the upper portion being "stronger," more clay-like, and less mealy than the main body.

Partly to obtain a thorough mixture of these different grades and partly to allow some weeks or months of "sweating," thus reducing all lumps, large quantities of the loess are commonly brought in from the pits and kept under shed for some time before using. A good grade of red brick is made, and the supply of good loess here and elsewhere is limitless.



THE GROWING INTEREST IN DRAINAGE.

FROM A CIRCULAR of information issued by the Department of Agriculture, we glean the following facts relating to the drainage investigations of the department, and how rapidly the interest in land drainage is gaining ground. Drainage maps are being prepared, and the general soils, topographic and hydrographic conditions as related to drainage, are being studied in a score of localities.

Among the drainage projects recently taken up are the following: A preliminary survey of the Everglades of Florida, with a view of securing data upon which to base a plan for the drainage of that district; a survey of the Black Bayou in the Yazoo Delta district of Mississippi, and surveys along the Little Forked Deer river in Tennessee.

To carry on these investigations and other work which will be taken up during the next fiscal year, \$150,000 was included in the general appropriation bill for the use of the office of experiment stations. Railroads are pursuing a far sighted business policy of assisting in the improvement of the agricultural conditions in the territory through which they run. The Missouri Pacific has recently undertaken a very necessary application of this policy along its lines in Arkansas and Louisiana. In this section there are extensive areas of marsh and swamp lands. Notably those of the St. Francis and Wichita basins and the Cypress Creek district. The state of Arkansas is becoming greatly interested in the subject of drainage. In South Carolina the subject of drainage is being taken up with great interest; the Charleston Sanitary and Drainage Commission has been co-operating with the Department of Agriculture during the past year in the preparation of plans for the drainage of swamp lands in the vicinity of Charleston; the South Carolina legislature recently extended an invitation to the office of irrigation and drainage investigation for a representative to address them on the subject of drainage. Mr. C. G. Elliott, drainage engineer of the department, responded to this call by addressing the legislature on the general features of drainage, taking up in particular the legal phases of the problem from the standpoint of the experience of other states, which will pave the way to a right beginning in the legislation enacted to strengthen the work.

WHAT SOME MEN KNOW AND DON'T KNOW.

An old settler who has been a farmer all of his active business life, insisted that he could go into his crib the darkest night and select seed corn of the best vitality, and never make a mistake—that he could tell by the feel of the ear. This same farmer offered his farm for sale a few years ago and claimed that it was thoroughly tile drained. The writer was requested to look at the farm for a would-be purchaser. We were requested to look after the drainage in particular. Several lines of drains had been laid, but by far too shallow, with poor outlets. One drain in particular was about 80 rods in length, laid with three-inch tile from head to mouth. At the head of the drain the tile were set almost perpendicular, to begin with, the upper end protruding above the surface of the ground as much as three or four inches, and open. We inquired as to his purpose in having the upper end of the drain open. He replied "that is to give it vent—it draws the water better." At the lower end or outlet the tile were turned up to the surface for an outlet.

He assured us that the drain worked exceedingly well. Yet it was plainly to be seen that for several rods back from the outlet the land was wet and "soggy." But the fact that the water boiled up and out of the tile at the outlet assured

him, seemingly, that the land had sufficient drainage, and he could not be convinced that the work was imperfect in any respect. The "vent" at the head of the drain and the water coming out of the outlet was all that was required in his opinion. Much of the other drainage on the farm was alike imperfectly done.

Such a thing as a water level in the soil was all "Greck" to him, and we presume that his selection of seed corn in the "darkest night" is on a par with his drainage, for he has never succeeded in managing his business affairs so as to make a success of his undertaking. There is a great need in the under-drainage of land of knowing "why" and "how" to do the best work. A self-opinionated man with wrong ideas in his head is a hard proposition in any undertaking. Any intelligent man with the opportunities afforded to him can, if he will, acquire the needed information to do efficient under-drainage, and in order to succeed in the work, the need of knowing "why" and "how" is imperative.

PRIDE IN BUSINESS.

Drainage, tile manufacturers contribute so much to the prosperity and development of the country that they ought to feel proud of their business, and do, if they appreciate their work. The thrifty, far-sighted manufacturers of drain tile impresses everyone with the importance and benefits of their products.

They are so situated that they may and do gather information about the details and benefits of land drainage that others ought to know, and may serve their trade in the way of imparting valuable information in season or out of season. They ought to be and many of them are enthused with the importance of their work—they think, talk and read about it, and work out a success.

Everything rests on the shoulders of the average man. Civilization demands that you and I do our best, both for ourselves and the public.

CLAY SOILS.

The farmer who cultivates clay soils and has practical tile drainage to any extent, knows how much less labor is required in the preparation of the soil for the growth of crops. Drained soils are easily plowed—the soil falling away from the plow, thoroughly pulverized and mellow, as good as can be desired for a garden. Drainage adds to the increased temperature of the soil from six to ten degrees—a difference of much importance in the germination of the seed and growth of crops. In the cultivation of crops, the better condition of the drained soil is a source of delight to the observing farmer. The ease with which it is stirred, the mellow condition when worked and the saving of labor in the cultivation of the crops are some of the advantages, to say nothing of the increased yield and better quality of the products.

The wide awake farmer or land owner will not be slow to avail himself of the advantages of under-drainage for his clay soils.

KEEP HIM.

If you have a man in your employ that is a little slow—slower than you like—but he does his work well, is always looking after your interests, doing his work methodically, picking up and caring for little things, careful that his time is occupied in your service, does not object if he works a little over time, if any emergency arises, in fact approves of it—never grumbles at his task, but does it with care, whatever is set apart to him—never encourages the insubordination of others, but rather discourages it, keep him. You might get a better man, but ten to one you will get a worse one when all the little things are taken into account.

Thomas F. McClure, president of the Fultonham Brick Company, Fultonham, Ohio, was recently elected unanimously to the presidency of the Metropolitan Bank and Trust Company, of Cincinnati. Mr. McClure is a man of wide experience and has a reputation throughout the great state of Ohio as a careful and conservative business man.

Written for THE CLAY-WORKER.

**A FEW REGRETTABLE FACTS REGARDING PRICES,
AND KINDLY REMONSTRANCE AGAINST THEM
AT THE BIG JAMESTOWN EXPOSITION.**



NORFOLK HAS HAD every incentive, every chance, every aid, and a perfect conspiracy of sympathy and co-operation to make the Exposition a "go." The steamship companies—notably, the New York and Boston lines—have reduced their rates, and changed their established arrangement of inclusive meal-and-passage, just to accommodate the travelers to Jamestown; the railroads have reduced rates all over the country to the same end; the newspapers, everywhere, are giving free and liberal and complimentary momentum to this big enterprise; the President lent his presence to the opening; the war vessels of nearly every country in the world are drawn around the harbor, in reverential attitude; all the states of the union have a booth or booths in the fair grounds, and are spending piles of money to help on the show, and lastly, and most important, to the success of it all, people are going to see it, in constantly increasing numbers, as the season advances.

Now, the public would naturally like to know what Norfolk, herself, has done, and is doing, to perform her part of the play, viz.: Taking care of the crowds that come.

Your correspondent has studied these points very closely,

them suspicious, all right! At every house, whose alluring ad for lodging had brought me, it was openly insinuated that I might be a burglar, or a fourth-rate crook, or "the-Lord-knows-what!" (And to think that I used to be addicted, in my younger years, to answering all ads that were directed to the attention of "A young man of prepossessing appearance!")

If I didn't resent this, but looked injured, I was shown a bunk, a single bed in a hall room, at \$10 a week, or a cot in a row with a room full for \$1 to \$2 a night, always with this stipulation: "No meals, and no use of bath." Then I would begin, timidly, to ask where meals might be obtained. The kind, cautious people would know nothing about such gross, outside matters, and so a victualling place had to be sought, which proved as exorbitant as the others, and not nearly so near worth the price demanded.

I went over to Boston last week in company with a well known Boston physician and professor, both of whom related a similar experience of having to pay \$10 a day at a hotel whose regular rates are from \$2.50 to \$4.00 per day. Both guests, on leaving, had inquired if rates would be the same later on; both were told that the rates on June 10 would advance to \$12 and up daily.

I have no desire to say anything that may reflect ungenerously on this great enterprise, and these great people; but it is only right that Norfolk should do her part by merely playing fair. She is not following suit, according to the rules of the game, but is trumping every trick!

People come to such places, surely expecting to spend



The Auditorium and Convention Hall, Jamestown Exposition.

and is giving you plain facts, which may be corroborated at any time.

What is Norfolk doing?

Why, just making her prices prohibitory!

All her people seem to have unanimously agreed upon a united squeeze!

"'Tis true, 'tis pity, and pity 'tis 'tis true."

Not satisfied with a large round profit, she is pinching for from 200 to 400 per cent.

You can readily see how your humble correspondent found all this out, since he, not being able to pay \$10—nay, nay!—nor yet \$5 a day at an ordinary hotel, had to hunt up a boarding house. (Heaven help us).

I should like to digress, just here, to avoid getting ahead of my story, and tell why the lean-pursed stranger here, not able and willing to plank down his \$10 per, finds himself an outcast, and "gets it in the neck." With no doubt a towering affection, and a jealous watchfulness, worthy of a young father over his first boy, the chief of police issued—before the opening of the Exposition—a circular letter to the householders, entitled, "A Warning," in which the good inhabitants were told to arouse all their sleeping and latent suspicions; to lock doors, fasten windows, look with caution and distrust upon nice-appearing and plausible strangers who might be seeking ostensible lodging only to burglarize or slay the innocent and confiding.

This official circular did its work to the extreme. It made

money, but they are not consumed of desire to spend all their substance in any kind of a hotel at \$10 or \$12 a day. Some of these people may be able to do that at home, but most of them are not able to do it anywhere; nor to pay equally extortionate rates at private or boarding houses, and denied the very human comforts of a bath-room, and then, in many more instances, having to pace around, seeking what they may devour!

Norfolk should remember that many, if not most of the strangers within her gates are fully expositioned, and are able to recognize hold-ups in a jiffy; also that she is on the winning side, by grace of the very patronage she should protect by merely treating them fair.

Your correspondent has had scores of letters from people asking to be recommended to places of accommodation, but his own experience, and that of scores of others, makes him wary of advising.

The best and most helpful effort for the visitors, in this direction, has been taken in hand by the Y. M. C. A., to which organization I cheerfully recommend all who contemplate a visit here. Write to this Association, state just what is desired, and then wait for specifications before coming.

There is much of interest to be seen even for those of us who have seen all the other big shows of the kind. The naval display is, of course, the piece de resistance, and is the one

unique mark of difference between this exposition and any other yet held.

The accompanying picture was a snapshot, taken by your correspondent, from the deck of the Old Dominion steamer as she glided like a graceful woman with a long train of white fluffy lace, thro' the line of stately and dignified war ships, enchantingly a-light from mast-head to stern.

I sincerely trust that the suggestion of a midyear meeting of the N. B. M. A. will eventuate in a reality, for there are, aside from a general good time, some points of informative interest to this Association.

H. O. OSIER.

Written for THE CLAY-WORKER.

HOTEL RATES AT THE JAMESTOWN EXPOSITION.

A Reply to "Knockers."

I was pleased to learn that the N. B. M. A. will hold a mid-summer meeting at the Jamestown Exposition in August or September. There is a great treat in store for those who will attend this meeting. The Exposition is different, in many respects, from other great Expositions; it being an historical Exposition, held right on the very shores where our forefathers first planted their feet on American soil; situated on Hampton Roads, made famous by the Monitor and Merrimac fight, in our civil war, where now nearly one hundred of the most powerful war ships, from nearly every nation on the globe, lie at anchor and resting in peace. Then we have the "Tented City," where nearly 50,000 soldiers are in camp, and give daily drills, and during the summer they will give sham battles. The military side of the Exposition



The States Building, Jamestown Exposition.

is one of the crowning features of this great show. The exhibits compare favorably with any other Exposition. The view from the grounds is magnificent, and in full view is Hampton Roads and the Chesapeake Bay, and, only a few miles away, is the Atlantic Ocean. Many of the finest sea-side resorts of the south, such as Virginia Beach, Ocean View, Pine Beach and Old Point Comfort, are located around the Exposition.

The Jamestown Exposition is all right, and going to be a great success, regardless of the kickers who are knocking it. I have read articles in some of the leading papers, from all parts of the United States, written by people who seem to be contented only when they are kicking. Some of these articles are absurd and far from facts and truth. Visitors should not expect to find a city like Norfolk, with only 65,000 inhabitants, to be a Chicago, St. Louis or even Buffalo. They try to "bail an ocean of prejudice with a pint measure of reason."

The Washington Post, a few days ago, told of a Washing-

ton lady who paid eighty cents for a raw tomato. I read articles in other papers, one of them being the Tribune, saying the hotel rates in Norfolk are prohibitory, being from ten to twelve dollars per day and up. They say the cafes are trying the get-rich-quick scheme, and they will charge from one to five dollars for a single meal. To this I would say the cafes in Norfolk today will compare in quality of meals and prices with almost any city in this country. A good meal can be had for fifty cents. At some of the hotels they serve a course dinner for seventy-five cents. Below are the rates of the "Inside Inn," located inside of the Exposition grounds.

European Plan: Without bath (two persons in a room), which includes the privileges of the "Inside Inn," and admission to the Exposition grounds, \$2.50 per day, for each person. If the room is occupied by only one person, the rate is \$1.00 extra.

American Plan Without bath (two in a room), which includes breakfast, lunch and their regular one dollar evening table d'hote dinner, including the privileges of the hotel and admission to the Exposition grounds, \$4.50 per day, for each person, or \$1.00 extra for one in a room. After registering



U. S. Battleship in Hampton Roads.

as a guest of the "Inside Inn" you are given a pass which will admit the bearer as many times as he wishes to go out and in the grounds.

The following extract from Governor Warfield's speech on Baltimore Day may be of interest to the kickers. He said:

"I visited the Centennial in Philadelphia in 1876, the Columbian Exposition in Chicago in 1893, and the St. Louis Fair in 1904, and I can say, without exaggeration, that the Jamestown Exposition is superior to them all, from any standpoint. The architectural and natural beauty of the Exposition is without a parallel. If some people went to heaven they would find fault with the surroundings and not be satisfied. As far as the charges of extortion that have been made against the restaurants and other interests here are concerned, I will say that they are without truth, for I have investigated myself. I had a party of friends to dinner here and the bill surprised me. I would have willingly paid that much for the music which went with the dinner. Because the government pier is not finished you should not blame these patriotic people for it. Get after the government; they are to blame. In a few weeks this spot will mark the most beautiful Exposition that America has ever known."

As to the charges in Norfolk hotels, I would like to say you can get an elegant room, in any part of the best hotels, for two or three dollars each. I stopped at the "Neddo" hotel a few days ago, and they charged me three dollars for a large room with two beds, for two in a room, at one dollar and a half each. They serve a regular course dinner and luncheon for seventy-five cents. Yesterday I went in the Terminal Cafe and ordered baked fish, cream potatoes, sliced tomatoes and a cup of coffee; they put down a ticket for forty cents. Does that sound like prohibitory prices? These are facts which I experienced myself this week. I cannot

understand where the kickers get the twelve dollar a day rate from, unless they expect the hotels to provide free tickets to all the attractions on the War Path and pay their car fare and wine bills, with cigars thrown in.

I would advise the members of the N. B. M. A. to stop at the "Inside Inn," inside of the grounds, and to engage their rooms at least two weeks in advance, to make sure of accommodations. If they do this they will have no trouble and will not be bothered by having to ride ten miles on crowded trolleys every night to a Norfolk hotel.

July 2, 1907.

H. L. JACOBS, Suffolk, Va.

Written for THE CLAY-WORKER.

POTTERY NEWS.

THROUGHOUT THE western pottery district trade has been improving since the end of May. The belated summer season held back sales to a considerable extent, but since then the manufacturers throughout the district have had their order books filled. No attempt is being made to cut price lists, and the demand is greater than ever. This is causing every pottery in the west, with but few exceptions, to be operated to its capacity.

Demand for sewer pipe and fire-proofing material is brisk, according to reports in the Yellow Creek and Toronto districts. All factories are being operated to the limit. Trade in the west is picking up at a remarkable rate, and trouble with the shortage of cars has been eliminated to a considerable degree.

Municipal improvements have caused a tremendous demand for fire brick. Factories in the Ohio Valley district are crowded with this sort of business, and the demand continues strong. Prices are firm and manufacturers are being urged to make shipments as prompt as possible. In the New Cumberland district many orders are being shipped to southern points by the Ohio River route, thus causing quite a saving in freight rates. The season, from the present outlook, promises to be the most successful in this line in recent years.

The annual meeting of the stockholders and directors of the reorganized Globe Pottery Company was held last week, when all officers were re-elected and the policy of the company ordered continued. Although the new firm has been in charge but six months, a handsome profit was shown in the first reports.

The Lewis County Pottery Company, of Janelew, W. Va., has just been chartered under the laws of West Virginia, with a capital stock of \$10,000, of which \$1,000 has been paid in, all that is required under the laws of that state. The company proposes to manufacture stoneware and sewer pipe on a large scale. The incorporators are W. E. Smith, J. J. Martin, J. L. Cawthorne, G. B. Late, all of Bridgeport, W. Va. Plans to erect a large factory are under way.

At the annual meeting of the board of directors of the Zanesville Tile Company, Harry L. Mooar, of Columbus, Ohio, was elected general manager of the concern. J. B. Owens, of the J. B. Owens Pottery Company, who held this position, tendered his resignation in order to devote his time to other pottery interests in the Zanesville territory. Mr. Mooar has been occupying the position of secretary-treasurer of the company for several years.

Kilns, similar in construction to the old line sewer pipe kilns, have been successfully used for the firing of general

ware, according to a demonstration just completed by the American China Company, at Toronto, Ohio. This is the largest kiln ever used for bisque firing, being 20 feet in diameter. It has just been fired for the first time. The scheme was originated by general manager Thomas Price, of the American Company. Other kilns of similar nature will likely be built in the district.

At the annual meeting of the Homer Laughlin China Company, which was held in July, all former officers were re-elected. The report of the starting of the new pottery at Newell, W. Va., was gratifying to the officials of the company.

Benj. Harker, for many years superintendent of the Laughlin potteries in the East Liverpool district, has resigned, and is succeeded by Joshua Poole, a native of England, and who has been with the company in an official capacity for several years.

Fire caused a loss of \$50,000 to the brick plant of S. A. Barnes & Co., at Bolesville, near Rochester, Pa. Four buildings were destroyed. The loss is partly covered by insurance. A fireman was seriously injured while at work at the fire.

As a result of the belief that the State legislature, both branches of which are controlled by Prohibitionists, will at the present session adopt Prohibition measures, two of the largest potteries in the Augusta, Ga., districts, whose product was confined almost exclusively to jugs for the liquor trade, have closed down. Since the legislature convened orders for more than 35,000 jugs have been cancelled.

The Tyler Brick and Tile Company has been organized

with a capital stock of \$10,000, the chief works of which will be located at Middlebourne, W. Va. The capital stock is \$10,000. The incorporators are J. E. Grin, D. Hickman, J. E. Sellers, John F. Shore, J. G. Mayfield, W. E. Kirchner, J. W. Swan and O. M. Sellers, all of Middlebourne. It is planned to begin the erection of their plant immediately.

On July 25, the property of the Norris Mining and Manufacturing Company, makers of brick and sewer pipe, at New Salisbury, Ohio, was offered at bankruptcy sale by order of the court.

At a meeting of the Piedmont Brick and Coal Company, of Piedmont, W. Va., just held, it was voted to increase the capital stock of the corporation to \$100,000.

The plant will be rehabilitated and it is believed that it will be one of the best paying properties of the kind in the Piedmont district.

With a capital stock of \$20,000, the Pittsburg Silica and Brick Company has been organized by John M. Heany, Bridgeville, Pa.; Frank R. Schneider, Crafton, Pa.; Oswald Ende, Carnegie, Pa.

The Augusta Pottery Company, of Augusta, Ga., will erect a two-kiln plant for the purpose of manufacturing general ware. Those formerly interested in the industry in the East Liverpool district are back of the proposition.

The annual convention of the National Brotherhood of Operative Potters was held in East Liverpool early in July. The same officers were re-elected. The wage agreement between the United States Potters' Association and the Brotherhood, which has been in force for two years, will expire October 1. A joint conference between the manufacturers and operatives committees will be held in Philadelphia in September. An amicable settlement of all differences is anticipated by all concerned.

O. MEGA.

There are two sides to everything, but there are mighty few people that can see the good in any side except their own.

Mid-Year Meeting of the N. B. M. A.

Jamestown, Sept. 17, 18, 19, 1907.

In response to numerous requests it has been decided to defer the proposed mid-year meeting of the National Brick Manufacturers' Association at Jamestown till September 17, 18, 19, 1907, when the exposition will be at its best and sea bathing and fishing and sight seeing will be most enjoyable. Reduced railroad rates to Jamestown prevail from all sections of the country and special arrangements will be made for hotel accommodations. Full particulars in the August Clay-Worker as to hotel arrangements, etc.



Magnesite Works of Veit.—The American delegation which visited these works has now departed for Coblenz, where the necessary papers will be executed for the signing of the contract for American delivery. The Americans represent the Harbison Walker people of Pittsburg, and also the American Steel Trust. In order to obviate any trouble with the Veit works direct, the contract will be executed through the firm Spaeter, which has conducted the sale of the Veit factories. The minimum quantity which must be exported to America is 5,000 car loads. It can be raised to 7,000 cars. The total production of the Veit works will be from 11,000 to 12,000 cars this year.—Baukermik, No. 16, 1907.

Sewer Pipe For Water Pressure Systems.—The main requirement for the use of sewer pipe for pressure systems is that the ground in which they are to be laid should be of a solid nature, so that no undermining will be possible. In fills or made ground it would not be advisable to use sewer pipe for such purpose. The best material to make water-tight joints is a Portland cement mixture. The application and the putting on of such jointing is very easy to be handled. After the pipes are laid a twine rope soaked with tar is first put in the socket to prevent the cement from getting inside of the pipe. Then the cement mortar, usually one part cement and one part sand, is poured into the socket. With a little care such jointing can be done quickly and cheap, and will stand as much pressure as the sewer pipe itself.—Tonind, Z., No. 43, 1907.

Patching Cement For Saggers.—There are several cements which can be used for patching broken and cracked saggers. These cements are of two different kinds. One will become hard in the fire and the other ones will get hard at the exposure of the air. A good fire cement is obtained by the mixture of 65 parts of fire clay, 30 parts of feldspar, and 5 parts of oxide of lead. This mixture is made in a thick paste by the addition of water. It is burned at between cone 4 and 8, and the amount of lead is changed according to the temperature at which the saggers are burned. For lower temperature more lead; for higher heat, lesser lead.

A cement which will get hard in the air exposure, consists of one part kaolin, one part fine grog or three parts of fine grog and one part of red lead. These mixtures are thoroughly mixed, and made into a paste by the addition of a mixture of equal parts of water and silicate of soda (water-glass). The broken parts of the sagger are well soaked in water, and the cement applied. A string is put around the sagger until the cement is set. Saggers which are patched in this way will last several burns.—Sprechsaal, No. 15, 1907.

Continuous Kiln For Burning of Porcelain.—There are different opinions as to which are the best methods for burning porcelain. Formerly it was held impossible to burn porcelain in downdraft kilns, but since the introduction of this system, and the success obtained with the same, the prejudice against the downdraft kilns is fast disappearing. The burning of porcelain with gas generators was also held impossible until Memdheim, with his gas kiln, proved that such firing could be handled with success. With the exception of the glass industry, there is no other branch of industry which sticks so close to old and antiquated methods as the fine ware clay industries. It is therefore rather exceptional that a manufacturer will consent to put in some new system which is more or less experimental. However, Mr. Egmont von Tielsch, of Altwasser, Silesia, decided to install at his porcelain plant a new continuous system for burning the products of his pottery. The new kiln was designed and patented by E. G. Faugeron, of Montereau, France. It is a continuous chamber kiln in which the products are moved forward on cars and

with one firing chamber. In order to investigate this system thoroughly before adopting and installing the system, Mr. von Tielsch made arrangement and obtained permission from the French pottery in which this system was already installed to make a trial run on his porcelain. The products of his pottery were shipped to France. To be entirely on the safe side even Silesian coal was shipped and used in the trial burn. The results were so gratifying to Mr. von Tielsch that he decided to erect two such kilns at his own plant. The kilns have been in operation since July, 1905, and are giving entire satisfaction. The first kiln used for biscuit burning is 45 meters (135 feet) long, while the second kiln is 60 meters (180 feet) long, and used for glaze burning. The kiln proper is a long canal or tunnel in which the ware is put on little cars which move forward at the rate of 3 feet per hour for biscuit burns and one and a half hours for glaze burning. The products of this kiln are fully as satisfactory as those burned in down draft kilns, and the saving of coal and other items is entirely in favor of this system of kiln.—Tonind, Z. No. 45, 1907.

The Cost of Manufacturing Bricks.—In order to obtain an idea as to the cost of manufacturing brick, we give the following data which was obtained from a brickyard in the vicinity of Berlin, which produced annually about 6,000,000 brick. The freight to Berlin by railroad is 4.00 marks (\$1.00) and by water 5.00 marks (\$1.25) per 1,000. The capital necessary for the erection of the plant was 200,000.00 marks, while the working capital, all according to the building market, is from 40,000 to 60,000 marks.

The cost of production is figured as follows:

	Mark	
1. Clearing of the claybank	0.30	\$0.075
2. Clay-mining, loading and unloading at crusher	1.50	0.375
3. Clay preparing ready for the machine....	0.65	0.1625
4. Making of the brick at the machine.....	1.30	0.325
5. The emptying of the forms.....	0.05	0.0125
6. The setting of the bricks on racks at machine	0.20	0.05
7. Hacking of the dry brick and cleaning up	0.65	0.1625
8. The preparation of the drying places....	0.10	0.025
9. Fireman and engineer	0.10	0.025
10. Setting of the brick in continuous kiln, also drawing and cleaning	1.50	0.375
11. Burning of bricks	0.40	0.10
12. Distribution of coal at continuous kilns..	0.07	0.0175
13. Loading of brick, either cars or scows...	0.50	0.125
14. Stable account (2 horses)	0.40	0.10
15. Supplies and materials	0.15	0.0375
16. Repairs and Seger cones	0.75	0.1875
17. Coal for continuous kiln	3.00	0.75
18. Coal for engine	0.75	0.1875
19. Petit expenses	0.13	0.0325
20. General expenses, postage, telephone....	0.20	0.05
21. Salaries, manager, bookkeeper	0.30	0.075

Total cost of manufacturing.....13.00 \$3.25

In addition to this we have the general expenses divided as follows:

	Mark	
a. Government sick fund	0.15	\$0.0375
b. Government pensions and insurance fund.	0.15	0.0375
c. Taxes and insurance	0.25	0.0625
d. Building account	0.50	0.125
e. Associations, taxes	0.20	0.05
f. 5 per cent. annual deductions	1.75	0.4375
g. Interest 5 per cent. on capitalization.....	2.00	0.50

Total fixed charges

Taking the two charges which brings the total cost of manufacturing up to 18.00 marks, or \$4.50 per 1,000 brick f. o. b. cars at factory.—Tonind, Z. No. 45, 1907.

Cornwall Stone.—This raw material, which is extensively used in England and America in the Ceramic industry, is known under the names of Cornish stone, Cornwall stone, Pegmatite-Crowan stone, China stone, but commonly called "Stone" by potters.

It is produced by the disintegration of granite and is therefore closely related in its composition to feldspar and kaolin. It contains less alkali than feldspar, but more than kaolin. The average composition of the better grades is 5 per cent.

potash, 18 per cent. alumina, and 75 per cent. silica, with smaller quantities of lime, magnesia and sodium.

Cornish stone can be more easily ground than feldspar. In perfect broken state it resembles closely flint, it is harsh. It is very changeable in chemical composition and in that respect quite often produces undesirable effects. It is used greatly in the production of glazes. In bodies it is used to obtain greater vitrification. In combination with lime it fluxes quite readily; borax can also be used to advantage.—Keram. Rundschau, No. 18, 1907.

Written for THE CLAY-WORKER.

NOTES FROM TIDEWATER, VA.

The

THE BRICKMAKERS of this section are all busy and running full time. The demand continues to be good, with good prices. The Exposition being now in full blast has not hindered building, as the demand for more buildings is still on. The Tidewater Railway Company has plans drawn for an eight-story depot. This building will be built of brick, faced with light colored press brick. We are feeling the effects of reinforced concrete and cement in different forms, yet the better class of buildings call for brick. We have ten new brick plants in operation this spring and a large sand-lime brick plant now being built at Cape Henry, Va. This spring we have had forced on us about fifteen concrete block plants; they, of course, are doing their share of business and cutting off the sale of a large quantity of brick.

The Waverly Brick Company, Waverly, Va., John Sailes, general manager, are now in operation and have burned their first kiln of brick. They have put in an outfit made by the J. D. Fate Company, of Plymouth, Ohio.

Whitfield Bros. Company, of Suffolk, Va., have started their new plant in operation and will soon be on the market with brick. They have an outfit furnished by Chambers Brothers Company, of Philadelphia, Pa.

Mr. Elliott S. Morse, general manager of the Potomac Brick Company, Washington, D. C., visited this section last week. He said they were putting in new machinery in their Washington plant, made by the J. D. Fate Company. He reports business very good in the Capital City.

W. Benjamin Davis, of Richmond, Va., who built a new, large and up-to-date plant this spring, has added a new steam shovel to his equipment, making this one of the largest and most complete plants in the state, with a capacity of 100,000 brick per day. This plant is located in Manchester, Va., just across the river from Richmond. He, also, has a soft mud plant in Richmond, with a daily capacity of 40,000 brick.

I visited his plant last week and Mr. Davis showed me around the plants. After visiting them we drove over to see a number of large buildings he is putting up. Mr. Davis is the largest contractor in the state capital, and finds use for all the brick he can make in his own buildings. He has on a force of sixty brick masons and has buildings going up all over the city. Mr. Davis is one of those big-hearted men who is always glad to meet visiting brickmakers and takes a pride in showing them around.

The city of Petersburg is having 24,000 yards of vitrified brick streets put down. I examined these brick and found them to be the Mack block, made by the Mack Manufacturing Company. A. G. Murphy, of Port Huron, Mich., has the contract at \$2.03 per square yard, on concrete foundation.

W. F. Frazier is now burning his first kiln of brick at his new plant in Suffolk. This kiln of brick will be used in building a dryer and kiln walls.

J. L. Bangley has started a new brickyard near Suffolk. He is building a yard for hand molding and will make by hand this year and will put in a stiff mud machine next year.

Mr. King, of the King Engineering Company, built one of his latest improved hot air dryers for W. Benj. Davis in his Manchester, Va., plant. This dryer is giving perfect satisfaction and Mr. Davis is well pleased with the King dryer and says it comes right up to the guarantee. Mr. King looked after the construction of this dryer, also one of his patent kilns for burning brick. I had a talk with Mr. King while in Richmond and found him to be a practical man in all lines of brickmaking. I can cheerfully recommend his dryer as being

one of the best on the market. He has several of these dryers in operation in Washington, D. C., which are giving entire satisfaction.

The Virginia Brick Company, successors to D. C. Harrell & Company, of Suffolk, will install new machinery and dryers in their plant in the near future. They have the matter up now and are about ready to place their order.

The J. P. Watson Brick Company, incorporated, will engage in the manufacture of brick and tile at Danville, Va. Officers: John T. Watson, president; Geo. A. Watson, vice president; J. T. Watson, Jr., secretary and treasurer.

G. C. Baldwin will build a new plant at Hoffman, N. C., to manufacture sand-lime brick and hollow blocks.

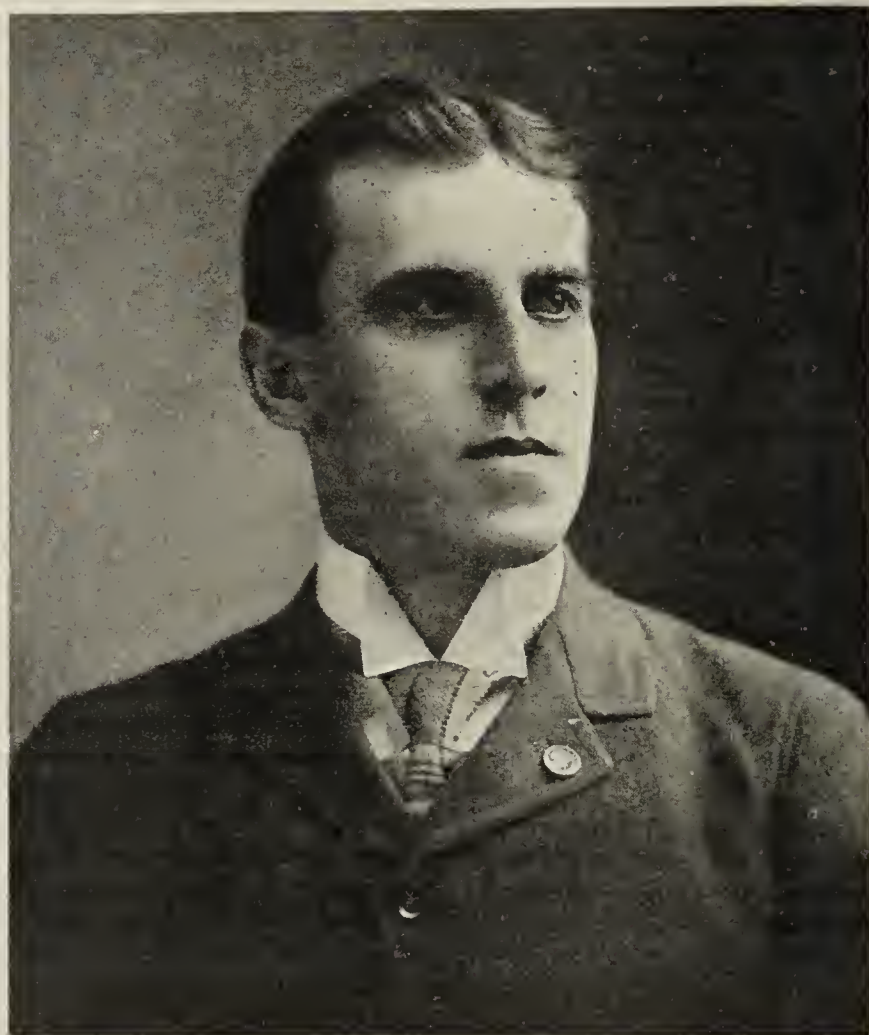
H. Powell and T. Currin will also establish a cement block plant at Oxford, N. C.

Montreal, N. C., is to have a \$50,000 concrete building material plant. The incorporators are B. O. Townsend, of Montreal; Fleming Ramseur and Walter Ramseur, of Shelby, N. C.

E. J. Dewine talks of putting in a large brick plant in the near future. The location will be on the Nansemond River, about five miles below Suffolk, Va. H. L. J.

ONE YEAR OLD.

The Mantel, Tile and Grate Monthly, published at Utica, N. Y., completes with the recent June issue its first year of existence. It is a spicy little publication and is the official organ of the Interstate Mantel and Tile Dealers' Association and also to the Wood Mantel Manufacturers' Credit Associa-



W. B. Edwards, Editor The Mantel, Tile and Grate Monthly.

tion. It is doing some good work in the trade, both in the way of promoting harmony through the organization and in handling technical questions and boosting the tile and mantel business generally. Edwards Bros. are the publishers and seem to be making good progress, not only in the work they are doing in the trade, but in the minds and hearts of the manufacturers also, who are showing their appreciation in a fair volume of advertising patronage.

The Eureka Brick Company have their new brick plant about completed, at Lynnhaven, Va., Mr. L. W. Doyle, general manager. Mr. Doyle says business is good but prospects are gloomy, owing to so many plants going up and the building boom caused by the Exposition may take a turn for the worse after the "big show" is over. Nevertheless we must live in hopes of continued prosperity.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



KANSAS CITY IS having a hard time this year to keep up with the building record made last year, and it begins to look like the figures for the year will show a decrease. There certainly was a big decrease shown in the month of June. The total cost of buildings for which permits were taken out in June, according to the estimates made when the permits were applied for, was \$771,820, as compared with \$1,453,140 the same month of last year, or a decrease of \$681,320. The total value of the permits issued last month for brick buildings was \$308,300. Taking the situation as a whole, the outlook is not especially good for the balance of the year. It is noticed that there has been a reduction in the front feet of new buildings, which would indicate that the small houses are not as numerous this year as last. There has been a great amount of home building for several years, homes being built to sell on installments, and then there has been a great many flats constructed for rental purposes, and many fine residences. It is thought by some that the building was overdone, and that the city population has not been keeping up with the increase in building. Others state that there is still plenty of demand for new houses, but people are a little more slow about putting their money into their construction.

The fact of the matter is, the high price of all kinds of building material, except brick, seems to be having its effect upon contractors, and they are hesitating about putting so much money in a building which may not be in great demand in a couple of years. Brick prices remain about the same as they have been for several years, so there can be no complaint from that quarter as to advance in building cost.

Over across the state line, in Kansas City, Kas., there was 94 building permits issued last month, with an aggregate value of \$186,560.

An attempt is being made to establish a new factory center on East Fifteenth street, near Benton boulevard, but the owners of residences in that section of the city are up in arms against the movement, and will fight it to the last ditch. As a factory site, the ground would be fine, but from the point of view of the residents living in that vicinity, it would be far from pleasant. The movement was started by the owner of a large sash and door factory, which will be compelled to move before the new union depot is erected, who wants to be within easy reach of the main part of the city and does not wish to go out to any of the present factory sites.

The union depot proposition is still in a languishing state. The railroads do not seem to be in any hurry to build, and the city is not rushing them in any way. The depot is badly needed, but the people seem to have become accustomed to waiting for it.

The boat line, which has been talked about so much, has at last been established, and one of the boats is making regular trips, to soon be followed by others. The rate of freight is about 60 per cent. of the railroad rate, and the time consumed in bringing the freight across the state is about the same as that used by the railroads, when switching is figured in. The line is so new that coaling stations have not yet been established, and there is a great deal of preliminary work before everything will be going smoothly. It is predicted that at no very distant date the large firms in Kansas City and at other points along the river, will own their own barges, and they will be handled by the steamship companies, and that brick will be brought in here by the barge load, and possibly shipped to eastern points in the same way, the Kansas vitrified brick becoming more and more popular in the east, and our need for the fancy face brick making it

possible to haul loads of the same material in both directions.

The fact that vitrified brick are in such great demand, both for building and paving, has kept the Kansas plants running good time, and their product seems to be well sold. At least none of them seem to be very anxious to sell brick in this city, and prices hold up good and stiff. On the other hand such plants as are making the pressed brick are generally reporting business dull, and they have large stocks of brick on hand to prove the condition they complain of.

The Lyle Brick Company will start to making brick in its new plant, Forty-eighth and Main, next week, and the company is glad of the relief this extra output will give, for the old plant has been loaded down with orders right along.

The Flanagan Brick Company is rushed with orders, the output being gobbled up as fast as produced, and they are making efforts to increase their capacity on red shale brick. They have purchased a large tract of shale property just east of the No. 1 plant of the Lyle Brick Company and will build an entirely new plant at that point, where they have a twenty-foot strata of fine blue shale.

The Roll Brick Company is reporting a steady demand for brick, there being no rush this season, but a good steady business.

The Kempfe Shale Brick Company is unable to supply the demand, but hope to commence the erection of their new plant, adjoining the old plant, in the very near future. They had quite a little fire there a few days ago, but after fighting the flames a couple of hours got the better of them and the loss was less than \$1,000.

The Eadie Building Supply Company has just taken possession of its new rooms in the Scarritt building, where the leading dealers in building supplies seem to be establishing headquarters, following the Builders' Exchange to that point. These people have office 316, which is next to the Exchange headquarters, and one of the best located offices to attract the attention of contractors. They report business good and state that they have just landed the contract for the face brick for the Laederich eight-story office building, corner Tenth and Main, and the brick to be supplied will be the Straitesville, Ohio, impervious buff speckled brick, which are practically vitrified and will indefinitely retain their color. They have also just closed a contract to furnish all the brick needed for the construction of a large roundhouse and shops to be erected by the Chicago, Rock Island & Pacific R. R., in Armourdale, Kan.

Taylor & Winn have secured the contract for the brick work of the new Baltimore hotel building, and this work will be rushed to early completion, as it is the owner's intention to have the building entirely completed and ready for occupancy before the National Republican convention in 1908.

The Pittsburg Brick Company will move from its present quarters in the Postal Telegraph building, to the third floor of the Scarritt building, August 1.

T. B. Price, auditor of the Pittsburg Brick Company, is ill at Excelsior Springs, but reports from him are now very encouraging, the past week of dry hot weather having been very beneficial.

K. A. W.

BITULITHIC DON'T LOOK GOOD.

Aldermen from one city frequently take junkets to other cities when the question of paving comes up to see the results obtained from the use of different paving materials. And, while these junkets result sometimes one way and sometimes another, the fact will crop out as it did recently when some aldermen from up in Iowa went to St. Louis to study the bithulitic pavements and went home feeling they had better stick to their brick paving. The fact of the matter is, asphalt paving of any kind, after it has been in use and worn awhile does not look good in the winter time, because it is slick and icy, and does not look good in the summer time, for it gets soft and hot so that it digs into holes. So, as a general proposition, it does not look good any time when it is backed up against good brick paving, and the main wonder is that more people have not found this out sooner.

Written for THE CLAY-WORKER.

THE AMERICAN CERAMIC SOCIETY'S MIDSUMMER MEETING.

A Series of Pleasant Visits to Interesting Plants at Schenectady, Glen Falls, and Perth Amboy, Including a Trip Down the Hudson River by Night.

THE EIGHTH ANNUAL midsummer meeting of the American Ceramic Society was in every particular a most enjoyable occasion. It included visits to some of the greatest factories in their special line, in the world, and afforded those who were so fortunate as to be present the opportunity of making never-to-be-forgotten pleasant excursions to Lake George, Saratoga Springs and a beautiful night trip down the Hudson River.

The neat announcements sent out by the committee on arrangements resulted in calling together nearly a score of ceramists who met at the Edison hotel, Schenectady, on the morning of July 11.

After hearty greetings, the crowd boarded an electric car for a day's inspection of the

General Electric Company's Enormous Plant.

Under the guidance of Mr. L. H. Barringer, a member of the Research Department at the plant, the visitors arrived at the main office at 10 o'clock, where they were royally received, and extended the privilege of spending the day in and about the mammoth factory, which is a veritable town in itself, employing over 16,000 workmen, and owning its own emergency hospital, fire department, and two large restaurants. Space will not permit a detailed description of this plant, which is divided into many important departments, each having sub-branches.

There are 180 buildings constructed of brick and concrete, covering 275 acres of ground. The Porcelain plant was the first and perhaps the one most enjoyed by the visitors, due to the fact that it was along the line of work in which they were most interested. We were received by the foreman, Mr. Cermak, who, together with Mr. Barringer, the latter a graduate of the Ohio School of Ceramics, explained the various processes. One noticeable feature was the absence of all shaftings, the different machinery being driven by individual motors. This adds greatly to the appearance of the plant, besides economizing space and giving better facilities for the various operations.

The raw materials are stored in huge bins at one side of the grinding and preparation room. English china clay, New Jersey ball clay, feldspar and flint are used for the body of the ware, and are taken from the bins, ground and mixed in the right proportions and then placed in duplex blungers of which there are four. After being thoroughly blunged,

the material is conveyed to a shaking screen and thence to two immense filter presses. Both presses are without the center valve and are so constructed that any of the bags may be removed in case of leakage, without interfering with the others. It takes an hour to fill these presses, which are capable of 110 pound pressure. Crossley machinery is used almost altogether. From the presses, the slabs of clay are taken to the dryer, where they are placed on shelves. After being dried they are taken to the dampening bins, back of the disintegrators, where they are broken up and thrown in a pile. When dampened to a uniform consistency, the clay is passed through disintegrators, being ground almost to a powder and then thrown into sealed bins, which obviates the dust nuisance.

The clay is now prepared for its journey through the factory, and is carried to the different presses in steel cars. There are seventy presses in constant use, over eighteen hun-



At DeLong's Yard Office.



DeLong's Clay Brick Plant.

dred stock shapes being owned by the company, who make all of the molds for the presses. They use a mixture of lard oil and gasoline for lubricating the molds.

From these presses the green pieces are taken on boards to racks, where they are dried in from four to five days by steam heat, then smoothed and prepared for the kiln. Sixteen revolving stands are used for spraying the slip on the ware, two foot exhaust fans being employed at each stand, driven by motors. The slip for the large ware is put on by means of a double spray.

The ware is placed in the kilns in saggars. There are eight kilns ranging from eight to sixteen feet in diameter, all double crown muffle kilns of up-draft construction, holding from 1,200 to 4,000 saggars. It takes from twelve to thirty-five hours to burn the ware. Large storage sheds adjoin the kiln rooms, but they were almost empty at time of visit.

They make only a small number of their saggars, finding it more convenient to buy from outside firms. However, they have a dry pan and pug mill for preparing saggar clays, and operate one saggar press.

The company is now erecting a large building to the rear of this department, which will be a repetition of the present one, thus doubling the capacity.

From this department we were escorted through the various departments of the other branches, where everything needed in the electrical line, from the covered wire to the large street railways controllers and immense generators were being turned out, and the visitors observed the modus operandi of the work from start to finish with unflagging interest.

At 2 o'clock the party was conducted to the officers' dining room, where an elegant dinner was served, after which the inspection of the plant was resumed.

We were told that 18,000,000 feet of lumber is used annually in packing the ware for shipment. Over 3,600 motors are used in running the machinery, exclusive of the testing station. A number of interesting experiments were being carried on in the testing department, where large insulators were subjected to a current of over eighty volts.

In addition to the Schenectady plant, the General Electric Company operates three other plants, one at Linn, Mass., employing 6,000 men, one at Pittsfield, Mass., employing 3,000, and a third at Harrison, N. J., employing 3,500 men.

From the General Electric plant we went by trolley to the works of the American Locomotive Company, an immense factory turning out thousands of high grade locomotives every year, where the rest of the afternoon was spent. One of the features of this plant that interested our party most was the hammering of the molten masses of iron into huge blocks, ready for use in the factory.

Trip to Glens Falls.

Early Friday morning, the crowd boarded the Delaware & Hudson River train for Glens Falls, where we were met by Mr. D. P. DeLong and his son Archibald, who escorted us to their brick plants. This is one of the few companies operating both a clay brick plant and a sand-lime brick plant.

The clay plant was visited first. It is operated entirely by water power, the water being furnished by a creek running past the works, which develops fifty horse-power. They have twenty acres of alluvial clay running ten feet in depth, varying in color from yellow to blue. The clay is carted to large tempering pits, of which they have two, each 22 feet in diameter and 4 feet deep, with concrete floor, and hold enough clay for 30,000 brick. Coal dust is mixed with the clay in the proportion of one-half bushel to every 1,000 brick, or 15 bushel to each pit full. The clay is tempered by means of a large wheel attached to a shaft run by water power. Three hours is the time required for this work. From the pits the tempered clay goes to an A. M. & W. H. Wiles & Co.'s six-mold machine. The sand for the molds is dried in a Henry Martin sand dryer. From the machine the brick go to eight track Standard steam dryer of 55,000 capacity.



A. C. S. Tourists taking Special Car.



Clay Bank at C. Pardee's Plant.

Thirty-six hours are required to dry the brick, and they are then placed in a field kiln, about 800,000 brick to the burn being the general run. They burn entirely with wood, it taking 36 hours for water-smoking and 5 days to complete the burn, the coal dust in the clay facilitating this work. A beautiful red shade is obtained by the additions of finely ground limonite.

The Granite Brick Company's Plant.

Across the road is the plant of the Granite Brick Company, an incorporated concern, of which the DeLongs are the heaviest stockholders. They have fifteen acres of a fine grade of coarse sand, which is brought in from the bank in carts and run through a rotary dryer twenty feet long and four feet in diameter, made by the American Process Company, of New York City. From the elevator the sand is elevated to screens, and is then dropped down to the measuring machine, where it is divided, and lime added to half of it, and passed through a tube mill, where it is ground very fine and then dropped into a pug mill, where it is mixed with the unground or screened sand. This division process was installed by the International Sand Lime Brick Machinery Company, of New York City, and is considered an improvement over the old method, where all the sand was of the same degree of fineness, the difference in the size of the grains of sand making a better bond. The sand in the tube mill is ground to 200 mesh. The mixture, after the coarse sand has been added, consists of 6 per cent. lime and 94 per cent. sand, and is elevated to silos, where it is allowed to stand over night, giving the lime a chance to thoroughly slack, after which it is conveyed to the Boyd presses. From the machines the brick are loaded carefully on cars, holding 700 brick each, and then placed in the hardening cylinders holding twenty cars, where they are subjected to 120 pound steam pressure for eight hours, after which they are ready for the market. They purchase the lime in bulk, and get a high grade lime free from magnesia. The brick pass the New York test higher than any other sand-lime brick and sell at \$8.00, f. o. b. at the yard. The company recently furnished 200,000 brick for the Glen Falls High School, and a like number to the Plattsburg hospital, and 400,000 to the Hudson River Electric Company for interior work.

From the DeLong plant, the crowd went by trolley to the Glen Falls paper mills, where they were shown the method of manufacturing paper from wood pulp, from the time the log enters the factory until it comes out the finished sheet, ready for the press.

After noonday dinner at the Rockwell House, the crowd separated, those on pleasure bent going to Lake George, while the rest of the party went to the Glens Falls Portland Cement Company's plant, where the Iron Clad cement is made. They were escorted through the plant by the superintendent, Mr. F. R. Jorgensen.

The rock, consisting chiefly of limestone seamed with shale and slate, is dynamited, after which it is passed through gyratory crushers, of which they have two. It is then elevated to two tubular dryers, from which it is again elevated to large bins. From the bins it goes to scales, where the various materials are weighed in proper proportions and then mixed, after which it is dropped down into four comminutors of 30 mesh. It then goes to tube mills, where 98 per cent. of the material will pass 40 mesh after grinding. From the tube mills it goes to rotary kilns and is subjected to a heat at cone 20. The red hot material is dropped from the 120x7 feet kilns into steel conveyors which carry it under a spray of water for cooling. It is then elevated to rotary coolers, thence to weighing cars, then again to comminutors, and the tube mills, and thence to the storage rooms, where it is barrelled and sacked ready for the market.

The inspection of this plant wound up the day, and it was nearly 6 o'clock when we boarded the train for Saratoga Springs, where we met the rest of the party and Prof. Binns,

of Alfred University, on his way home from a business trip. From Saratoga we went to Albany, where we boarded one of the magnificent Hudson River boats. Here Mayor Boleschweiler, of Perth Amboy, joined the party, and acted as guide and chaperone in a manner that left nothing to wish for, and added much to the pleasure of the trip. The journey down the Hudson by night was one of the most enjoyable features of the meeting, and it was long after midnight before the ceramists sought their state rooms.

The Day at Perth Amboy.

We started the day by breakfasting on the boat as it lay at anchor, and then made our way by ferry and rail across Staten Island to Perth Amboy, where we were greeted by a large crowd of delegates, including three members of the Roessler-Hasslacher Chemical Company, and were taken in the Mayor's special car to the Packer House, where we left our luggage and were decorated with badges bearing the inscription, "American Ceramic Society, Eighth Annual Meeting, Perth Amboy, Third Day."

Mayor Boleschweiler announced before starting out again, that the entire party was in his care for the day, and anyone caught spending money would be considered a trespasser, and would be locked up until repentant. The first stop after leaving the Packer House was at the large plant of Henry Maurer & Sons, at a suburb known as Maurer, where several A. C. S. members, including our good friend Edward C. Stover, joined the party. After an enjoyable Section Q meeting tendered by the mayor, we were conducted through the fire-proofing plant by John Pfeiffer, the superintendent. They manufacture fire-proofing of all kinds, also high-grade fire brick. They have one clay bank at the plant and one eight miles distant. The ware is made on machinery which is manufactured by the company and burned in two large Hoffman 14 and 16 chamber kilns and sixteen down-draft kilns. The top of the Hoffman kilns are used for drying the brick. The 16-chamber Hoffman kiln has been under constant fire since 1892. The products take a heat of 3,000 degrees, Fahr. Nine large down-draft kilns are used for burning firebrick and seven clamp kilns for burning common brick.

The plant was established in 1874 and has been in continuous operation ever since, and now has an annual output of 75,000 tons of clay products. Mr. Maurer has built up this part of Perth Amboy, which bears his name, and it is a monument of which to be proud. The company has built a hotel, postoffice, restaurant, saloon, railroad station and many dwellings, including twenty-five houses, which are occupied by their employes. We were shown at the plant a 30-foot flat arch, made of hollow blocks, which has been up six years, and stands a pressure of 300 pounds to the square foot.

The next stop was at the American Smelting and Refining Company's group of plants. Mr. H. Garlich showed the party through the plant. One of the most interesting sights was the refining of \$6,000 worth of silver, while the visitors were looking on.

From this plant the party went to the works of the New Jersey Terra Cotta Company, where we were met by the superintendent, Mr. W. H. Grieswald, and spent an enjoyable hour. A large line of architectural terra cotta is turned out at this plant, which is equipped with American Clay Machinery Company's machinery, and a New York Blower Company's fan. The fine clays come from Metuchen, the home of C. A. Bloomfield, and are stored in large sheds at the plant. The old terra cotta is ground up and used for grog. The ware is burned in ten large kilns.

From this plant we were taken back to the hotel, where a fine dinner was served by the courtesy of the Roessler-Hasslacher Chemical Company. This was ended by speeches by His Honor, the Mayor, Prof. Karl Langenbeck, of Washington, D. C., and Stanley G. Burt, the president of the society.

The last trip was out to the clay bank of the C. Pardee

Clay Company, where a picture of the group was taken. From here the crowd went back to the Packer House, where one of the most enjoyable midsummer meetings of the A. C. S. was adjourned. A number of the party took advantage of the close proximity of Perth Amboy to the Jamestown Exposition and extended their vacation by taking a flying trip to the Exposition.

List of Those Who Participated.

A. BoleschweilerPerth Amboy, N. J.
J. Parker B. Fiske.....Boston, Mass.
Charles A. Bloomfield.....Metuchen, N. J.
C. H. Griffin.....Worcester, Mass.
Howard BloomfieldMetuchen, N. J.
Walter M. Fickes.....Carnegie, Pa.
W. J. Stephani.....Philadelphia, Pa.
R. H. Minten.....Perth Amboy, N. J.
H. B. Wells.....Matawan, N. J.
Frank E. Pyatt.....Matawan, N. J.
M. E. Gregory.....Corning, N. Y.
James E. RandallIndianapolis, Ind.
Thorfin TachNew York, N. Y.
Peter P. OlsenSouth Amboy, N. J.
Prof. C. W. Parmelee.....New Brunswick, N. J.
Prof. Edward Orton.....Columbus, Ohio.
Edward C. StoverTrenton, N. J.
Charles WeelansTrenton, N. J.
Everitt TownsendTrenton, N. J.
Karl LangenbeckPerth Amboy, N. J.
M. A. MetznerPerth Amboy, N. J.
C. N. ThrallTottenville, N. Y.
Wm. MathiasenPerth Amboy, N. J.
G. B. FordSouth Amboy, N. J.
H. E. AshleyNewell, W. Va.
W. H. GreiswaldPerth Amboy, N. J.
L. M. RossiPerth Amboy, N. J.
August RossiPerth Amboy, N. J.
W. A. CrowellPerth Amboy, N. J.
Fritz HaylerPerth Amboy, N. J.
Carl DirkesPerth Amboy, N. J.
Stanley G. BurtCincinnati, Ohio.
Otto W. WillNew York City, N. Y.
C. Howard SmithPerth Amboy, N. J.
Ferdinand L. Titsworth.....Tottenville, N. J.
W. MalschNew York, N. Y.
C. T. Montgomery.....Columbus, Ohio.
F. H. HastingsHartford, Conn.
L. H. Barringer.....Schenectady, N. Y.
S. H. KanmacherSchenectady, N. Y.
A. F. HobbsSchenectady, N. Y.
F. Cermack.....Schenectady, N. Y.
H. A. PluschRocky Hill, N. J.
D. P. DeLong.....Glens Falls, N. Y.
Archibald DeLongGlens Falls, N. Y.

PERTINENT POINTS ABOUT THE SCOTT KILN DRYING SYSTEM.

Nearly everyone associates with the Scott kiln drying system the idea that it is dependent upon some particular type of kiln. The fact that its original promoters were at the same time promoting a semi-continuous kiln, and the further fact that the inventor is also a designer of a patent kiln, which he uses, have tended to strengthen this idea, so that it has now become very generally fixed in the minds of brick manufacturers. As a matter of fact, this system is adapted to any kiln. It is:

- 1st. A mechanical conveying system.
- 2nd. No dryer is necessary, the brick being set and dried in the kiln, directly from the machine.
- 3rd. The brick can be dried just as easily in a scove or clamp kiln as in a down draft or semi-continuous kiln.
- 4th. It is immaterial to us what type of kiln the purchaser may now have, or may contemplate building.
- 5th. The kiln of itself has nothing to do with the system, any more than the steam boiler, further than being one of the units which form a means to the end.
- 6th. We do not design kilns, neither do we pose as kiln experts.
- 7th. The system in no way affects the burning of the bricks, as they can be burned in exactly the same way as with other systems, with the same amount of fuel, in the same time, there being less bats and damaged brick, because they are subjected to less handling.
- 8th. First, last, and all the time, it is a conveying and drying system, which eliminates 50 per cent. of the labor commonly employed; does away with 350 to 1,000 or more cars, with their racks, pallets, etc.; makes unnecessary the use of from 5,000 to 10,000 feet of rail; from 1,000 to 3,000 ties and stringers; a lot of turn tables, switches, thousands of feet of steam pipes with attendant fittings; and expensive dryer building; and 10,000 to 20,000 square feet of ground space occupied by same; enables the owner to set more brick with fewer men; to empty the kiln in one-third the usual time; to load three freight cars with the same force and in the same time it previously took to load one.

THE HARRIS SMOKELESS FURNACE.

We have upon our exchange table some very interesting literature on the Harris smokeless furnace. This is a new invention in the boiler furnace line which claims to be absolutely smokeless, even when using soft slack coal of the very lowest grade. Smoke never issues from the chimneys, except when the fire doors are held open, at which time the flaming of the gas is reduced below the temperature of the flames by the inrush of the cool air. Only a grey haze escapes when the doors are first opened. According to the claims of the inventor there is no sooting of shells, tubes, or flues, from imperfect combustion, and it makes a higher heat than can be made or maintained in the old style furnaces, as the heat is impinging constantly on clean shells and in clean flues of the tubular boilers and on water tubes, it stands to reason that a higher heat can be maintained and it is easy to understand why this furnace takes so little fuel. The heat from the smokestack of this furnace is very clear and about 400 to 500 degrees Fahr., and can be turned into the brick dryer with great satisfaction and economy. This is now being done at Albany, Ga., and does away with the expense of installing steam pipes for the dryer, which means a great saving. Instead of using steam jet in the furnace boxes, the steam is superheated to dissociation in a cast iron dissociator and sprayed into the fire boxes as "oxygen" and "hydrogen" gases. These hydro carbons of the fuel form instantly and



Boiler and Furnace with Harris Smokeless Attachment.

constantly producer or water gas, and the induced aid which has flowed up through the steel air flues from the ash pit and passed between the red hot arches follows the blowing of the gas over the fire and sets the volume of water gas into a white flame, which does away with any smoke or soot in the fire boxes or stack.

The furnace can be applied to stationary brick dryers, lumber dryers or to rotary dryers, at a cost of from \$175 to \$400, including the material with which to build, drawing of plans, and the privilege of usage. Several plants in the South are using the furnace with the utmost satisfaction. The W. D. & C. H. LeSeuer Brick Company, Nashville, Tenn., have installed the Harris smokeless furnace and say it saves them one-third of their old fuel bill and gives better satisfaction than any furnace of the same size they ever used. One of these furnaces is now being installed at the Albany Brick Company's plant, at Atlanta, Ga., where an eighty horse power tubular boiler is used. They expect to dry their brick with the waste heat from the stack.

The inventor, J. B. Harris, M. D., 307½ Second Avenue, N., Nashville, Tenn., will be glad to give any information desired in regard to the Harris smokeless furnace.

In the interesting "story" of the Texas Fire Brick Company's plant at Corsicana, on pages 28 and 29, mention is made that they are using a four-mold Boyd press, and a dry pan made by the same firm. The letter from Corsicana under date of May 30, 1907, given on page 7, shows how well pleased the T. F. B. Co. are with their Boyd machinery. Mr. Schwarz

is to be complimented for his candor. It is not every manufacturer who is willing to give credit as he does to those from whom they purchase machinery, etc. It indicates a broad gauged generous disposition, which in part accounts for the success of the Texas Fire Brick Company.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.



CONDITIONS with the brick men of Cleveland improve as the season advances, for the volume of building is becoming greater as the good weather continues. Most of the big structures are now under way although new ones are being continually planned.

Contracts for the new bank building on Euclid avenue, for the First National Bank of Cleveland, have been let, and

Cleveland firms have come in for the cream of the work. The front of the massive monumental structure is to be of granite, but the sides and courts will be of pressed and enamel brick.

The Cleveland Builders' Supply Company have secured the contract for the pressed brick, which are to be of a light gray color. Some 150,000 will be needed on the job. The Cleveland Hydraulic Press Brick Company has secured the contract for the terra cotta job. It is to be of granite enamel finish to match the general scheme. The enamel brick job goes to the Stowe-Fuller Company, with offices in the Superior building. They are to be white and 60,000 will be required to complete the courts.

After numerous injunctions from rival contractors and others, the new \$4,000,000 county court house contracts have been let to Andrew Dall & Son. Although the massive structure is to be of granite a vast amount of brick will also be used. Several millions of the shale variety will be required, while 800,000 white enamel brick will be used in the courts. The contractor has not yet announced from whom he will purchase his supplies but the local brick agents are hot on his trail and expect to land the contract soon.

What will probably be the most unique terra cotta job in country will be on the Webb C. Ball building on Euclid avenue. The structure is at present three stories high, but is to be raised to seven. The present front is gray pressed brick. When the addition is up the entire front is to be faced with white enamel brick. For the first three stories the brick will be anchored to the building and on the new addition it will be attached direct. This is the first time this kind of work has been attempted here and the terra cotta men are all watching it with interest and getting ready to bid on the job. It is believed that the work will present a beautiful finish, for the color panel scheme to be worked out will be elaborate.

Benjamin Rose, wealthy Erie street merchant, will erect a new sixteen story brick and steel building on Erie near Central avenue, within a few months. He is at present in Europe looking up new ideas for the scraper. Yellow press brick, with quantities of terra cotta, will be used to conform with a number of brick buildings Mr. Rose has at present under construction on the same thoroughfare where he has inaugurated a boom.

Lake county, Ohio, is to have a new \$300,000 court house, to be built at Painesville, twenty-five miles east of Cleveland. George Carmichael, of Akron, who got the job, gave the brick contract to the Stowe-Fuller Company, of Cleveland, who are agents for the Sayre-Fisher red pressed brick, which was specified by the commissioners erecting the structure. Deliveries have been started on the job.

The Stowe-Fuller Company has landed another big contract at Erie, Pa., a short distance east of Cleveland, where it will supply the fire brick necessary for the construction of 100 large coke ovens for the Erie Coke Company.

Word has been given out that the new Pope building of ten stories to be erected on Euclid avenue near the Union Club, is to have a terra cotta front. The building is now under way and a number of local terra cotta agents are busy running down the job.

H. B. Camp, who is credited with improving the modern

clay conduit to its present rate of efficiency and who sold out his interest in the business for half a million, has started with his son, Henry Camp, to erect and equip a new factory in Independence township near Cleveland, where there will be manufactured various grades of conduit and fireproofing panels. Mr. Camp installed a continuous kiln and a continuous dryer, but has remodeled them to make them operate more satisfactorily. It is likely that the new factory will be producing by September. Gas heat will be used and to that end the company has sunk fifteen natural gas wells on the property and will in addition be supplied with service from the main of the East Ohio Gas Company, which supplies many of the brick plants near Cleveland.

The plant of the Ohio Ceramic Engineering Company, which was destroyed by fire in the suburbs of Cleveland a few weeks ago, has been entirely rebuilt and is now working to capacity turning out all kinds of brick machinery. Business is reported good by the officers of the company, who were put behind in their orders by the disaster.

The mammoth brick intercepting sewer which will, when finished, carry away all of Cleveland's sewerage to one point, is rapidly nearing completion, the sewer being extended at present a short distance out into the lake. The section under the lake is of steel, the big tubes being taken to the location and sunk and cemented together.

An unfortunate accident occurred at the Farr brick yard in Cleveland about a week ago when two men were badly injured by being pulled into a brick machine. William Stevenson, aged twenty-six, was operating the machine when by some means he was hauled into it and mangled. It was necessary to break the machine to pieces in order to release him. A helper, John Kwaipkowski, had an arm broken while trying to release his friend. Both were taken to hospitals.

A big quantity of brick sewerage is being done in Cleveland and during the past month a number of contracts were let. Among the successful bidders to whom a number of jobs were let were Christian Burkhardt, William Lehman and Beers & Doolittle.

William H. Hunt, manager of the Cleveland Hydraulic Press Brick Company, has been spending a few days in the east recuperating his health and doing a little investigating. Several weeks ago, Mr. Hunt was commissioned by the executive board of the Cleveland Builders' Exchange to visit Philadelphia and look into the methods used in operating the city trade schools there with a view of establishing the same in Cleveland should it be found expedient. Mr. Hunt is still away, but is expected home very shortly, when his report will be awaited with interest, for the trade school question is a decidedly live one in Cleveland at present. Mr. Hunt will spend a few days at Atlantic City while in the East.

C. B. Stowe, of the Stowe-Fuller Fire Brick Company, spent a few days in Washington about June 13 in connection with the appeal his company has made to the Interstate Commerce Commission regarding the unjust freight rates charged on brick from Ohio, Kentucky and Virginia to eastern points where the competition is keen with the big eastern companies. Alleged discrimination on the part of the railroads is charged. Mr. Stowe says he hopes to get relief from the commission and that its decision will be announced shortly.

"A brick is a brick," declared Mr. Stowe, "whether it is made of one kind of clay or another. There should be one rate on brick just as there is one rate on sugar, cement, oil and other commodities. There are four rates now where there should be only one. The rate on brick from Chicago to the east is twenty-five cents per hundred pounds, while the rate on breakfast foods for the same weights is 17½ cents. Something wrong, isn't there?"

The common brick plants are all busy producing. A few are making minor repairs and adding to their equipment but for the most part business is moving along very briskly. There has been no changes in prices this season and none are looked for. The paving brick factories about Cleveland are having big seasons as the volume of paving in this and other cities is very great. Two Cleveland plants supply the bulk of the paving brick at Detroit and all of the brick used in Cleveland is produced at home.

On July 4th the Cleveland Builders' Exchange held its annual outing at Mackinac, in Lake Huron, several hundred members and their wives participating in the event. From Cleveland the party went to Detroit and thence up through Lakes St. Clair and Huron to Mackinac, where several side trips were given. The return was made Monday, July 8. H. C. Bradley, of the Barkwell-Bradley Brick Company, who is president of the Exchange, with Mrs. Bradley chaperoned the party.

BUCKEYE.

Written for THE CLAY-WORKER.

THE SEVENTEENTH ANNUAL CONVENTION OF THE
NATIONAL BROTHERHOOD OF OPERATIVE
POTTERS, EAST LIVERPOOL, OHIO,
JULY 8-13, 1907.

THE SEVENTEENTH annual convention of the N. B. O. P. opened at 10 a. m., on the morning of July 8, with 200 delegates, representing over 20,000 union potters from all parts of the United States, in attendance. The delegates were royally received in the city, and every liberty and attention given them by the city officials. The entertainments planned this year were more extensive than ever before in the history of the Brotherhood, and on account of the unusual number of important measures and resolutions to be acted on, this year's meeting was considered one of the most important ever held.

All business sessions were held at the hall of the East Liverpool Turnverein on Walnut street, and were closed to all except accredited delegates. In order to save time, all committee sessions were held during the recess at noon.

The session was called to order by Chairman Samuel W. Crawford, who, in a brief address, complimented the delegates and the organizations they represented on the excellent

State of Order—T. J. Humphrey, Trenton, N. J.
Law—Harry Halles, Kokomo, Ind.
Finance—A. V. Gilbert, East Liverpool, Ohio.
Rules—Harry Lowe, East Palestine, Ohio.
Appeals and Grievances—S. W. Crawford, East Liverpool, Ohio.
President's Report—S. M. Moore, Trenton, N. Y.
Inspector of Convention—Harry Gauker, Steubenville, Ohio.

The greater part of the afternoon of the first day's session was taken up with the reading of the annual reports of President T. J. Duffy and First Vice President Frank H. Hutchins. President Duffy's report in particular was most interesting.

Tuesday's sessions were all routine, the various resolutions for acceptance or rejection coming before the body. A total of 22 resolutions were considered, of which six were adopted and sixteen rejected.

The resolutions adopted were as follows:

1. That sanitary workmen be paid every week instead of every two weeks.
2. That manufacturers heat packing sheds in winter and furnish shelter for wet straw packages that are returned.
3. Devising plan for establishing uniform price list for decorating kiln work and kiln firing.
4. Asking 10 per cent. increase in the making price of sanitary ware.
5. Providing agreement with sanitary manufacturers for prompt return of workmens' retainer when leaving firm's employ.
6. Providing that kilnmen or kiln drawers shall not be re-



The National Brotherhood of Operative Potters, East Liverpool, July 8, 1907.

progress that has been made since the formation and first convention held in this city seventeen years ago. In the course of his remarks, he emphasized the fact that the convention came to East Liverpool in order that the manufacturer and the operator might be brought closer together, and stated that only such action would be taken during the sessions as would be for the best interests of all concerned.

The address of welcome was to have been delivered by Mayor W. V. Blake, of East Liverpool, "The Ceramic City," but owing to his having been subpoenaed to Lisbon on an important case, he was unable to be in attendance, and his address was read by Secretary Edward Menge.

The response was made by T. J. Duffy, president of the N. B. O. P., who briefly reviewed the achievements of the organization since its birth.

Following these addresses, the convention passed into executive session, of which session the first business transacted was the appointment of the President's various committees. These committees, with the chairman of each, were as follows:

Resolutions—George Smith, East Liverpool, Ohio.
Press—F. H. Hutchins, Trenton, N. J.
Sanitary Price List—George M. Martin, Trenton, N. J.
General Price List—Charles Dorff, Sebring, Ohio.

quired to carry or wheel saggar shores to grog pan when drawing kiln.

The following resolutions were rejected:

1. Election of president and vice-president by referendum vote.
2. Conferring more power on bench bosses to hire crews.
3. Establishing a law requiring foreigners to pay an initiation fee of \$50 to join the union.
4. Requiring minutes of conference with manufacturers to be printed and copies presented to each local.
5. Changing decision of standing committee with reference to the extent to which manufacturers can be held for spoiled ware for which the men are not directly responsible.
6. Fixing wage scale for throwing and turning lavatory legs.
7. Fixing date on which conference committee must reach its decision.
8. Auditing the officers' books every six months.
9. Changing method of transfer cards from one local to another.
10. Requiring finishers to pay for their own sponges.
11. Regulating hire of apprentice packers.
12. Changing date of wage agreement from October to April.
13. Fixing kilnmen's working hours from 8 a. m. to 4 p. m.
14. Paying for sanitary pieces after leaving the hand instead of after leaving the kiln.
15. Changing discount of sanitary apprentice pressers.
16. Equalizing prices on certain classes and pieces of ware.

The business of the day was completed in time for the delegates to accept the invitation of the management of the

East Liverpool-Zanesville baseball game, after which they attended the vaudeville performance at Rock Springs Park, as the guests of the management of that resort. In the evening they were given a trolley ride over the entire system by the local Trades and Labor Council, which body accompanied the delegates.

On Wednesday morning 18 resolutions were acted on, 9 of which were adopted, 7 rejected, 1 referred to the Executive Committee, and the other referred back to the local offering it. The following resolutions were adopted:

1. Placing the cost of preparing clay for saggar makers on the firm instead of on the workmen. This will become effective on October 1st, next.
2. Reporting irregular attendance of delegates to locals.
3. Granting 25 cents extra on the day's work to all kiln men required to bed ware in flint.
4. Providing against employes not working as regular packers doing packers' work.
5. Requiring kiln crews to report promptly the lowering or raising of crowns in kilns.
6. Preventing a change in the method of making any piece of ware until the price dispute has been settled by the standing committee.
7. That any dispute not settled by the standing committee in 90 days, be referred back to the local submitting it.
8. Requiring that the manufacturer pay double time for all compulsory work done on legal holidays.
9. That glaze be rubbed off the bottom of individual butters in the dipped state before being sent to the kiln man for placing.

The resolutions rejected were as follows:

1. Granting an increase of 15 per cent. to handlers, 10 per cent. to moulders and 25 per cent. to kiln men.
2. Abolishing standing committees and referring disputes to the locals interested, for settlement.
3. Advancing the price for making ewer and slop saggars, oval draw-throughs and oval deckers and bats.
4. Holding conventions in pottery centres.
5. Granting union cards to ex-potters who were members of some labor organization before the N. B. O. P. was organized.
6. Prohibiting workmen of other branches becoming dishmakers except by beginning as apprentices.
7. Preventing pressers transferring to the jiggering department.

Wednesday evening was spent in sight-seeing and various forms of entertainment, the delegates accepting any of the forms of amusement offered as suited their fancy.

The business session of Thursday morning was again taken up with a portion of the many resolutions remaining to be acted upon, and it continued to make excellent progress. The resolutions adopted were:

1. Changing the rules on the depositing of withdrawal cards.
2. That glost kiln men refuse to handle ware placed in low crown biscuit kilns by non-union men.
3. Publishing price settlements of sanitary price list committee on special pieces of sanitary ware.
4. Publishing the names of suspended members in the national secretary's quarterly report.
5. To elect the president and vice president by referendum vote. (This resolution has been referred to the trade.)

The following resolutions were rejected:

1. Prohibiting the chairman of the standing committee from sitting in executive sessions of the convention.
2. Requiring representatives of all branches of trade to be permitted to attend the conference committee meetings.
3. To change the time that members of locals must attend meetings to be eligible to election as delegates to the annual convention.
4. To change the hour rule applying to sanitary pressers.
5. Seeking to take from the standing committee the right to settle clayworkers' disputes.
6. To readjust sanitary workers' day's work.
7. Conferring power to fix separate fees on each local.

In the evening, the party left on a special train for Pittsburgh, Pa., where the evening was spent at Luna Park, the guests of Manager Gregg. The entire evening was spent at the park, attractions visited and a general good time enjoyed by all. Returning from Pittsburgh, the special left Union Station, Pittsburgh, at 11:45, arriving at East Liverpool about an hour later.

In the character of the business transacted at the session

on Friday, this was the most important day of the convention. The resolutions for general increases in wages came up formally, and these were all turned down. This feature was somewhat of a surprise. Practically all of the business of the convention was closed on Friday, with the exception of the annual election. The resolutions adopted were as follows:

1. Substituting white granite prices for C. C. ware.
2. Granting a half holiday to employes on Saturday.
3. Fixing a minimum rate for turning St. Dennis and Baltimore teas.
4. Providing a 15 per cent. increase on certain prices of pressed, cast and sticking-up ware.
5. Establishing uniform prices for making, placing and decorating china. (This resolution was also referred to the executive board.)
6. Providing that moldmakers shall be paid at the rate of \$4 per day while blocking and casing molds.
7. Providing that Belleek moldmakers be paid at the rate of \$3.50 for ordinary work and \$4 for blocking and cases.
8. Providing for an increase of one-fourth cent per dozen on stamped ware.
9. Providing that kiln drawers shall not be required to draw a kiln when the heat at the kiln door is more than 110 degrees.
10. Providing for an increase to jiggermen of one-half cent on all plain edge plates and one-quarter cent per dozen on all plain edge fruits, saucers and ice creams.
11. A second resolution establishing uniform prices for making china. (This resolution was referred to the executive board.)
12. Providing for the readjustment of the apprentice dipping system.
13. Providing that loss in ware permitted to remain in the shop for an unreasonable length of time shall fall on the firm. (Referred to the executive committee.)
14. Providing that the firm shall pay a portion of the expense for transferring ware to green rooms located at unreasonable distances. (This resolution referred to the executive board.)
15. Providing that if any general increase is granted to the workmen, a like increase will be granted to the help.
16. Increasing the salary of the president of the organization to \$1,600 and the salary of the vice-president to \$1,400. (This was referred to a vote of the trade.)
17. Extending sympathy to Moyer, Haywood and Pettibone, officials of the Western Miners' Federation under indictment in Idaho for murder.
18. Providing for a readjustment of the cubic measurements of biscuit and glost kilns whereby the number of cubic feet to constitute a kiln man's days' work shall be increased, with proportionate increase in wages.
19. Prohibiting girls doing casting, pressing or jiggering, except where they serve regular apprenticeship and are paid trade prices.
20. Printing resolutions enacted by the convention and distributing copies to the trade.
21. Permitting locals to establish sick, burial and beneficial societies for the benefit of members.

These resolutions were rejected:

1. Granting a straight increase of 10 per cent. to jiggermen and dishmakers in white granite.
2. Changing the cubic measurement of biscuit kilns from 212 cubic feet to 200 cubic feet.
3. Providing for a general increase of 10 per cent.
4. Providing for the readjustment of apprentice kiln men's wages.
5. Providing for a straight 15 per cent. increase for general ware pressers and casters. (An amendment to this resolution was substituted.)
6. Seeking to regulate the kind of clay that shall be furnished to dishmakers.
7. Providing that the manufacturer shall provide empty baskets for kilndrawers before they begin work.
8. Providing for a readjustment of the apprentice dipping system in the east and in the west. (A substitute for this resolution was adopted.)
9. Providing for a 10 per cent. increase for making sugars and bed pans, and establishing a minimum price of 90 cents per dozen for 9's ewers and \$1 for 6's ewers.
10. Appropriating \$200 for the benefit of Moyer, Haywood and Pettibone, of the Western Miners' Federation.
11. Granting an increase to the dippers of from 45 to 47 cents on ware thrown out on grid and from 65 to 67 cents for hooked ware, each based on regular kiln men's day's work. (A substitute for this resolution was offered and referred to the conference committee.)
12. Granting a general increase to the pressers and readjusting the ratio of apprentices.
13. Granting a 10 per cent. increase to the entire trade.

14. To build a home for aged potters. (This was deferred indefinitely.)

The above work completed the handling of every one of the 121 resolutions that had been prepared to bring before the convention, and it was done in what is considered record time for this assemblage. In other years it has taken from ten days to two weeks to complete the business, while this year, although there were more resolutions, both in number and in importance, the work was accomplished several days sooner than was the case last year. The evening was taken up with a number of private affairs and entertainments that had been arranged for the visitor, and a number of excursions were taken.

The last session was held on Saturday morning, when unfinished business was taken up and completed. In order to close the session and be in shape to adjourn at noon, the meeting was called to order at 8:30, and the delegates received their mileage money, etc., after which the annual election of officers was held. In the election there were one or two slight contests, but in the end, all of the old officers were elected, the election having resulted as follows:

President—T. J. Duffy, East Liverpool, Ohio.
 First Vice-President—F. H. Hutchins, Trenton, N. J.
 Second Vice-President—S. W. Crawford, East Liverpool, Ohio.
 Third Vice-President—Harry Hailes, Kokomo, Ind.
 Fourth Vice-President—Thos. J. Humphrey, Trenton, N. J.
 Fifth Vice-President—Charles Dorff, Sebring, Ohio.
 Sixth Vice-President—Geo. M. Martin, Trenton, N. J.
 Secretary—Edward Menge, East Liverpool, Ohio.
 Treasurer—John T. Wood, East Liverpool, Ohio.

The contest for the next convention city was between Atlantic City and Baltimore, the former city winning out by the narrow margin of ten votes. The dates of the meeting will be announced later.

The Brotherhood announced receiving an invitation from the International Federation of Pottery Workers of Europe to affiliate with that body, and this was referred to the executive board, which is composed of all of the newly elected officers. After extending a vote of thanks to the local committees, the Mayor and the people of the city, a motion to adjourn was offered, and the convention of 1907 passed into history as being one of the most harmonious ever held. The majority of the delegates left immediately for their homes, although a number remained in the city to make a tour of inspection through the big potteries located there.

G. D. S.

Written for THE CLAY-WORKER.

LOUISVILLE BRICK SITUATION.

The manufacturers of clay products in this city report an active business in their several lines, and find the outlook as being favorable for future operations. The general demand has been good, and some of the plants have been rushed with orders. Taking the situation as a whole, there is every indication that the business will prove in every respect profitable.

It is true that the weather during the past few months has not been favorable for building operations, and the labor troubles have had a tendency toward retarding construction work, but nevertheless the manufacturers have not been seriously handicapped.

The Louisville Fire Brick Works, at Highland Park, Ky., have all the business that they can care for, with an ever-increasing demand for their output. They have found it necessary to recently install another Johnson brick machine, and will thereby increase their capacity.

The Southern Brick and Tile Company have had a demand for all the drainage tile they could turn out, and have been operating their large plant to its capacity. They also report a good demand for face and common brick.

The Burrell & Walker Sewer Pipe Manufacturing Company have been operating their sewer pipe plant at Owensboro, Ky., day and night in order to keep up with the demand for this commodity. The call for fire brick with them has not

been very brisk within the past few months, although they have had a fair number of orders.

The Bannon Sewer Pipe and Fire Brick Company report that they find the demand for both of these lines steadily increasing. They are continually making improvements at their immense establishment and are operating full force.

The Louisville Brick Company have had enough orders to keep them busy, though they complain of the weather as having had its effect on the general building business, and this has naturally had some drawback to their activity.

The Louisville Pottery Company have just completed another large addition to their plant and are busy. They are now in a position to take care of more business, and believe it will be forthcoming, although the unfavorable reports regarding the fruit crop will in all probability have its effect on the demand for jars.

The Hydraulic Brick Company say that the unsettled labor conditions are having a bad effect on their business, though they are busy at all their big plants. While the indications are not as favorable as they might be, still they are hopeful for a more favorable turn in the near future. JOSHUA.

Written for THE CLAY-WORKER.

BRICK NEWS OF NORTHERN IOWA.

THE Lehigh Sewer Pipe and Tile Company, of Ft. Dodge, is now engaged in perfecting their plans and specifications for the erection of their new plant at Lehigh, Iowa. The plans being outlined call for a one-press 18-kiln plant, with four story dry house and such necessary building as will properly equip and furnish capacity for the output of a one-press plant. The capacity contemplated in the plans will call for 3500 cars per year and employ 150 people. The company has scoured the country for a corps of expert workmen to take actual charge of the several departments of the work.

This new company has several decided advantages over competitors in its new plant. The plan of disposing of a limited amount of the stock to dealers will obviate the necessity of a corps of salesmen, and insure a ready acceptance of the output.

The plant is located on a tract of 160 acres of land recently purchased, from which clay has been shipped for distances ranging from 50 to 100 miles, which was mixed with the clay of other plants. The raw material has been given a very thorough test and found to be of superior quality. The deposit is good from the grass roots down, and has an open face of from 40 to 50 feet. The plant will be so arranged that the clay can be put in the hoppers at from ten to twelve cents per ton.

Water in great abundance is at hand; in fact the course of the creek is now being diverted to make room for some of the buildings. A coal mine is situated within a stone's throw of the plant and will be connected with the plant by means of a short switch or conveyor.

There are at present two lines of road connecting the plant, and the company is now negotiating with the Minneapolis and St. Louis for the construction of a two mile switch. The main offices of the company will be in Fort Dodge.

The Western Stoneware Company has disposed of all of its property in Ft. Dodge with the exception of its land holdings. Fire last fall destroyed their plant, and recently the company sold off what salvage there was together with such stock as was in their yards, and have abandoned Fort Dodge as a branch of their several plants.

J. N. Miller, of St. James, Minn., who acquired the property of the Fort Dodge Clay Works in a land deal a few years ago, offered it at auction sale a few days ago. The bids were not high enough to suit him, and he bid it in at \$8,500. The plant has not been run for several years. At one time it was one of the largest and best equipped plants in the state.

Ft. Dodge, Iowa.

JED.

Written for THE CLAY-WORKER.

HEARD IN NEW ENGLAND.



AFTER ALL the wet weather of the early part of the season, the hot, dry weather which has followed, has been a boon to brickmakers. In some localities through New England, short, sharp showers have caused slight damage in the yards, but as a whole there has been little interference from the rain, since the heavy falls stopped several weeks ago.

Before makers really succeeded in getting to work, the supplies left from last fall were pretty generally sold. This holds good of all six New England states and represents a condition as acceptable as it is interesting. Good weather for making and a good market make a trade combination which it would be difficult to equal. Accordingly it will not be stretching the truth to say that all the yards throughout the entire New England territory are busy. Some are not running quite so strong as they did last year, while others have put in additional machinery and have hired additional men and are putting out more than ever before. Taking the entire territory as it stands, there is no question about the activity being the greatest ever known at this season.

Information from Boston reports the movement as fair and says there are many jobs in and about Boston which will call for a good many brick. This condition is largely responsible for the present excellent market and the activity which is steadily improving in certain lines. A good many large jobs have been provided for which are yet to be supplied with brick. In fact, none have been bought. No makers have been asked to bid, so far as is known. These jobs will greatly improve the market and will undoubtedly absorb any surplus which increased forces at some yards and increased machinery at others may produce. Reckoning them in, the situation will be found substantially as it was last year.

When new brick began to come into market it was assumed that prices would go down. On the contrary they kept up, and are now quite as high as when new brick made their appearance. The demand so far has been sufficient to absorb everything offered, whether old or new stock. The future promises quite as well and makers and dealers generally are optimistic and anticipate a good, active and high market all summer. Prices are as follows:

Up and down s. s. brick f. o. b. yards in Massachusetts or New Hampshire, \$7.50 to \$8; up and down w. s., \$9 to \$9.50; New Hampshire selected, f. o. b. cars New Hampshire, \$12; Massachusetts face bricks, \$19 to \$20; fire bricks, \$28 to \$35.

Those in position to judge with considerable accuracy, believe that the market will remain substantially where it is, all summer. They think that the increased demand arising from jobs which will begin shortly, will absorb any surplus that may be produced and will keep the market steady, regardless of the increased facilities in some quarters and the increased operatives in others.

From the Connecticut yards come reports of prosperity and good demand. Building operations in the numerous thriving cities of Connecticut are extensive and are sufficient to absorb practically everything made about as rapidly as it is ready for delivery. The market has remained firm, though with the quantity that is now about ready for delivery it would be but reasonable to suppose that some of the present activity and firmness might disappear. The situation is considered good, however, and makers expect no change in the present prosperous conditions.

The major portion of the make will be taken in home cities for use in building operations or in public or semi-public works. The demand for the latter will be larger than ever before, according to present prospects, and the market promises to continue firm and active throughout the season. Many

makers improved their plants during the idle season and are turning out more brick of better quality than ever before.

The same observations will apply to Massachusetts. The public and semi-public works, with the extensive building operations planned or under consideration, will combine to make business good for manufacturers all through the summer. The market now all over the state is much better than usual at this season and there is nothing to indicate that it will not continue so indefinitely.

In Vermont, operations are active. While Vermont is not so large a producer as some of the other New England states, it is still something of a factor, and surplus brick from the Champlain valley offered in New York last season led to reduction in prices by the Hudson and Hackensack manufacturers. The reduction in prices shut the Vermonters out of New York, but not until after they had given the Hudson river men a serious scare. This summer, building operations in Vermont are extensive. Many large dams for the development of electric power, to be transported many miles in some instances, are under construction by large private companies and there are many extensive building operations in the different cities of the state under contract. These outlets for brick will enable makers to secure a good market for their product all summer. The surplus on hand when the season opened was slight and that was quickly disposed of. Now, the only stock ready for delivery is what is being burned from day to day.

New Hampshire is shipping a large quantity of brick to Boston this season. A good proportion from the New Hampshire yards have always been sent to Boston heretofore, but this year the quantity is larger than usual, due to larger building operations and more extensive public works. Prices are good and the demand promises to absorb everything offered. Many New Hampshire cities are contemplating extensive improvements. The quantity of brick which will be used in that way will be large, though it is manifestly impossible to make any prediction which approaches accuracy. Many of the plants have been improved during the idle season and are in superior condition for doing business.

Maine is doing a good business this season. The market is ready to take whatever is offered and sales are rapid enough to absorb everything as fast as it is made. Many Maine cities are using liberal quantities this year and there is more or less demand from other localities as well. The result of this combination of good things is that Maine brick are being taken fast enough to keep manufacturers busy and give them good prices for their work.

The use of brick as a structural material is steadily increasing in New England. More and more architects are recommending it and builders everywhere are adopting it for certain classes of work. Concrete is too new to have made much impression on the situation as yet, though there are freely expressed fears that eventually concrete will cause serious inroads in the brick business. Apparently, however, the difficulty will not arise this year and unless concrete proves more satisfactory in New England than it has almost everywhere else, the competition will not injure the brick trade materially. New England brickmakers are watching the application of concrete to structural work closely and will undertake to discourage any general adoption of that material throughout the six states.

BUT.

TRADE NEWS AND NOTES.

The Williams Bros. Brick Company, of Franklin, Va., have their new plant in operation and have made over one million brick, for which they have found ready sale.

Mr. Gus Kampmann, of New Orleans, La., has placed his order with the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for a complete soft mud brick equipment to be installed at Nicholson, Miss.

The Pennsylvania Fire Brick Company has put in operation another Baldwin locomotive to haul clay from the mines to the plant at Beech Creek, Pa., a distance of about seven miles. The road is a narrow gauge one and on account of the rapidly increasing business a number of important changes in the line have been made, and much new equipment added. The plant is working on several large orders for coke oven brick, that are being delivered to the Connellsville coke region to be used in the construction of additional ovens and new coking plants.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A New Colorado Brick Company.

Editor THE CLAY-WORKER:

Please send me a copy of your journal as I want to learn all I can about clays. The Grand Junction Pressed Brick and Tile Works has been incorporated under the laws of this state to work clay, and as I am the vice president and general manager I want to learn all I can.

We need a good man to get us started, as we have plenty of fine kaolin that assays 93 per cent. pure, and we have had it tested and made into fine buff pressed brick. We need some one with money and practical experience to put us on our feet and if you know of any one, would like to reach them.

Respectfully,

S. H. KERN.

Can Brick be Burned in Continuous Kilns with Crude Oil.

Editor THE CLAY-WORKER:

Do you know of any brick plant where they use crude oil for burning building brick in continuous kilns? We have two continuous kilns of sixteen chambers each, which work all right and turn out good brick, but for the past year or two the coal which we have been compelled to use has been too slow; that is, the fire does not travel, although the draft is all that could be desired. I know oil is used in Kansas and other places in connection with the Eudaly and other down draft kilns, but I have never heard of it being used in the continuous kilns. Any information you can give me through the CLAY-WORKER, or otherwise, will be much appreciated.

S. W. BURNHAM.

Will Probably Enlarge Plant.

Editor THE CLAY-WORKER:

We have your letter of June 20th calling our attention to our subscription to the CLAY-WORKER, which is due. You will please find enclosed check for \$2, which will pay for same. We are the only people who are running a brick manufacturing plant in Knob Noster. We sold about three million brick in 1906; and shipped about 150 cars of milled clay for the manufacture of buff brick, terra cotta and milled fire clay. We could have sold twice that amount in the last three or four years if we had been able to manufacture them. We make a very fine grade of brick and have no trouble in selling them. I am figuring on increasing my plant this fall so as to double the capacity so that I will be able to keep up with my business. In fact, I have no kick coming on the business I have done in the past three or four years, my only trouble being due to the small capacity of my plant.

Knob Noster, Mo.

G. M. B. & Co.

Wants to Buy "Bella Robbia."

Dear Mr. Randall—We are in receipt of a letter from a Spaniard in the Republic of Columbia, S. A., which has struck us as very amusing. We know that you appreciate a joke in connection with the clay industry and we take pleasure in sending you below a copy of this letter. I will say that the letter came in reply to an advertisement in a South American

paper, advertising mantels, tile and electrical porcelain. It reads as follows:

THE HARTFORD FAIENCE CO.,

Hartford, Conn.:

Gentlemen—In "El Comercio" of February 15th, I saw your "ad" in regard to faience metals, etc., colored with finished "Bella Robbia," hardened in the furnace. These goods cannot be used here because the freight is too dear. I would suggest to you to sell me the material called "Bella Robbia," which I suppose will be more or less the same as the enamel or varnish which is applied to the other articles. I expect you will answer me and let me know whether it is in powder, can be shipped in packages; or whether it is liquid, which requires barrels or tins. At the same time, what is the price per 25 pounds?

Very truly yours,

JOSE MCGUERRERO,

Via Panama, Pasto, Departamento Narino, R. de Colom.

Very truly yours,

THE HARTFORD FAIENCE CO.

National Drain Tile Company Expanding.

Editor THE CLAY-WORKER:

You are, perhaps, aware that we are intending to build another large tile plant this summer at Streator, Ill., and in order that you may know the facts in regard to this, will say that we have just closed a deal for 30 acres of fine shale land adjoining the corporate limits of Streator and within easy access of that city. We have a shale bank some 30 feet in height and in unlimited quantity, on the south bank of the Vermillion river. Five railroads radiate from this point, putting us within easy access of all shipping points in Northern Illinois and Eastern Iowa.

We propose to begin building at once and erecting a main building, 224 x 80 feet, three stories high, with engine, boiler and machinery rooms, 102 x 40 feet. Will also build twelve 33-ft. kilns—all buildings and kilns to be substantially built of concrete and brick and at an approximate cost of \$100,000.

With the erection of our Streator plant, taken together with our other five plants, we will have a total of 70 kilns, with an output of some 6,000 carloads of drain tile per annum, or some 500 car loads per month.

We expect to have our new plant at Streator in full operation by January 1, 1908, and to be in better condition to take care of our growing trade than ever before.

Will say in connection with this, that we are also contemplating the building of another large plant at Springfield, Ill.

Yours very truly,

NATIONAL DRAIN TILE CO.

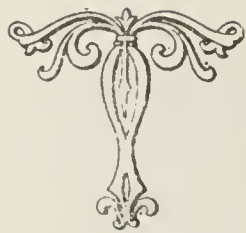
SUCCESSFUL ROOFING TILE MACHINERY.

"Trade is very good with us," writes W. P. Grath, president of the Illinois Supply and Construction Company, St. Louis, Mo. "We have recently shipped four Grath special hand-power brick presses, two for making sand-lime brick, and two for making ornamental press brick. Also shipped out during month of June one Grath five-mold brick press, which went to a Texas sand-lime brick plant, and an order for a similar outfit to go to California." Mr. Grath is especially pleased with the work being done by his roofing tile machinery. Mr. August Hecht, treasurer of the Detroit Roofing Tile Company, writes under date of June 27, 1907:

"We are much pleased with the Grath Revolving roofing tile press, and the Grath special tile and trimming press, which we have been using for some months past, and which has proven entirely satisfactory to us. We find the presses to be all you claim for them; to be simple in construction, very powerful, and sufficiently heavy to be a guarantee against breakage and shut-downs incident thereto. Please rush the order for the Little Giant auger machine with dies for making Spanish, shingle and promenade tile." The Grath line of brick and tile machinery is illustrated on pages 8 and 9 of this issue. Our readers desiring anything in the way of clay-working machinery will get full advice promptly on addressing the I. S. & C. Co., Holland Building, St. Louis, Mo.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



HE BUILDING MARKET continues brisk and the season seems to be holding its own. Building in Chicago for June just passed showed an increase of nine per cent. over June of last year. Operations are of a somewhat different nature from those of last year. While some large jobs are in progress or being planned and estimated, it is safe to say that the bulk of the material sold in this market is going into smaller pieces of work and more of them.

Quantities of individual dwellings varying from pretentious residences to more modest homes and cottages are being erected in all parts of the outlying city, and especially in the suburban districts. The smaller type of apartment house and the combined store building and apartment house for second class neighborhoods seem much in favor with speculative builders. There are also a great many mercantile and industrial buildings going up for individual companies and manufacturers.

There is a great boom in a building way upon the west side, the north side and the northwest side in the districts bordering or approximately bordering the river. This has been caused by the condemnation to make way for the new mammoth railway stations to be erected along Canal street, and for the modifications of the railroad yards, of property long occupied by many of the smaller manufacturing and mercantile establishments in which much of what may be termed the native wealth of the city is invested. These buildings are either being torn down or are about to be torn down. The tenants are being driven out, and it is necessary to provide other quarters for them. Some of them are moving out a considerable distance from the old quarter, but for the most part, they are staying within a comparatively small radius for the old center.

Conspicuous among the new structures going up in this locality will be the new Adams Express Company's building, contracts for which are soon to be let. The Adams Westlake Company is to have a new building, 100 x 100 feet, in Ohio street, between North Franklin and Orleans streets. Jenney, Mundie & Jensen, architects, have completed the plans and advertised for figures. The building will be seven stories high, built of brick, mill and steel frame construction. The cost is estimated at \$125,000. The Chicago Asbestos Table Mat Company is having Architect D. S. Pentecost prepare plans for a factory on West Lake street, near Fall street. It is to be 50 by 100 feet, two stories high, built of brick and mill construction. The George Nash Company is to have a new storage and office building at 115 West Washington street. It is to be 30 by 150 feet, and of brick and reinforced concrete construction. Contracts have been let for a factory building at West Kinzie and Lincoln streets, for the use of the L. R. Harsha Manufacturing Company, which will be there stories high, 30 by 90 feet, and built chiefly of brick. A mercantile building to cost \$175,000 is to be erected at West Randolph and Washington streets. It will be built chiefly of brick. This is one of the buildings which is going up as a result of the widening of Randolph street east of Desplaines street to the width of the Randolph street market. This improvement, together with the change due to the encroachment of the railroad companies, is causing this district to rebuild like a city laid low by fire, and property values are booming as a consequence. All the new buildings are of high grade.

City Engineer Erickson has asked for bids on two new city pumping stations. Both structures will be large, and will be of steel, frame and brick construction. They will be used for increasing the city's water supply. The fine old stone pumping station at Chicago avenue was a fine tidbit for some foxy stone contractor in the old days of boodling city councils, but the brick-built pumping station for the intercepting sewer at Thirty-ninth street, is an infinitely more business-like and neater appearing structure. To see one and then the other is like comparing a baronial mansion of the old world, which has been fairly well kept up, but

which still has the flavor of antiquity, with a modern office building. One is prone to remark that he would prefer his drinking water minus the flavor of antiquity.

Another item of public improvement in which brick is making a fine showing is in the park houses which are being put up in the many small parks now being strung through the congested neighborhoods and in districts considerably removed from the great parks of the city. A new one requiring 75,000 brick is under construction at West Twenty-first and Fisk street. The S. S. Kimbell Company has the contract for the brick, and are furnishing the Continentals. The same company is supplying the same grade of brick for the addition to the St. Luke's hospital, at Fifteenth street and Indiana avenue, given by the late "Silent" Smith, as well as for an addition to Mercy hospital, at Twenty-sixth street and Calumet avenue, and a very large addition to the Presbyterian hospital on the west side. The three contracts called for a total of 600,000 Continentals. The S. S. Kimbell Company is shipping 125,000 Continentals to Pierre, S. D., to be used in a railroad station under construction for the Chicago Northwestern railroad.

The Bonner and Marshall Company report a brisk season, and a large number of residences, many of them out of town, but more in the city. For these purposes they report a great run on their Oriental brick and an increasing demand for it. They have one contract, for an Episcopal church at Hancock, Mich., calling for 100,000 of these brick.

Just at present, of course, the period of mid-summer dullness is about two weeks old, and its advent has shown itself in a perceptible falling off in the number of building permits issued by the city building commissioner. And while the month of June indicated a gain over the same month a year ago, the first two weeks of July showed a slight falling off in comparison with the first two weeks of July, 1906. Nevertheless, this loss is generally credited to the unusual number of large undertakings exploited in the corresponding period last year, for not an office in the city but is so busy that it is planning to increase its facilities. SCRIP.

REPORT OF THE C. C. P. M. A.'S FIFTH ANNUAL CONVENTION.

We were pleased to receive recently the report of the proceedings of the Fifth annual convention of the Canadian Clay Products Manufacturers' Association, which was held last December at the Rossin House, Toronto. The report is daintily covered with a pretty green paper in imitation of burlap. Including the list of members, the pamphlet contains fifty-seven reading pages. All the papers and discussions of the last convention appear in this report, making it a very interesting compilation of much value to the Canadian clayworkers. Anyone wishing this report should correspond with the secretary, Mr. C. H. Bechtel, of Waterloo, Ontario.

THE DRYMORE SYSTEM'S NEW CATALOGUE.

The "Drymore System" is the title of a finely illustrated catalogue of the various products of the Drymore System Company, which will be of interest to all clayworkers. The catalogue has a clean, attractive gray cover, the book proper being made up of loose leafed glazed white paper, held together with a strong black cord. It contains descriptions and illustrations of their various drying systems and clay-working machinery. They have a fine line of transfer cars, elevating trucks, revolving pallet supports, turn-tables, dryer cars, brick machines, steel shell pug mills, automatic rotating side cutting tables, dry pans, crushers, disintegrators, conveyors, elevators, screens, etc., and can furnish all the necessary machinery and appliances for the complete equipment of an up-to-date plant. This new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud and soft mud brick. For further and more complete information in regard to the benefits of the Drymore Systems, their machinery, etc., the readers should correspond with the Drymore System, Seventh and Chestnut streets, St. Louis, Mo., who will be pleased to give them all desired information. We refer the reader to their advertisements on Page 91 of this issue.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF DETROIT.



THE MONTH OF JUNE, 1907, showed a remarkable gain in building operations for the city of Detroit over the same month last year. The total for June, 1907, is \$1,524,800, and for the same period last year, -968,800, a gain of -556,000. June brought the first half of the year 1907 to a close, with a total value of building permits amounting to \$7,313,165, as compared with \$6,294,400 for the first six months in 1906. This shows a gain of \$1,018,765, which is considered remarkable, when it is known that building operations in a majority of other cities show a falling off.

The total value of building permits taken out in May, 1907, is \$1,715,350, as compared with \$1,227,400 in May, 1906. Total for the year 1907 (five months), is \$5,788,305, against \$5,325,600 for the same period in 1906. Permits were taken out in May, 1907, for 518 new buildings. In 1906, this number was 449. For the first two weeks in June, 1907, building permits totaled \$690,760, which is a considerable gain over 1906.

These figures naturally make the brick men feel good, because they show a substantial gain over 1906. And 1906 was far in advance of any other year in Detroit, all records having been broken last year.

As a result local brick manufacturers have more business than they can handle. It has been stated on good authority that Detroit could easily take care of the product of ten more brick factories. The price of common brick has also advanced, some firms quoting as high as \$7 for common clay brick. The general price, however, ranges from \$6.50 to \$6.75. Even at these figures it is impossible to secure large quantities. A local firm recently wished to purchase 20,000 brick for immediate delivery, but inquiry at all the yards here developed the fact that this amount could not be furnished at one time.

The largest permit taken out last month was for the House of Providence for the erection of a new five-story brick hospital at 2474 West Grand Boulevard. The cost will be \$300,000 and John Finn is the contractor in charge. Other large buildings planned are. Champlain Improvement Company, brick dwelling, \$28,000; Anheuser-Busch Brewing Company, office and storage building, \$18,000; church house for Fort Street Presbyterian church, brick and stone, \$40,000; Bohemian Catholic church, brick, \$35,000; Twist Drill Company, brick factory, \$15,000; Detroit Lumber Company, brick office building, \$11,500; Tuomey Bros., store building, \$70,000; North Baptist church, \$80,000; Packard Automobile Company, addition, reinforced concrete, \$100,000; William Coughlin, brick apartment house, \$14,000.

It can easily be seen from the above list, that while there is some reinforced concrete work going on in Detroit, it has not made great headway against brick construction. The great majority of large buildings are of brick.

The paving, repaving and street repairing work is now in full swing in the city of Detroit. It is estimated that over \$1,500,000 will be expended by the city this season in this kind of work. About \$285,000 worth of brick is now in the streets for resurfacing work, and it will be used on twelve new streets. The brick repaving bids show a slight reduction this year from last. The average price paid last year was \$2.47, as compared with the average bid this year of \$2.31. One of the most successful bidders for brick repaving work this year is Contractor James Hanley.

Brick men have been much interested lately in the fight between the American Creosoting Company and Russell & Jennison for the contract for nearly \$80,000 worth of creosote wood for paving purposes in Detroit. For years William Thomas, who now represents the American Creosoting Company, has had a hold on the brick situation in Detroit. Thomas represents also the Malvern Clay Company, the Collinwood Shale Brick Company and the Massillon Stone and Fire Brick Company, three of the five companies that have city contracts, and he has also been very friendly with the public works department. Thomas took the local agency for the

American Creosoting Company, and decided to break into the city with a lot of business. However, Robert Y. Ogg, representing Russell & Jennison, had laid careful plans for landing the creosote wood contracts, and although his bid was the same as the American Creosoting Company, the council finally decided to recommend his block. It was rather a severe blow to Thomas and caused considerable comment.

George H. Clippert, the well known Detroit brick manufacturer, has been appointed a member of the board of control of the Industrial School for Girls at Adrian, Mich., to succeed Gilbert Hart.

Detroit people have been much interested in the excellent display of Robineau pottery, made at Syracuse, N. Y., and recently on exhibition in the rooms of the Detroit Society of Arts and Crafts. This pottery is new to Detroit and has made a great hit.

The Detroit City Council has approved and the Michigan legislature has passed a bill abolishing the building inspector's office and providing a four-man commission. This would also give the commission the power to issue building permits and take it away from the fire marshal. The bill makes the duties of the commission far more comprehensive than that of the inspectors and it is generally approved. It is also the intention to formulate a new building code for the city of Detroit, the commission to have entire charge of this matter.

H. H. Dickinson, who has for many years handled building supplies at 422 Grand River avenue, has secured the local agency for the pressed brick handled by the Bartlett Company, of Jackson, Michigan. The office in Detroit is located at 302 Hodges building, with H. C. Dickinson in charge.

George B. Elliott has opened a new office in the Majestic building, where he will handle a general line of building supplies.

Practically all of the buildings for which permits have been asked are small. In 1906 the first permit taken out was for a hotel to cost a million dollars. In 1907 there has been no single structure for half that magnitude, yet the total cost of buildings is much larger than last year. It is also interesting to note that 76 of the permits issued this year have been for manufacturing plants.

Detroit brick dealers and manufacturers have naturally shared in this building prosperity and at present they have all and more business than they can handle.

The Detroit Roofing Tile Company is a new firm in Detroit's clayworking colony. The company has purchased eight and one-half acres of land in Springwells, along the Michigan Central Railway, and now employs 21 men, operating two presses. Its offices are located in the Bamlet building and officers are as follows: President, H. C. H. Stege, of Madison, Ill.; secretary and treasurer, August Hecht, Detroit. The company manufactures interlocking roofing tile, ridges, etc., and already has made a number of sales in this territory and in Illinois.

"The only other factory that makes tile anything like ours," said Secretary Hecht, "is the Ludowici Roofing Tile Company, of Chicago. Our tile is patterned after that made in Germany and from present indications we believe it will meet with a ready sale in this country. Before coming to Detroit, we hired an expert to investigate a number of clay beds in this country, and he finally reported that the Springwells clay beds were better suited to the manufacture of our tile than any other."

Frederick B. Stevens has been awarded the contract for pressed brick for the new House of Providence, which is to be erected at a cost of about \$200,000. South Webster brick are to be used. It is estimated that 600,000 brick will be required for the building.

The Fairview Coal and Supply Company is a new firm that will handle brick in Fairview, a suburb recently annexed to Detroit. W. E. Currie and T. E. Currie, who have been in the paving material and general supply business here for some years, are president and treasurer, respectively, of the new company. Harry S. Thompson, formerly with the C. H. Little Company, is general manager. The offices and yards of this new firm will be located at Kerchival avenue and the new Terminal railway.

The Detroit Mantel and Tile Company has taken over the business of the Pioneer Mantel and Fixture Company. Headquarters of the new firm are at 114 Broadway.

WOLVERINE.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	\$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVIII.

JULY, 1907.

No. 1.

CURRENT COMMENT.

A man may earn a great deal of money and still not be well off.

* * *

Philadelphia has succeeded in eliminating the "siren" horn from the automobiles. Now, if some city would only eliminate the smell.

* * *

See that terra cotta gets a fair show at parkway and other landscape improvement. It is the stuff—and "push" should be the watchword.

* * *

The only redeeming feature about the mud-slinging in politics is in that it occasionally develops a well-formed brick of a man who has strength to do what he thinks is right and stand the consequences.

* * *

The average man has a better right to follow the dictates of his own conscience and judgment than the advice of some other man, but he should first see that his conscience is in good order, is properly speeded up and headed in the right direction.

* * *

It looks like the weather man has been doing all he possibly could to interfere with business this spring and summer, but notwithstanding the contrariness of the weather, crop reports are showing up much better and business is improving, including also plans for building.

* * *

The thing that really hurts us when we are on the prosperity wagon in good shape is not the surplus of prosperity but the fear clinging to us all the time that just around the next turn in the road we will meet that gaunt wolf "hard times." It is all right, too, in a way; it keeps us thoughtful of the future, but the trouble with it is that it gives us "panicky"

feelings and thus mars, in some measure, the good things we have.

* * *

It used to be the sick man of the East, but now when the newspapers want a sensation they stir up some Japanese muddle.

* * *

Always keep at least one eye out for the main chance—but don't make the mistake of thinking everything that comes your way is "it."

* * *

If some men would root for brick as enthusiastically all the year as they root through the summer months for baseball there might be so much business doing that many of the boys would not have time to see much of the national game.

* * *

We have delayed this issue of THE CLAY-WORKER a few days in order to include a report of the midyear meeting of the American Ceramic Society and the convention of the National Brotherhood of Operative Potters, which being unusual, we are sure, will be read with more than passing interest.

* * *

It is no more right for the people to wrong the railroads than for the railroads to wrong the people. Justice to the railroads should not mean harm to the people and there ought to be a way of finding a happy medium between the two extremes so that both the people and the railroad might have their dues.

A CHANGE AT THE ILLINOIS SCHOOL FOR CLAY-WORKERS.

Mr. Albert V. Bleininger, who for several years has been associated with Prof. Edward Orton, at the Ohio State University, has made two important changes within the past month. First, he took unto himself a life partner, and after celebrating the event by a happy honeymoon trip to the seashore, he and his fair helpmeet have taken up permanent residence at Champaign, Ill., he having accepted a professorship in the Department of Ceramics in the Illinois State University. To those who know Prof. Bleininger personally, it need not be said that he will bear his new honors with unassuming modesty, and acquit himself with great credit. The clayworkers of Illinois are very fortunate indeed in securing his services. He is not only versed in the sciences and an accomplished German scholar, but has a practical knowledge of the workaday affairs of the clay industries that will enable him to render service of exceptional value. Under his direction, the good work already under way will be carried forward with tireless energy. Mr. Ross C. Purdy, who has had charge of the department the past year has returned to the Ohio State University in order to secure a much coveted degree.

THE N. B. M. A. AT JAMESTOWN EXPOSITION AND SEASHORE.

As announced on page 42, there will be a midsummer meeting of the members of the N. B. M. A. at the Jamestown Exposition, September 17, 18 and 19. This is in no sense a convention, but just an informal social event; nevertheless, it is safe to predict that there will be much shop talk, and that those who want information relative to workaday affairs on the brick plant can get it there at first hands. Those who attended the midyear meeting during the World's Fair at St. Louis, will, if they can, be sure to gather at Jamestown. While those who missed the first event should bend every energy toward participating in the pleasures of a meeting on the seashore. Full particulars of the event will be announced in the August CLAY-WORKER. Arrangements are being made for a side trip to Atlantic City following the meeting at the Exposition. The arrangements for reduced railroad rates include privilege for stop-overs at Washington, Baltimore, Philadelphia and New York. As the sea shore resorts will be at their very best in September, and the Exposition will then be ditto, a most delightful summer vacation

is assured for all who participate, and it is well to note that brick, tile and pottery manufacturers generally, even though they are not now members of the N. B. M. A., are invited to be present, and share in the pleasures of the occasion. Those who can are of course expected to bring their wives and sweethearts with them.

THE REAL VACATION.

It has been well said that the only happy people are those who are busy at some genial employment or at least taking a well earned rest from the fatigue of such employment. Some people pretend to be taking a rest and enjoying themselves when they are really simply taking a vacation. The vacation, as the ordinary person takes it, is nothing more than a bluff at resting. It keeps up a sort of the routine. Too much of a cut and dried affair; we are sight-seeing; junketing and various other things enter in to keep us going at a high tension. That is no rest except the rest which comes by virtue of the change furnished from every day work. What we all really need is a rest rather than a vacation. Rest and relaxation, and the only way to get it is to take to the woods; go away back where communication with the outside world is very difficult, keep close to the ground and forget the day of the month, forget business, forget as much of modern life as we can, try to be boys again, try to live in as primitive a manner as is practicable. The man that knows how to do this and follows up his knowledge in the right way, can get a rest which he would be ashamed to call a vacation.

VISIT OTHER FACTORIES.

Take a day or two now and then to visit other factories. In so doing you may learn something that will be worth many dollars in the long run in the management of your own. Different conditions may suggest to others a change of management that may be profitable to others and yourself as well if intelligently applied. Things learned by experience are usually well learned, but they are oftentimes expensive, and we may learn as well by observing what others are doing with little cost. Besides the exchange of thought and experience along practical lines is always helpful. Factories do not always turn out like products with different management. A little special care at some point in the making of the product may add much to its value, as well as the uniformity of the product. The writer once visited a tile factory where those who handled the tile from the cut-off were careful to smooth the ends of any hanging fragments or little fractures that might interfere with the smoothness of the ends. By so doing the tile had a uniform appearance in the drying room, in the kiln and on the yard, that commended them to buyers.

By visiting other factories you may observe some little things which may help in a better management of the work. Some are gifted in economizing the labor by saving all the steps possible in the work; and in so doing, lessen the cost of production. In making visits to other factories be willing to give as well as get good suggestions. If you see points that others may profit by your experience—not in a dictatorial way, but modestly, suggest that it might be practical to do so and so. In so doing you may be helpful as well as broaden your own field of information. The difference between success and failure often hangs on some little economic advantage that one may practice in the management of his business.

Men engaged in a common vocation, though strangers, and widely separated, are bound together in a fraternal sympathy that is unfelt toward others. It is good for them to meet and talk over matters of common business interest, to instruct and be instructed in the countless details and per-

plexities that are constantly arising, and profit by each other's business experience. The oldest and most experienced are likely to profit by visiting the factories of others.

THE ARTISTIC TEMPERAMENT.

The last few years there has been out-cropping here and there some mention of the fact that the people are growing more artistic in their ideas. This not only applies in the building of homes, a subject which has been covered before, but of late with the more frequent mention of this influence and the general awakening and prevalence of the artistic temperament, we find that it is not only individuals that are influenced, but all up the line to government doings, and even the hearts of the railroad men are touched.

In writing of colors in brick work in New York, a correspondent says that it is interesting to note the change in taste during the past twenty years in the color of brick used in construction work.

Formerly most of the brick used was of a dark, sombre color and the only relief offered in the way of lightening the effect was a little stone trimming here and there. Now, however, this is all changed and is not only lightened up by the use of more brightly colored brick, but also by the general development of the artistic taste of design as well as color, and the effect is very pleasing.

Among the late, and perhaps the most striking converts to the artistic temperament are the railroad managers who are now giving attention to beauty and pleasing effects in bridge designing as well as durability, and if it reaches the hearts of the railroad managers it is easy to see that the spread is thorough and must include practically all men of affairs in the world.

Another decade will undoubtedly bring some great changes in building operations, including everything from a fence to a mansion. And it is a good sign, and one of those signs of the times which shows that we are learning how to stand prosperity.

UNPROTECTED WINDOWS THE GATEWAY OF DESTRUCTION BY FIRE.

The International Society of Building Commissioners has kept most careful tab on the fires of the past year and in a recent bulletin makes the statement that 44 per cent. of all the fire losses of the year are directly attributable to the lack of proper window protection. Fire originates in one building but cannot be confined there, and its travel is made easy via the window route to every building in the neighborhood. Further, 80 per cent. of all the damage done in buildings in which fire did not have its origin is fault of insufficient window protection. In a conflagration like that of San Francisco nearly 100 per cent. of the damage is directly attributable to that same cause, for in that case we know of but fourteen separate and distinct fires occurring in the city on that memorable morning. Had the adjacent buildings been made invulnerable by protected windows those fires would have been confined in the structures in which they had their inception and would have resulted in but insignificant blazes. Surely is this matter of properly protecting windows an important one! Shutters and the usual automatic closing affairs constitute but make-shift protection at best; the one assured and universally approved system of window protection is a metal or incombustible sash filled with wire glass, and where the danger is particularly great, on narrow alleys, etc., there should be two thicknesses of wire glass.

It finds also that 78 per cent. of all the damage done in buildings where fire originated was caused by open stairways and elevators permitting the rapid spread of fire throughout every part of the structure. New buildings should be equipped with brick or hollow tile fireproof enclosures, and

where these may be difficult to place about elevators and stairs in old buildings then light iron frames and wire glass enclosures can be so placed at little cost and affording splendid protection.

A MISTAKE OF OMISSION.

On page 72 of this issue, our readers will find a new ad from the Chicago Brick Machinery Company. This ad should have appeared in the previous June issue of THE CLAY-WORKER, but was omitted through an oversight in our composing room; something that has never happened before, and is not likely to happen again.

A NEW DRY PRESS BRICK MACHINE.

We are pleased to introduce to the trade on page 65 of this issue a new six-mold dry press patented by P. L. Simpson, and offered to the trade by the National Brick Machinery Company, Chicago, Ill., who claim for it great strength, large capacity and efficiency in the manufacture of both sand-line brick and pressed brick made from shale or clay. Naturally the manufacturers are very proud of this press, and solicit correspondence relative to it.

TRADE LITERATURE.

THE AMERICAN ROAD MACHINE COMPANY has issued a special illustrated catalogue of "Champion Crushing Machinery," which is intended exclusively for brick manufacturers. It sets forth in an interesting letter good and sufficient reasons why brickmakers should use the Champion crusher, chief of which is that it cheapens the cost of making brick. They will be pleased to mail this catalogue free to any of our readers, who will find in it some very convincing testimonial letters from brickmakers who are using Champion crushers with profit.

SOMETHING NEW in Clay Crushing Machinery is shown in Bulletin No. 7, issued by H. Brewer & Co., Tecumseh, Mich. A new compound crusher is first illustrated which has the appearance of great strength. Next crushing rolls with removable white-iron shells are shown, with full details as to the method of construction and the advantages afforded. Other and more familiar clay crushers are shown, including an immense conical roll clay crusher and stone separator. A post card request for the bulletin, mentioning THE CLAY-WORKER, will bring a copy as quick as the mails can carry it.

WE ARE INDEBTED TO the Roessler & Hasslacher Chemical Company, 100 Williams St., N. Y., for a copy of the revised 1907 edition of their Ceramic Department catalogue. It is a combination memorandum book and catalogue of gold and silver preparations, enamels, fluxes, metal oxides and over-glaze and under-glaze coloring materials for all manner of ceramic work. As mentioned in their ad on page 85 of this issue, they offer a special preparation of Carbonate of Barytes for the prevention of scum on brick and other clay ware. Our ceramist readers may obtain a copy on application to the R. & H. C. Co. direct.

POWER TRANSMISSION, Elevating and Conveying Machinery of all kinds and descriptions, together with a number of immense plants in which same is being used, is illustrated in a substantial cloth covered book received from the Skillen & Richards Mfg. Co., of Chicago. The contents of the book is carefully indexed to enable the reader to turn quickly to any particular sort of elevating or conveying machinery desired. Their link belt carriers are adapted to many brick and tile manufacturers, and any of our readers desiring information in regard to any such appliances are requested to send for a copy of the book or for special circular dealing with the particular appliance desired. They make a specialty of elevator buckets and steel spiral conveyors, as per illustrations on page 77, of this issue, and solicit correspondence. Readers are requested to mention THE CLAY-WORKER.

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ESTABLISHED COMPANIES, as well as beginners, find our services profitable. We correct faults of manufacture and keep plants up-to-date. Engagements for special service, or by the year.

THE RICHARDSON-LOVEJOY
ENGINEERING CO.

[See page 90.]

WANTED, FOR SALE, ETC.

WANTED—Experienced manager to start brick and drain tile factory. Fine demand for products. Splendid raw material. Must have money to invest in local capital. Address,
G. A. ROBINSON,
Secretary Hampton Commercial Association,
714 dm Hampton, Iowa

WANTED—A practical man with some capital, say \$5,000, who is able to superintend the building of an up-to-date shale brick plant and to take entire charge of the manufacturing and business end of a \$50,000 plant. For such a man we will furnish money for the plant, make him general superintendent, give him interest in the business and a good salary. The best references as to ability and character required.
73 dm R. S. T., Care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on
Pages 70, 71 and 77.

200%

MORE

Radiating Service than any "Hot Air" Dryer made.

Simple of operation and construction.

Burns any kind of fuel.

Constantly under perfect control.

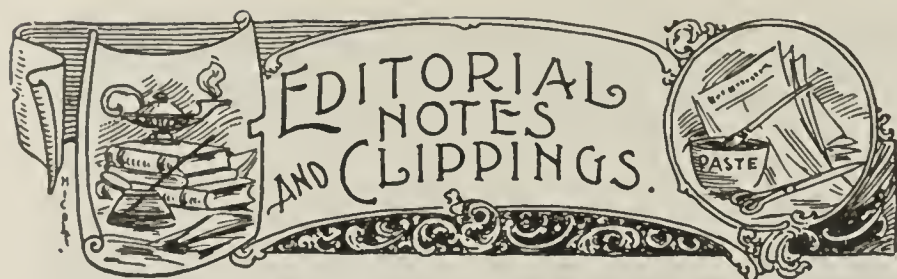
A new system of ties and a positive rail clamp absolutely prevents spreading of the track.

Write for exhibit 2077

The C. W. Raymond Co.,
Dayton, Ohio, U. S. A.



THE RAYMOND RADIATED HEAT DRYER



Sheffield, Iowa, is to have a \$50,000 brick and tile plant.

P. O. Petersen will establish a pressed brick factory at Battle Lake, Minn.

Pierre, S. D., wants a brick plant. Interested parties should address the Pierre Board of Trade.

The Owensboro Brick Company has been incorporated at Owensboro, Ky., with \$100,000 capital stock.

Lawrence Cole, of Covington, La., has purchased land at Ramsey, La., on which he will start a brickmaking plant.

The Stovall Brick Company, Stovall, N. C., advise us that they are in the market for a disintegrator of 25,000 to 30,000 capacity.

Alex W. Mass is interested in the organization of a company at New Orleans, La., for the manufacture of fire brick, sewer pipe, etc.

The Calumet Brick Company, Blue Island, Ill., has purchased thirty-one acres adjoining its present plant, with a view of enlarging the brick plant.

Mr. J. Kramer, formerly of Des Moines, is to start a brick plant at New Virginia, Iowa, where he has brought a tract of land containing a deposit of good clay.

San Angelo Brick Manufacturing Company, of San Angelo, Texas, has been incorporated with a capital stock of \$20,000. Incorporators: C. H. Powell, Fred Beck and August Balfanz.

Two carloads of Martin latest improved brick machinery is being forwarded at the present time to Canada by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The pottery of the Adamant Porcelain Company, near Harrisburg, Va., was almost totally destroyed by fire, June 26. The fire was caused by an overheated kiln. The loss amounts to about \$15,000.

Everett Vancil was badly injured by a cave-in at the clay bank of the Macomb Sewer Pipe Works, Macomb, Ill., recently. Several other men were at work in the bank at the same time, but they escaped.

Mr. W. J. Crawford, Palestine, Texas, has just installed a Martin horse power equipment for the manufacture of soft mud brick, furnished by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The American Clay Products Company contemplate the erection of a plant at Wilkesbarre, Pa., for the manufacture of terra cotta. The demand for the company's product is so great that they are compelled to build an additional plant.

Mr. S. E. Ream, Aldan, Delaware Co., Pa., has placed his order with the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for a soft mud equipment for the manufacture of brick, and which outfit is to be installed at Ephraïa, Pa.

The Morris Brick Manufacturing Company, Ltd., has been chartered with a capital stock of \$20,000 and headquarters at Morris, Ont. The directors are Alpin Chisholm, Findlay Mackenzie, Robert F. McTavish, John Wilton, William Macgregor Galbraith and John M. Phillips, all of Morris.

The Schmitt Brick Company, Columbus, Ohio, who lately installed the Martin patented rack pipe steam brick dryer system of 30,000 daily capacity, are now putting in additional 30,00 capacity Martin dryers, installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The plant of the Watertown Pressed Brick Company, Watertown, S. Dak., was almost completely destroyed by fire June 11. This was a new plant and had only been running a week. The work of rebuilding was begun as soon as the workmen could get at the debris, and will be pushed as rapidly as possible.

Joseph Sasser, an 18-year-old boy employed at Ochs & Frey's brick yards, South Allentown, Pa., accidentally stepped into the crusher while dumping a load of clay. The teeth of the crusher caught him by the right foot and he was drawn

slowly into the machine until up to near the thigh, when the crusher tender stopped the machine.

George F. Hammer, of Parsons, Kans., contemplates the erection of a plant at Shreveport, La., for the manufacture of brick and tile.

New Birmingham Brick Company, of Rusk, Texas, has been organized with \$50,000 capital. Incorporators: A. S. Busby, J. S. Wrightman, W. B. Neeley.

The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., has recently shipped to Messrs. O'Connor Bros., Red Bluff, Cal., an outfit of horse power brick machinery.

Robert Klose, proprietor of the Beatrice (Neb.) Brick Works, is installing new machinery and making a number of other improvements in the plant, which is now running overtime to keep up with its orders.

The Leesburg Brick Company, Leesburg, N. J., has recently installed a complete outfit of Martin soft mud brick machinery purchased from the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The large plant of the Richlands Brick Company, at Richlands, twenty-five miles west of Tazewell, Va., was totally destroyed by fire July 3. The loss was about \$25,000, with \$4,000 insurance. The origin of the fire is supposed to have been in the engine room.

A certificate of incorporation has been filed with the Secretary of State by the Electric Brick Company of Schenectady. The capital stock is placed at \$25,000 and the directors are as follows: F. N. Stevens, of Schenectady, and J. M. Carpenter and G. S. McKearin, of Hoosick Falls.

A company consisting of E. M. Spear, G. A. Mellin, C. R. Right, Peter Larson, J. A. Osborne and others, has been incorporated at Genoa, Neb., and purchased the old brick plant. A number of improvements will be made and the plant operated regularly under the management of Peter Larson.

H. N. Batem, of Ottawa, Ont., is at the head of a plant that has been organized at Seeley's Bay, Ont., to manufacture brick and tile. The company is capitalized at \$100,000, and will erect a plant at once of 50,000 daily capacity. The company will be known as the Perfect Brick and Tile Company.

The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., has just shipped to Mexico, one Martin latest improved animal power brick machine. This shipment was completely dismantled and the machine put up in small packages for transportation over the mountains of Mexico on mule back.

The Laclede-Christy Clay Products Company, recently formed by the consolidation of the Laclede Fire Brick Manufacturing Company and the Christy Fire Clay Company, has purchased a block of ground in South St. Louis. The block contained a fine deposit of fire clay which will be mined. No plant will be built on the ground.

Knoxville, Tenn., is to have a big sewer pipe plant. The charter for incorporation has been filed, calling for a capital stock of \$50,000. The incorporators are Frank S. Reid, H. M. Houk, J. G. Simpson, John C. Houk, and William E. Moses. The name of the concern is the Southern Pipe and Foundry Company, and its plant will probably be located in South Knoxville.

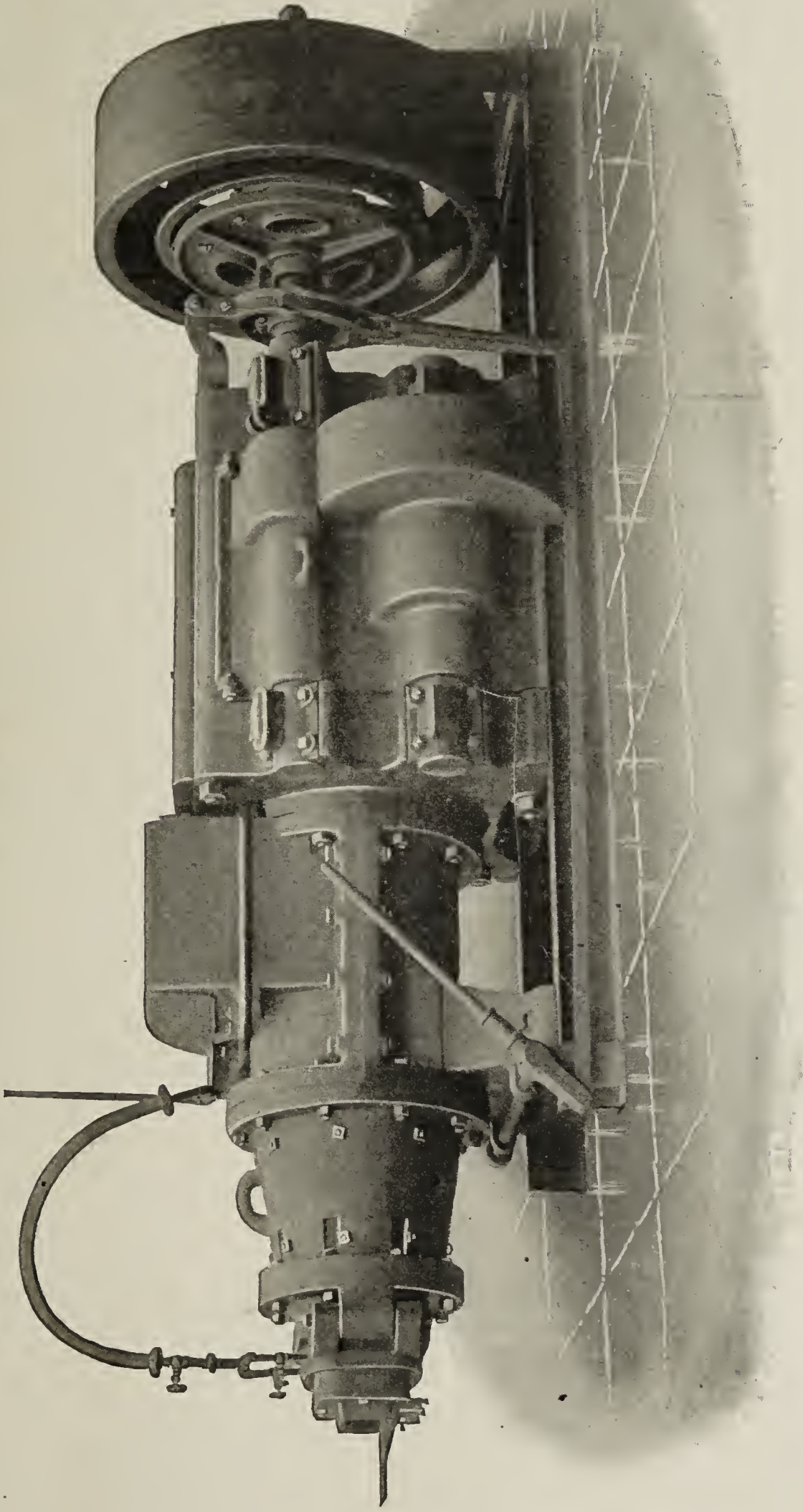
The Denver Shale Brick Company, of Denver, Col., are making extensive improvements and will double capacity of their plant. They have ordered from Chisholm, Boyd & White Company another four-mold Boyd press "Special" with dry pan and other machinery. Additional kilns are being built and when plant is completed will have a capacity of 40,000 brick per day.

The paymaster of the Excelsior Terra Cotta Company, at Rocky Hill, N. J., changed the weekly pay day recently and by so doing saved his company a very comfortable sum. For sometime the employes have been paid off on Tuesday, but for some reason, pay day was changed to Friday. On Tuesday, as the paymaster was driving out to the works, he was stopped by masked men who demanded his money. After searching him the robbers took to their heels.

The plant of the Carquinez Brick and Tile Company, near San Francisco, Cali., was started June 8th, and is now turning out 50,000 brick daily. The opening was in the nature of a social or festive function and hundreds of visitors were shown over the plant and later on a collation was served. Charles P. Grimwood & Company, engineers, who have an in-

(Continued on page 60.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

(See ads on pages 106 and 107.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

terest in the plant, were the constructing engineers and may well be proud of their work.

Runge, Texas, wants a brickyard. The clay has been tested and found to be of an excellent quality for building brick.

The plant of the Granite Brick Company, Des Moines, Ia., was completely destroyed by fire June 25. The loss is covered by insurance. The plant will be rebuilt at once.

The Liberty Shale Brick Company has been organized to manufacture brick at Liberty, Kansas. The plant will have a capacity of 25,000 brick daily. Work on the plant will begin at once.

The Henry Martin Brick Machine Manufacturing Company of Lancaster, Pa., has just shipped one of their modern 9-foot dry pans to the East Windsor Brick Works, East Windsor Hill, Conn.

The Fairview Brick Company, Denver, Col., has started their new four-mold Boyd press "Special," which Mr. F. E. Marshall, president of the company, purchased a few weeks ago while he was east.

The plant of the Algona Brick and Tile Company, at Algona, Iowa, was badly damaged by fire, which destroyed the engine room and dry house. The loss is estimated at about \$5,000. The plant will be rebuilt at once.

The Red Wing Sewer Pipe Company, Red Wing, Minn., has decided to double the capacity of Factory A and work on the construction will shortly begin. This will increase the output of the company by about 50 per cent.

The plant of the Corona Pressed Brick and Terra Cotta Company, Corona, Cali., will have its capacity doubled within the next three months. General Manager Genereux is now making preparations for extensive improvements.

The new tile factory of the R. Gustavino Company, at Woburn, Mass., has been completed and operations were started June 17, when the plant was thrown open to visitors. They are turning out a high grade of glazed tile.

The Maine Clay Products Company, of Thomaston, Maine, has placed an order with the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for a complete equipment for the manufacture of soft mud brick.

The employees of the Harbison-Walker Brick Company, at Portsmouth, Ohio, went out on a strike recently. The trouble was adjusted by accessions on the part of the employees and the company both, and the men went back to work.

The Norton Silica Brick Company, Norton, Va., have placed their order with the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for a Martin latest improved 9-foot wet pan.

Robert C. Emanuel, proprietor of the Mallory (S. C.) Brick Manufacturing Company, was struck by a train which was backing into the depot at Latta, S. C., and killed almost instantly. He was twenty-five years old and had been married about a year.

Frederick Jiquay, a young boy employed by the New England Brick Company at their plant at East Brookfield, Mass., fell into the clay mixing machine and was so badly cut and bruised by the knives that he died before the machine could be stopped.

The property of the Cambridge Brick and Tile Company, consisting of about two acres of land, buildings and machinery located in West Cambridge, Ohio, was sold at sheriff's sale recently to Attorney Fred L. Rosemond. Consideration, \$2,000. It is understood that Mr. Rosemond was bidding for the National Bank of Cambridge.

The Somers Brick Company, of Atlantic City, N. J., who recently equipped their plant with a Martin improved outfit of style "A" machinery, have placed their order with the Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for a duplicate outfit of the same kind, which is being installed at the present time.

The Dillsburg Vitrified Brick and Tile Company, of Dillsburg, Pa., has placed an order for machinery with the American Clay Machinery Company, of Bucyrus, Ohio, consisting of one 9-foot dry pan, one 5-foot dry pan, one double shaft pug mill, one No. 43 auger machine, two Eagle represses and their No. 26 cutter. They will build four down draft kilns with a capacity of 175,000 each. The order for fire brick has been placed with the Elk Fire Brick Company, of St. Marys, Pa.

The waste heat system of drying will be used and the plant will be in operation by the end of September at the latest.

The Sheffield Brick and Tile Company has been incorporated at Augusta, Maine, with \$100,000, by L. A. Ingalls and E. J. Pike, both of Augusta, Maine.

E. A. Joseph is erecting a brick plant at Cold Harbor, N. D., where he has leased a tract of land on which he has a good vein of coal, as well as a large deposit of clay.

The Earl Park Brick and Tile Company has been organized at Earl Park, Ill., with \$15,000 capital stock. The directors are F. H. Meier, H. L. Cohen, J. Dugan and C. Christiansen.

The Grueby Pottery Company has filed articles of incorporation. The company is capitalized at \$30,000. The incorporators are Wm. H. Grueby, Wm. H. Graves and Henry W. Belknap.

The San Antonio (Texas) Brick Company has been incorporated with a capital stock of \$100,000. Incorporators, John A. Fraser, John J. Stevens, George H. Craft, D. B. Sanders and A. B. Spencer.

The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., is installing a complete equipment for the manufacture of soft mud brick at Pennbrook, near Lansdale, Pa., for Mr. George M. Fox, Jr.

The Hammond Brick Company, Hammond, La., made its first run June 28th. The plant has a capacity of 50,000 brick per day and is equipped throughout with modern machinery and will be run the year through.

The Rushville Brick Company, Rushville, Ind., is at the present time putting in the Martin patent dryer system of 30,000 daily capacity, installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The plant of the Memphis Stoneware Company, valued at \$80,000, was totally destroyed by fire early in the morning of July 3, which originated in the drying room. The loss is partly covered by insurance. The plant will in all probability be rebuilt.

Mr. F. B. Davidheiser, Pottstown, Pa., who lately equipped his plant with an improved outfit of Martin soft mud brick machinery, has further improved his plant by adding the Martin patented rack pipe steam brick dryer system, which is now being installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

A ten-ton steel cylinder at the plant of the Schenectady Sandstone Brick Company, Schenectady, N. Y., exploded the morning of June 29, killing two men, injuring a number of others, and damaging the plant almost beyond repair. The explosion was due to the fact that the men who had been sent to remove the head of a cylinder which had cooled off, removed the head of a cylinder full of live steam.

El Paso, Texas, is having a building boom, and is using all the brick the local manufacturers can turn out. The brick plant of Z. T. White, at El Paso, was flooded by the breaking of the levee a short time ago, and is just getting in operation again. The shutting down of this plant interfered considerably with the building interest of the town and will now be run day and night to catch up with its orders.

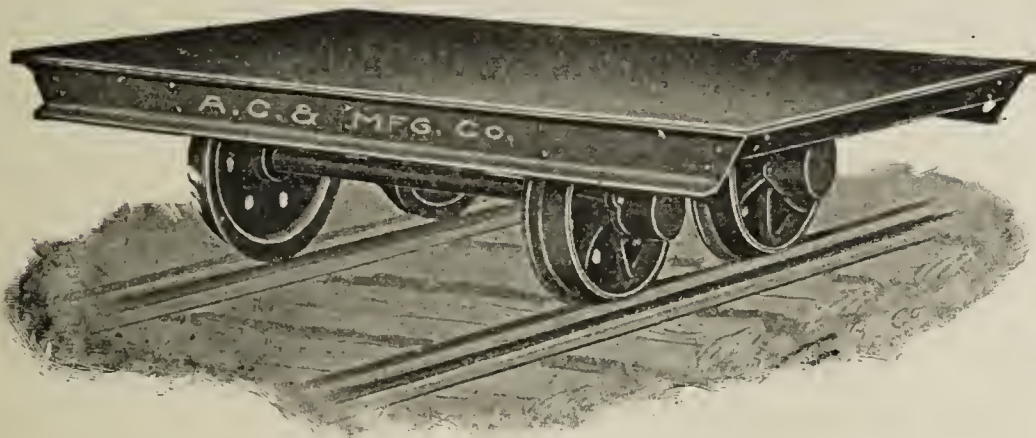
Charles W. Dorcus has leased his farm, located near Woodsboro, Md., Frederick Co., for a period of 50 years to William F. Robertson and Jacob Ohmit, of York, Pa., who will develop slate deposits on the property, and possibly also engage in the manufacture of brick. If the slate deposit proves as valuable as is expected, a \$75,000 plant will be put up and a branch railway line will be run from Woodsboro to the plant.

The Fertile Clay and Fuel Company is the name of a new company that has been incorporated at Mason City, Iowa, with \$200,000 capital. The plant will be located near Fertile, Iowa, where the company has 700 acres of peat and clay land, but the main office of the company will be in Mason City. Dr. Sanders, of Many, is president; B. Rhodes, of Fertile, is treasurer, and A. L. Rule, of Mason City, secretary. The company will manufacture brick and peat.

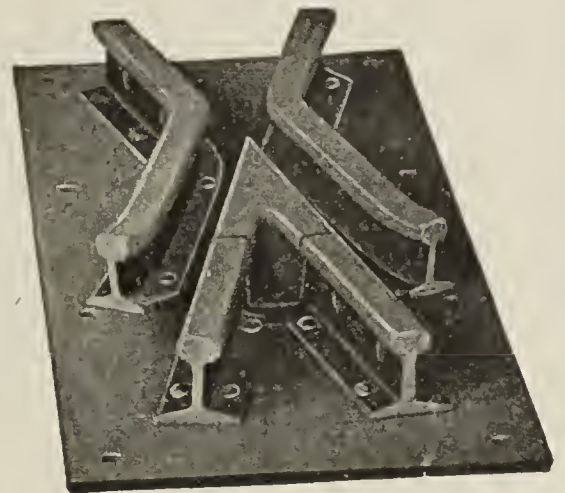
Chisholm, Boyd & White Company has recently shipped to Salt Lake City, Utah, three of their six-mold special Boyd presses, which are now being installed at the new plant of the Salt Lake Pressed Brick Company, which is nearing completion and will soon be set in operation. The Salt Lake Pressed Brick Company has been using two four-mold Boyds for over fifteen years. These machines are still in use doing good work, and about a year ago they installed another four-mold, making in all, six Boyd presses. When the plant is completed it will be one of the largest and best equipped press brick plants in the country.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

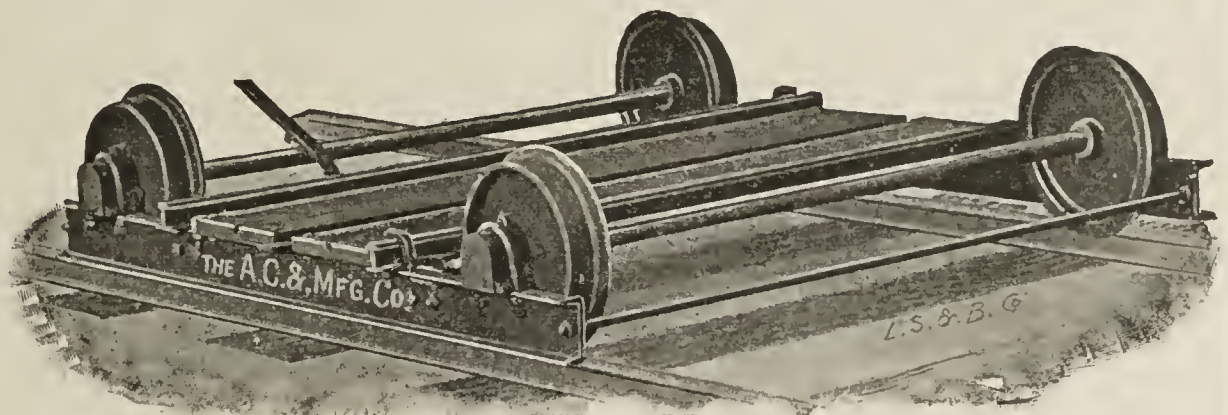
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for THE CLAY-WORKER.

BRICK NEWS OF NEW YORK AND VICINITY.



DRY WEATHER and almost continuous heat, have combined to improve the manufacturers' position since last month and to enable him to get out several burnings during the time. A long, hot period has followed the extremely wet and cold season which ushered in the summer and brickmakers have profited accordingly. The heat has enabled them to get ahead faster than they do sometimes and the effect is that the market is supplied with new brick continuously. However, there is some old stock which remains to be worked off, though it is not enough to create any disturbance in the general market.

So far as general market conditions are concerned there is little change of importance during the month. Sales have been made continuously at good prices and everything points to this same happy combination of circumstances for the months to come. Give the makers good weather in the vicinity of New York and there will be no question about production. The yards can turn out all that is wanted and the consumptive demand is sufficient to warrant good prices. Prices are quoted about as follows:

Front buffs No. 1, \$32 to \$33; grays, shaded and specked, \$32 to \$33; white No. 1, \$32 to \$33; Hudson river common, \$6 to \$7; light hard, \$5 to \$6; pale, \$3.50 to \$4.50; No. 1 fire, American, \$25; No. 2, \$20; Scotch, \$35.

Demand all along the line is active and sales have progressed readily enough, though naturally the market is somewhat weaker now that the supply of new brick is sufficient, or perhaps a bit more than sufficient to satisfy all requirements. Many manufacturers are holding back more or less stock, anticipating larger demand later. When the new subways which have been authorized are ready for construction, there will be another demand equal to what resulted from the construction of the first subways. Some of them will be ready for brick this summer. Others will not, but the mileage which will need brick will be enough to make manufacturers hustle to keep up with the demand when they are ready to use the stock. This work, which is more or less rough, does not take the best grades of brick, and when the immense quantities were wanted before it proved a boon to those makers who have more or less poor stock which cannot be sold for front work, but which does well enough for the work which is to be sheathed in cement and tar.

Many great buildings will be constructed in addition to the requirements for subway construction. These will consume millions of brick. Hundreds of thousands mean nothing about New York. Millions are the only figures that are considered. Buyers purchase in millions and sellers think only of furnishing in millions. This combination of favorable circumstances leads to such a development of the business as has made the Hudson river district an extremely important producer of brick of all grades. As the metropolis continues to develop, the demand heretofore noted will seem as nothing compared with what is to come.

Hudson river manufacturers are busy at all their yards. The output is now in full swing and the market is there. There is nothing to prevent a good business through the season. Development has been checked by fear of over production, though so far it has not looked much like that. It seems almost impossible that there could be over production, when building and structural operations in and about New York are so extensive and so continuous.

Along the Hackensack river all is prosperity and activity. Not much enlargement of output will be noted this year, but it will at least be up to last year and perhaps a shade beyond, though that cannot be said now. If the production is kept up and it is all sold at prices which have prevailed so far this season, manufacturers will not complain of their hard lot. It is not as much as it was a few years ago when the price of

making was so low that manufacturers lost money. This continued for several years, and not until the prosperity of three years ago began did the makers get a chance to recoup themselves and make good some of the losses of the dull seasons which had gone before. Last year it looked like overproduction and low prices and the season opened with something like 120,000,000 more available than were ready for delivery on the same date the previous year. But the poor weather prevented full operation for more than a month later than usual and the surplus did not last long. Now it requires practically all the new brick made on the Hudson and Hackensack rivers to satisfy the ordinary daily requirements.

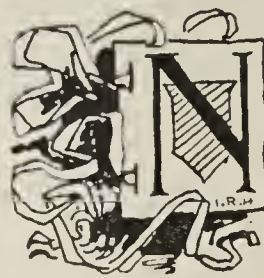
The Kingsland Brick Company, Kingsland, N. J., has had a judgment for over \$31,000 recorded against it in a suit to settle some contested claims. It is understood that the matter will be adjusted.

The North Jersey Brick Company, at Carlstadt, N. J., has uncovered considerable additional clay and is driving its business to the limit. It has put in electric motors for driving all its machinery and has discarded the adjuncts of the business which were introduced and utilized by Mr. Walsh. The company is prospering and its shipments are extensive.

BURTON.

Written for THE CLAY-WORKER.

WITH THE NEW JERSEY BRICK MEN.



NEW JERSEY brickmakers are happy. The long spell of dry, hot weather has enabled them to make a good quantity of brick without danger of injury from the effects of showers and rains. Trouble enough came to them early in the season, but later the change has been all that could be desired. Now the weather is superb for brickmaking, a little warm for comfort, perhaps, but good for the fresh brick which must be dried out of doors.

The situation through New Jersey is not essentially different from what it has been all through the season, or, at least, that portion of it during which the weather has permitted the making of brick at all. The market is good. Demand from all the New Jersey cities is sufficient to care for a considerable proportion of the make of the New Jersey yards and the rest of it goes to New York and Philadelphia. All the yards in the southern part of the state have opportunity to market their surplus in Philadelphia, while those in the northern part find a ready market in New York.

But speaking of markets, the New Jersey cities should not be ignored. Take Newark, with its 300,000 people and its enormous industries and its great building operations constantly in progress. Any yard or yards in the vicinity of Newark have a ready market for everything that can be produced. The building operations provided for this season surpass anything heretofore known and include factory, business and residence property. All the building permits together are ahead of anything which has been recorded previously. The outlook for the future is good and the present active market promises to continue indefinitely. It is certain that Newark will grow. It is equally certain that Newark will always be an enormous consumer of brick. Its many miles of brick paved streets show what the people think of brick as a material, and it is quite well established that the future is as promising for brickmakers as the past has been.

Paterson, once the unfortunate, is now one of the best and most alive cities in New Jersey. All the new buildings in the burned area have been rebuilt with brick and a beautiful city, full of artistic buildings, is the result. Practically every new building of importance is of brick and a satisfying series of buildings they are, too. Practically all the new buildings of importance now in process of construction, and there are a good many of them, are of brick. It is the favorite building material and no cleaner or more satisfactory city can be found in the vicinity of New York.

Paterson has also taken kindly to brick paving, and has some miles of that sort of pavement. More is to be laid; some this year and some next. It has worked satisfactorily and the people who are compelled to use the pavements most

(Continued on Page 64.)

THE CHAMBERS DRY PANS

J. W. Sibley, Pres. and Genl. Mgr.

J. A. Menge, Vice-Pres. and Treas.

W. L. Sibley, Sec'y.

SIBLEY-MENGE PRESS BRICK CO.

Chambers Bros. Co.,
Philadelphia, Pa.:

Birmingham, Ala., May 22, '07.

Gentlemen--When you ship the pan, please also send us one set of malleable iron screens for our large 9-ft. pan with openings 3-16 in. wide, same as originally furnished with that pan. The original set are still in good shape, but the openings have worn a little too coarse. This pan has been in constant use for 16 months and we have not had to spend one cent on it in repairs as you know.

We are grinding both shale and fire clay. The absence of the troublesome step found with other pans has relieved us of one of the burdens that is most vexatious and costly to clayworkers.

With best wishes,

Yours very truly,

SIBLEY-MENGE PRESS BRICK CO.

Per Jno. W. Sibley, President.

THE CHAMBERS BRICK MACHINES

[COPY]

A. H. Simpson, President.

Thomas Harrold, V. Prest.

W. L. Mardre, Secy. and Treas.

CHATTAHOOCHEE VALLEY BRICK COMPANY,

Mess. Chambers Bros. Co.
Philadelphia Pa.

Omaha, Ga., 3/21/ '07.

Dear Sirs:-

We have been running our new machine about four weeks and am pleased to say it is giving perfect satisfaction.

Your new No. 8 Cutter is a dandy.

We find that the only thing the machine needs is plenty of clay.

Wishing you continued success, I am,

Yours truly,

/Signed/ C. J. NEWMAN,

Mgr.

CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets

Chicago Office:
E. R. FRAZIER, 59 West Jackson Blvd.

PHILADELPHIA, PA.

SEE AD ON PAGE 3.

are enthusiastic in its favor. It not only has satisfied on level stretches, but it has been used with good effect on steep grades, and drivers do not complain materially of its difficulties. Heavily loaded trucks negotiate the brick paved grades without difficulty. It is a hard matter to find a horse that can pull a full load on a level on a wood paved street.

Passaic is growing with the rest of the New Jersey communities and considerable brick is being used in the new construction now in progress. The city has developed a good many fine factory buildings, all built of brick, and some of its most beautiful churches are also of brick. The fact that builders use brick wherever possible is sufficient proof of their faith in it, and their belief that there is nothing better for permanent structures which must stand the vibration of heavy or light machinery.

The great trunk sewer from the Passaic valley to New York Bay will be begun shortly. But it will be years before it is finished. It is understood that the state sewerage commission favors brick construction, and if it is finally adopted it will be one of the greatest pieces of brick construction in New Jersey. Perhaps it will surpass anything else which exists at present. It is quite impossible to give dimensions or even any approximate probability of the size of the work or the quantity of brick wanted. The engineers do not know yet. But there will be many obstacles, and objections will be raised, but in the end good lawyers say that the state will be able to build this sewer and thus relieve the Passaic valley from intolerable conditions which have driven the population all away from the polluted Passaic river, formerly one of the most attractive streams in the state.

Another important piece of engineering will be the construction of a reservoir at the head waters of the Passaic to impound the water at flood and hold it in reserve for droughts, either for potable or for manufacturing purposes. The dam would be the largest in New Jersey, and the impounding reservoir would be one of the sights of the state. Many thousand of brick will be used in this when it is built.

The building in the small towns in the suburban sections of New Jersey is making live communities today where were only pastures yesterday. Long stretches of paving will shortly be necessary, and it would seem as though brick men have a favorable opportunity to impress upon those who prepare the specifications for paving that brick is the proper material to use, and that a brick pavement once laid down will last for many years with the minimum of expense for repairs.

A. L. B.

Written for THE CLAY-WORKER.

GEORGIA CLAY NOTES.

A BRICK PLANT has been built at Reid Station, nine miles south of Macon, Ga., by Thomas Bond. The plant will have 50,000 daily capacity. It is expected to be in operation by August.

The brick industry of Macon is one of the largest manufacturing industries of the city. The annual output of brick is now about 70,000,000, with the price at \$6.50 per thousand at the yards.

The Cherokee Brick Company, of Macon, has recently increased its capacity by the addition of a new brick machine.

It is reported that all of the necessary capital for a white ware pottery, to be located in Macon, has been raised, and that it will be only a matter of a short time before a plant will be built.

Two of the kaolin mining companies at Dry Branch are installing washing plants, and expect to place on the market a purer and more uniform product than heretofore, and to produce clay largely for potters' use. New clay pits are also being opened up and other improvements are being made.

A brick company has recently been organized at Milledgeville, Ga., for the manufacture of common building brick. A deposit of alluvial clay along the Oconee river will be used.

The experimental pottery at Augusta, Ga., has proved to be a success, and it is reported that a two kiln pottery will be built by local capitalists.

A. CRACKER.

Written for THE CLAY-WORKER.

WESTERN PENNSYLVANIA BRICK AND BUILDING NEWS.



BRICK BUSINESS throughout the entire Pittsburg district has been particularly good during the past month, and practically all of the large manufacturers report that their business has shown a most satisfactory increase during this time. In at least a half dozen instances, the owners of local brick plants were forced to fire extra kilns, the business having increased beyond the expectations when portions of the plants were closed down for repairs.

There have been three notable features in the clay working industry in this vicinity, these being the remarkable business done this summer in the manufacture of sewer pipe, fire brick and common red building brick. An unusual number of the small towns and cities in the vicinity of Pittsburg have been installing sewerage systems for the past few months, and this has created an extraordinary demand for tile sewer pipe. And a feature of the orders that have been placed is the fact that in almost every instance these towns and cities are placing their orders for pipe of considerably larger diameter than is necessary for the present size and importance of these places, showing that even now preparations are being made for the expansion of the systems without being forced to install complete new lines.

There is also an immense amount of street paving being done, which has caused an increased demand for vitrified pavers, and all works producing this class of brick report excellent business on hand.

Residence building is at its height, which exhibits the reason for the third feature of the local market, the demand being far in excess of that at the same time last year, although the present building season is at least four weeks behind that of 1906.

Fire brick inquiries this summer are unusually plentiful, and it has been conservatively estimated that there will be double the quantity of blast furnace and stove brick used this summer than for any year in the past five. There are a large number of new furnaces and steel plants being built in this region this summer, and these orders, in addition to the regular summer orders for relining and repairing, have been keeping all of the manufacturers of refractory materials hustling to keep up with the promised deliveries on contracts.

The unusual amount of coke oven construction has also been the means of creating quite a rush, and it is estimated that there are no less than 15,000 new ovens being built in the various coke fields.

The car shortage has proved a serious drawback to brick manufacturers in particular, and has been the means of causing considerable loss in forcing them to run large quantities of brick to the sheds, instead of being able to load direct from the kilns into the cars. Some little improvement is being shown in this respect at the present writing, however.

The Pittsburg Silica and Brick Company, of Pittsburg, has been incorporated with an authorized capital stock of \$20,000, and will engage in the mining of silica and fireclay, and the manufacture of the same into silica and fire brick, and other refractory materials. The incorporators of the company are John M. Heany, of Bridgeville, Pa.; Frank R. Schneider, of Crafton, Pa., and Oswalt Ende, of Carnegie, Pa.

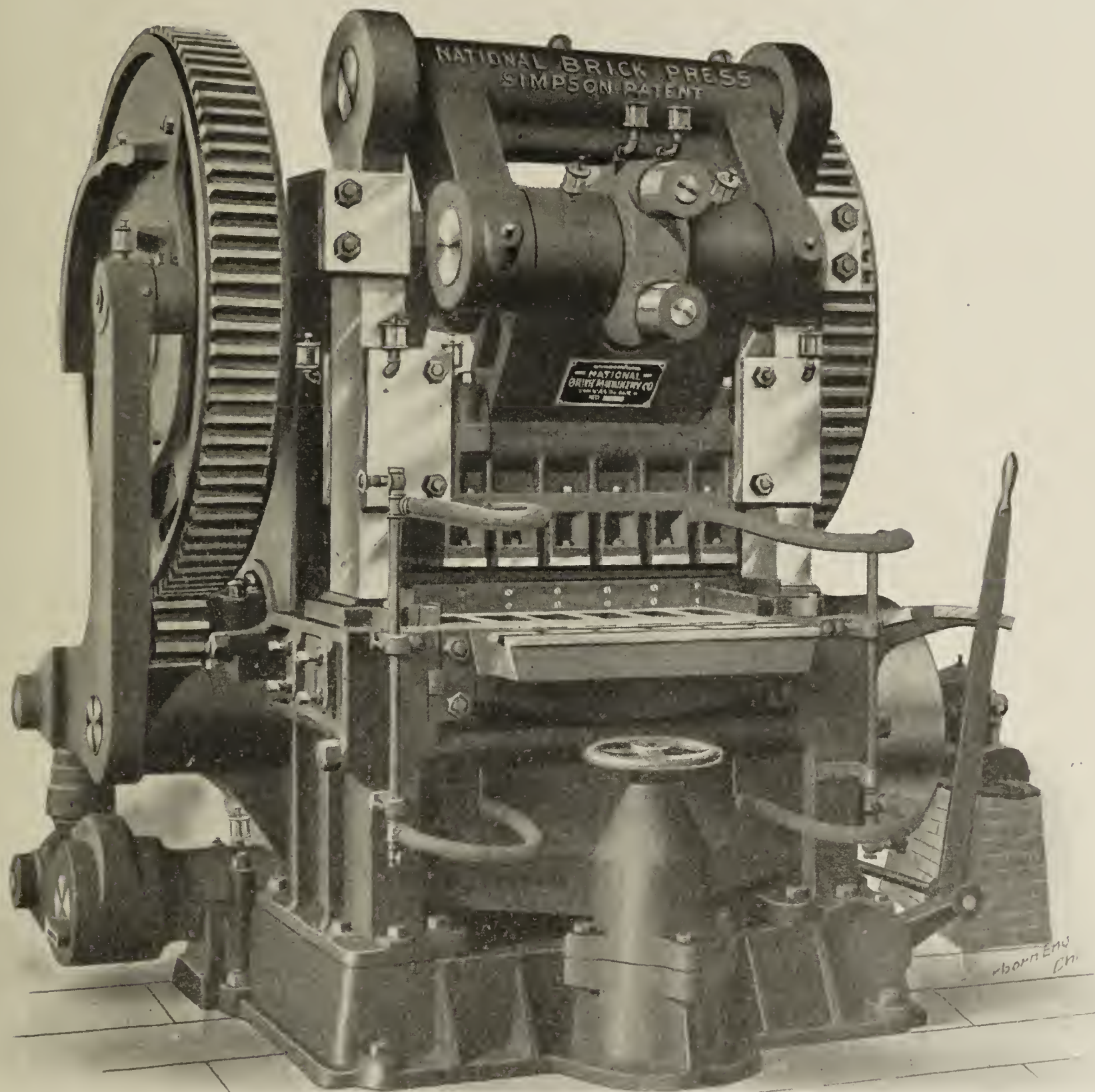
The Maxwell Brick Company, of Williams, Pa., has been awarded the contract for furnishing a portion of the brick that will be used in the paving of a number of the streets at

(Continued on Page 66.)

The National Brick Press

Simpson Patent

SIX MOLD



Read What Our Customers Think of It.

National Brick Machinery Company, Chicago, Ill.:

Rochester, N. Y., July 6, 1907.

Gentlemen—We beg to inform you that the new Six Mold Brick Press, Simpson Patent, which we recently purchased from your company, is turning out a very high grade of brick at the rate of 27,000 per ten hours. We find the press to be smooth running, strong and compact with its parts easily accessible, and in every way it is equal to all of our expectations. It has been installed beside our four Mold Model C Press which we understand was designed by the same inventor and which has been doing very satisfactory work for the past two years. It gives us pleasure to state that we are glad that we decided on a Simpson Press for the increased equipment of our factory.

Very truly yours,

ROCHESTER COMPOSITE BRICK COMPANY.

R. W. Holden, Treasurer.

Built in Four, Five and Six Mold Sizes.

National Brick Machinery Co.,

General Office, Chamber of Commerce Bldg.,

CHICAGO, ILL.

Somerset, Pa. The contract was secured through the efforts of J. S. Maxwell, head of the company.

The Clymer Brick and Fire Clay Company, of Indiana, Pa., has been incorporated with a capital stock of \$80,000, and will engage in the manufacture of both refractory and clay brick. The incorporators of the new concern are Robert M. Wilson, John S. Fisher, S. N. Langham and Henry Hall, all of Indiana, Pa.; H. M. Widdowson, of Mehafeff, Pa., and T. L. Snyder and H. A. Kratzer, both of Clearfield, Pa.

The DuBois & Butler Brick Works, located at Falls Creek, Pa., and which have been shut down during the past several months, resumed again last month, with sufficient orders booked to keep the plant running full turn during the remainder of the summer. During the shut-down, a number of needed repairs were made, and the plant placed in first class running condition. About sixty men are regularly employed.

The plant of the Pennsylvania Clay Company, in Crow's Run, Freedom, Pa., which was destroyed by fire some months ago, is rapidly being rebuilt, and in a short time will again be placed in full operation. The plant was almost a total wreck, all of the machinery and ten of the kilns being destroyed. The insurance, however, was adjusted as soon as possible, and the reconstructed plant will be far more modern than the old one was.

Rapid progress is being made on the construction of the new brick plant at Bessemer, Lawrence county, Pa., which will be operated by the Bessemer Brick Company, of New Castle. The building of this new plant, which adjoins the present plant of the company, will give about double the present capacity, thus giving the owners a daily output of 50,000 nine-inch brick. Modern brick moulding and cutting machinery will be installed, and six new down-draft kilns are being built.

Pittsburg being one of the greatest brick manufacturing centers in the United States, the announcement that freight rates on brick and clay would be advanced 10 per cent. on August 1 has caused no little anxiety throughout this entire district. It has been contended by the manufacturers for a long time that the rates were already too high, and the announcement of still higher rates was a severe blow to many of them. The railroads contend that their operating expenses are increasing steadily, and that it is compulsory for them to advance freight rates on all lines. The shipping business is now at its height, and all of the manufacturers are endeavoring to make their shipments as heavy as possible this month in order to save all possible. There was considerable talk of making a fight against the advance, but the futility of such action was readily seen, and the decision will be accepted without any showing of fight.

The Patton Fire Clay Company, Patton, Pa., has been awarded the contract for furnishing the brick that will be used this summer in paving the streets of Ebensburg, Pa. W. H. Herr & Co., of Altoona, have the contract.

The new plant of the Kittaning Clay Products Company, at Cowanshannoc, Pa., has been completed, and was placed in operation last month. The new plant is one of the most modern in this part of the state, and is a mechanical plant in every respect. About 30,000 brick are being manufactured daily at the present time, although the plant was built to be able to take care of orders for 80,000 brick daily. Mottled, gray and white brick will be manufactured, and the new concern has orders on its books for a sufficient number of these to keep the plant in operation at the present rate of manufacture for a year at least. Extensive clay beds in the immediate vicinity are owned by the concern, and model mines are being opened and operated.

The Magnolia Brick Company, New Martinsville, W. Va., has been given the order for the large number of brick that will be used in the construction of the large glass plant that will be built in that city. In addition to the regular brick,

a large number of special shapes and blocks will be required, which will have to be made up.

Fine progress is being made on the construction of the immense new brickmaking plant of the Castanea Brick and Tile Company, at Castanea, Pa. The plant is already assuming definite shape, and will be one of the largest and finest plants in the Clinton county district. The foundations are all in, and work is now under way on the walls. A branch of the New York Central railroad has been run to the plant, and thus expedites the delivery of all construction material. The office building of the company has been completed, and is now occupied. It is thought that the entire plant will in operation by the latter part of this fall, and a steady run throughout the winter is assured, as the firm already has a large amount of future business entered on the books for delivery during next spring and summer.

B. F. Johnston, the Pittsburg representative of the Columbia Fire Brick Company, of Canton, Ohio, has received the order for 120,000 "Columbia" and "Strasburg" firebrick for his company, as well as the order for over 6,000 special shapes and 80,000 pounds of fire clay that will be required in setting the twenty boilers at the new furnace plant of the Jones & Laughlin Steel Company's new plant at Aliquippa, Pa. This same company has also been awarded the contract for furnishing a large number of fire brick for the three new gas producers being installed at the plant of the Gorsuch & Scott Co., at Zanesville, O., 50,000 fire brick for the Bellaire Bottle Company's plant at Bellaire, Ohio, and a large order from the Fostoria Glass Specialty Company, of Fostoria, Ohio.

The Charleroi Brick Works has been awarded the contract for furnishing 250,000 brick for the new school that is being built in that city. The plant, according to the report from Superintendent J. A. Bowman, is very busy, and owing to the steady business, has been forced to decline to bid on several lots of 800,000 or more brick. The company also has a large number of orders for brick for the Pittsburg Plate Glass Company, and will run to capacity the remainder of the year.

The Osceola Silica and Fire Brick Company, of Osceola Mills, Pa., has a large number of orders on hand, and complains that owing to the scarcity of men it is impossible to run the plant to capacity. This is not the only plant that is suffering in a like manner, however, as a large number of manufacturers report that they have been unable to secure sufficient labor at any time during the present year.

Last month, after the regular letter was prepared, the large pottery of the Pennsylvania China Company, located at Wickboro, Pa., was badly damaged by fire, which originated in the decorating kiln room. The blaze was confined to this one room, however, and although it was a total wreck, it was not found necessary to close down the plant, and the damage is being repaired as rapidly as possible.

S. G. Davis is installing a large steam drill at the plant of the Mill Hall Brick Works, Mill Hall, Clinton county, Pa. The clay is very hard, and considerable difficulty has been experienced in cutting it.

F. A. C.

TRADE NOTES

The Latonia Brick Company, Latonia, Ky., are equipping an up-to-date modern brick plant including Martin latest improved brick machinery with the Martin patent rack pipe steam brick dryer system of 40,000 daily capacity, it being installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

A company with \$50,000 capital stock has been incorporated to manufacture face brick at Ashaway, N. J. The company will be known as the Ashaway Clay Company and will erect a 40,000 daily capacity plant at once. The following officers have been elected: President, George L. Babcock, Plainfield, N. J.; vice president, George N. Burdick, Potter Hill, N. J.; secretary and treasurer, Frank Hill, Ashaway, and manager, Fred J. Robinson.

A SURE CURE FOR THE CONCRETE CRAZE

"BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE"

AN ELABORATE PUBLICATION

Cover in 4 Colors.

Ninety-Six 10x12 Pages.

Eighty-three 7x5 Half-tones.

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which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

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Written for THE CLAY-WORKER.

NORTHWESTERN OHIO BRICK AND BUILDING NEWS.



AFTER TWO MONTHS Common Pleas Judge Morris has come out of his lethargy and decided to do something in the case of the indicted brick and lumbermen who, to facilitate matters and to save a long drawn out legal battle, plead guilty to a technicality, when, as a matter of fact, they never violated the spirit of the anti-trust law at all.

But the learned judge has only just decided to do something. When the pleas were entered the one request made of the judge was that he facilitate matters all that he could, and pass sentence at an early date. This was requested for one principal reason—to save the slump which seemed certain to fall upon the building industry. Just the moment the tradesmen were indicted, speculating real estate men set up a hue about prices dropping, and as a result building came to a standstill. And since then the standstill has been decidedly effective.

In the hope that an immediate settlement of the cases would restore normal conditions and show the people that any fall of prices was out of the question, it was asked of the judge that he pass sentence at once. It has now been nearly two months and sentence has not yet been passed, although His Honor today called the attorneys together and asked them what had happened since he last saw them in re "trust violations." Therewith having been duly informed what had happened, he sayeth that soon he will sayeth more, but how soon he sayeth not. And the brick men are still up in the air—incidentally so is the building industry in general.

The same proportion of small building goes on apace, but of the large buildings nothing but old projects are underway, except a few flats, and this season, from a building standpoint, has been a sad fizzle.

But to get to the court procedure.

On call of the court, Attorneys Baker, Fuller and Holbrook waited upon Judge Morris, and at his request, told him what had happened since the men had plead guilty.

Judge Morris said that since that time he had had communication with nobody concerning the cases, and that he desired the attorneys for the last time to have a full say, because he was soon to pass sentence.

Mr. Baker showed or tried to show the judge once more that the original purpose of the brickmen's organization was a praiseworthy one, and intended to enable the small dealers to compete with the large dealers by having the yards of their associates in the organization to draw from.

There was no conspiracy in the organization, he said, declaring that the brick dealers were deserving of consideration from the fact that they did not charge nearly as high prices as they could have charged by reason of the fact that they were producers, and that no one else but themselves stood between the raw material and the consuming public.

"I am informed," said Baker, "that the prevailing prices, as set by the members of the association, were no higher than the scale of prices as charged by the workhouse yards, where bricks are made at a great deal lesser cost. Also the prices are much lower than in many other cities."

The other attorneys argued along the same lines, and then Judge Morris dismissed them, saying that within the week he would set the day for passing sentence.

The attorneys argued that even a minimum sentence would be excessive.

The Carbon Limestone Company, at Newcastle, will soon begin the construction of a mammoth brick works near the state line, between the line and Quakertown Falls. Large beds of shale to be used in the manufacture of a select quality of fire and paving brick are being uncovered and a large force of men will be employed the year around. The plant will cost nearly \$100,000. The beds of limestone, fireclay and

shale in Lawrence county and the eastern part of Mahoning are exceptionally rich, and it is estimated they will last at least fifty years.

Rapid progress is being made on the large brick plant being erected by the Columbus and Hocking Coal and Iron Company at Kacheluacher, in the Hocking Valley. A large force of men is engaged in setting up the gas engines. The fine weather will permit the men at work to complete the plant some time in July.

The capital stock of the Fultonham Brick Company, which has a large plant at Fultonham, Ohio, has been purchased by T. T. McClure & Sons' Company, of Columbus, Ohio, and the Kirchner Construction Company, of Cincinnati. Reorganization of the concern has been effected by the election of T. T. McClure, president; E. E. McClure, vice president; Frank F. Dinsmore, secretary, and F. H. Kirschner, treasurer. The capital stock of the company is \$100,000, and it has been divided between the two construction companies. The plant was taken over June 10.

The Iron-Clay Brick Company, which has headquarters in the Ruggery building, Columbus, Ohio, and which has a large plant at Shawnee, is receiving a large number of orders for the summer and fall business. The company now has about 150 cars placed in advance. The semi-annual meeting of the board of directors was held June 18, at which time the semi-annual dividend of 3 per cent. was declared payable July 1.

The large plant formerly operated by the Columbus Pottery Company, located in Chaseland, north of Columbus, which was partially destroyed by a disastrous fire several months ago, has been entirely rebuilt by the American Mutual Pottery Company, which was organized by James M. Loran and others to take the plant over. The work which was started at the time of the fire has been completed and the plant is now being operated. The officials of the new company are discussing the advisability of changing the line of manufacture. So far no successor has been elected to Dennis J. Clahane, president of the company, who died recently. It may be that a meeting of the stockholders will be called soon to elect a successor and to make arrangements to start the plant.

The Bell Pottery Company, which has a plant east of the city limits, is now in the hands of a receiver, but arrangements are being made to have the receivership lifted and a syndicate may be formed to purchase the property. Receiver Gumble said that he believed the court would give an order for sale in a few weeks.

The T. B. Townsend Brick and Contracting Company has filed a complaint with the railroad commission of Ohio against the Zanesville Belt and Terminal Company, on the grounds that the railroad's services are insufficient, that its rolling stock consists of one locomotive; that its bridges are so weak that it cannot haul heavy trains over them; and that the defendant objects and refuses to deliver to the complainant for the transportation of freight any empty cars offered to the defendant by the connecting lines for the use of the complainant when such cars are 100,000 pound capacity.

Some time early in July the new pottery plant at Perrysville near Mansfield will be in operation. The work on the main building is completed but the occupation of the plant has been held up because of the fact that the sidetrack is not completed by the railroad. This will be finished within a few days.

R. E. Kelly, formerly manager of the Findlay Hydraulic Pressed Brick Company, has accepted a position as sales agent for Warren B. Ferris, dealer in brick and building materials. Mr. Kelly has taken up his new duties, and Mr. Ferris, who is president of the Devonshire Brick Company, which has a large plant at Roseville, will devote his attention to managing the plant and to the buying department. Mr. W. A. Shoemaker is general manager of the concern. Hereafter Mr. Ferris will look after the plant in conjunction with Mr. Shoemaker.

E. C. Kuenzli, of Nevada, Ohio, tile manufacturer, was fined \$5.00 and costs last week for using wagons with narrower treads than specified by law. Mr. Kuenzli had five wagons loaded with tile on the pike, and every tire was less than the proper width.

T. O. D.

REMARKABLE OFFER.

We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for

\$3.00



The New Way.

“POST” SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen. Guaranteed by Makers.
NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

Gen. Lew. Wallace: The author of “Ben Hur” writes, “I have tried every kind in the market and unhesitatingly give the preference to the “Post.”

Judge Luther L. Mills, Chicago: The “Post” Fountain Pen is the Best I have ever used; simple, reliable, durable.

Dr. Josiah Strong: The great author of “Our Country” says: “I have been hunting for twenty years a perfect fountain pen; have tried many, and they have tried me; but the “Post” leaves nothing to be desired.”

The CLAY-WORKER, INDIANAPOLIS, —INDIANA.

**DO
IT
NOW**

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE “POST” FOUNTAIN PEN and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued, beginning with the.....Enclosed find \$.....

Name.....

Postoffice.....

Street and Number.....

County..... State.....

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

DRY PRESSES FOR SALE.

One 2-mold U. S. Brick Press. One 3-mold Boyd Brick Press. One 4-Mold Brick Press of standard make. One 3-mold Andrus Brick Press. Dry Pan, Pulverizer, Screen and Transmission. One set of plates for seven foot Wet Pan. 1,000 horse-power Corliss Engine and boilers.
611p B-K BRICK CO., Denver, Colo.

WANTED.

A person competent to promote and organize a clay industry. Have the finest clay property in the country, with two railroad systems central to a vast market, with cheap fuel, etc., etc. Need \$100,000. Address, J. H., care Clay-Worker.
71d

FOR SALE.

One power repress, in No. 1 condition; used only a short time. Capacity, 10,000 per day. Ask for full particulars. Address, AMERICAN ENAMELED BRICK & TILE COMPANY, 1 Madison Avenue, New York City.
73dm

WANTED—Position as superintendent by a practical man, of a sewer pipe or brick plant. Understand making and burning of sewer pipe, fireproofing, flue linings, and all kinds of furnace linings. Good handler of men. Can give best of references. Address, MISSOURI, Care Clay-Worker.
71cm

FOR SALE.

At a bargain, a yard equipped with granulator, disintegrator and a Big Wonder machine. The Warner system of handling and drying brick, the Boss system of burning. Sixty-nine acres of good clay, with market for the output. Yard is in active operation and has a first-class reputation. A splendid opportunity. Reason for selling, failing health. Address, P. J. CONNELL, Muskegon, Mich.
73cm

FOR SALE—ENGINES AND BOILERS.

BOILERS.

4 72x18 horizontal tubular, high pressure.
1 84x18 horizontal tubular, standard.
1 78x16 horizontal tubular, standard.
1 72x16 horizontal tubular, standard.
5 72x16 horizontal tubular, standard.
1 66x16 horizontal tubular, high pressure.
1 60x18 6-inch rivetted flue, standard.
3 60x16 horizontal tubular, standard.
Sixty others, all styles and sizes.

ENGINES.

20x48 Wheelock.
18x42 Hamilton.
18x36 Wright.
16x32 Buckeye.
18x26 H. S. & G.
16x20 Brownell.
14x20 Atlas.
14x14 Vertical.

Forty others, all sizes and styles.

Also pumps, heaters, tanks, saw mills and general machinery. Send us specifications of your wants.

THE RANDLE MACHINERY CO.,

1735 Powers St.,

7 tf d Cincinnati, Ohio.

ASTORIA—One of the best places in the whole country to establish brickmaking plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia river. No brickmaking plant within 100 miles.

CHAMBER OF COMMERCE,
71dm Room 710, Astoria, Ore.

WANTED—Manager and superintendent of a brick plant, established a number of years and making high grade stiff mud brick. Must be competent to handle peculiar clay and make A1 brick; understand machinery; good business ability; the management of men; have unquestionable habits; first-class reference. Address in full and in confidence, stating salary expected. X. Y. Z., Care Clay-Worker.
71d

A BUSINESS CHANCE.

Would sell an interest in a prosperous brick plant to practical man, capable of taking charge and operating the yard. Town growing rapidly and no competition in this line. Only small amount of money required, but party must be reliable and experienced to receive attention. Attractive proposition is open to such person.

BIG HORN BRICK CO.,
71cm Cody, Wyoming.

WANTED.

Situation by a thorough clay man as superintendent or manager of some large brick plant, thoroughly understanding the business from top to bottom. The manufacture of fine front brick by either the dry clay or stiff mud process, also the manufacture of sewer pipe, flue lining, fireproofing, fire brick and common brick.

Thoroughly understands the erection of complete plants from the ground floor up, the erection of both up and down draft kilns, the successful handling of same with either coal, oil or wood, the handling of all kinds of machines, etc.

Thoroughly understands the labor question, the successful handling of same, and knows how to get results out of labor, knows when a day's work is being done and how to get it. At the present time have the management of one of the largest dry press plants in the country, making the finest ware made anywhere, but wish to make a change for good reasons. Address, EXPERIENCE,

A BANKRUPT SALE
OF A VALUABLE BRICK AND
TILE PLANT.

Public or Private Sale of the Jackson Brick and Tile Company of Jackson, Missouri, on Saturday, August 31, 1907, between the hours of one and three o'clock in the afternoon. A complete brick and tile plant with all the necessary machinery, trucks, wagons, etc., and the plant is equipped with the following machinery:

A Fernholtz 4 Mould Dry Press Brick Machine (used part of one season.)

A Freese Combined Brick and Tile Machine; brick capacity of this machine 20,000 per day, and makes 3, 4, 5, 6, 8, 10 and 12 inch tile. Two up-draft kilns, 2 down-draft kilns. Railroad switch into plant. 10-64 acre clay field and 2 acres more or less of land on which plant is located.

Terms of sale, cash in hand.

Trustee authorized to sell at private sale. Written bids and correspondence solicited.

JOSEPH E. SCHMUKE, Trustee,
71dm Cape Girardeau, Mo.

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States. WESTERN CLAY DEVELOPMENT CO., Van Meter, Iowa.

FOR SALE—Thirty acres of land containing shale for making paving brick; also high grade of potters clay, limestone and one lime kiln for burning fertilizing lime, coal enough on land to burn lime, 8 brick kilns. All located on the B. & O. R. R. Inquire, A. H. COLEMAN, Massillon, Ohio.
53cm

FOR SALE CHEAP.

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machines first-class. Capacity 7,500 to 10,000 brick per hour. Greatest bargain. Write for particulars.

GREAT EASTERN CLAY CO.,
53cm 39 Cortlandt St., New York City.

POTTERY FOR SALE.

A two-kiln pottery for sale in Philadelphia, Pa., conveniently located to P. R. R. Co., to P. & R. Ry. Co. and to wharves. In running condition for the manufacture of any line of pottery ware. Kiln, 16½ feet, up-draft; also a decorating kiln. All as good as new. Address, MacQ., Care Clay-Worker.
61c

FOR SALE.

SECOND HAND MACHINERY.

PUMPS.

One 20x6x18 "Hughes" duplex outside end packed plunger pump, pot valves.
One 16x8x18 outside end packed plunger pump, brass valves, for heavy press.
One 12x8½x12 "Snider-Hughes" duplex pump, inside packed pistons.
One 8x6x10 "Smith-Vaile" duplex pump.

AIR COMPRESSORS.

One 10x10x12 "Guild & Garrison" horizontal duplex, steam driven.
One 8x8 vertical, steam driven.
One 13x8x12 vertical compound, belt driven.

GAS ENGINES.

One 50 h. p. "Olds" gas or gasoline.
One 50 h. p. "Fairbanks-Morse" gas or gasoline.
One 15 h. p. "Miami" gas.
One 20 h. p. "Ohio" gas.
One 5 h. p. gas or gasoline.

CONDENSERS.

One 7x9x10 "Dean Brothers," jet condenser.
One 10x14x18 "Laidlaw-Dunn-Gordon" condenser.

BOILERS.

One 66 inches by 16 feet, standard horizontal tube.
One 54 inches by 16 feet, standard horizontal tube.
Two 60 inches by 16 feet, standard horizontal tube.
Three 72 inches by 16 feet, standard horizontal tube.
Two 72 inches by 18 feet, standard horizontal tube.
One 105 h. p. "Wicks" horizontal water tube.

ENGINES.

One 18x26x42 heavy duty, tandem compound, Allis-Chalmers corliss.
One 16x24 "Atlas," R. H., plain S-V.
One 12x20 "Mansfield," R. H., plain S-V.
One 12x20 "Columbus," R. H., plain S-V.
One 10x16 box bed, plain S-V.
One 16x32 "Buckeye," R. H. automatic.
One 14x20 "Atlas," L. H. automatic.
One 10x18x12 "Erie-Bali," Ver. Cross Com. Aut.
Two 9x15x9 "Westinghouse," Com. Ver. Aut.
One 8x7 "Westinghouse," Aut. Ver.

HEATERS.

One 300 h. p. Ver., closed.
One 250 h. p. Hor. closed.
One "Rice" heater and B. F. pump, combined.

Also other sizes than given in list, if wanted.

Prices and description on application. C. C. WORMER MACHINERY CO., 77 Woodbridge St., W., Detroit, Mich.

3 tf d

Robert Twells Will Buy or Sell Second-Hand Brick Machinery.

For some time past, I have been devoting my time to assisting fellow clayworkers who have had trouble in burning their ware, and have always succeeded in obtaining better results in burning, as well as improving the ware, shortening time of burning, saving coal and getting the desired color.

SECOND-HAND BRICK MACHINE EXCHANGE.

I have now opened an Agency or Exchange for second-hand brick machinery and brickyard supplies of every description. Why buy a new machine when you can buy a good second-hand machine for half the price? Many machines are taken out to make room for one of larger capacity, or because it was not adapted to the particular clay it had to work, or because the clay bank becomes exhausted, or the plant burned down, or the owners failed in business, or for a number of reasons, none of which reflect upon the machine itself. Tell me what you want, and I will tell you at once whether I can furnish it.

If you are putting in new machinery, and have any machines or supplies that you wish to dispose of, send me a description of same, stating exact condition of machine, and the lowest cash price you will take for same, f.o.b. cars at your place. Listing it for sale with me will not hinder you from selling it yourself if you get a buyer.

ROBERT TWELLS, Walnut Hills, Ill.

PHILLIPS & McLAREN CO.

PITTSBURG, PA.

Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.

Also
Rock and Ore Crushers.

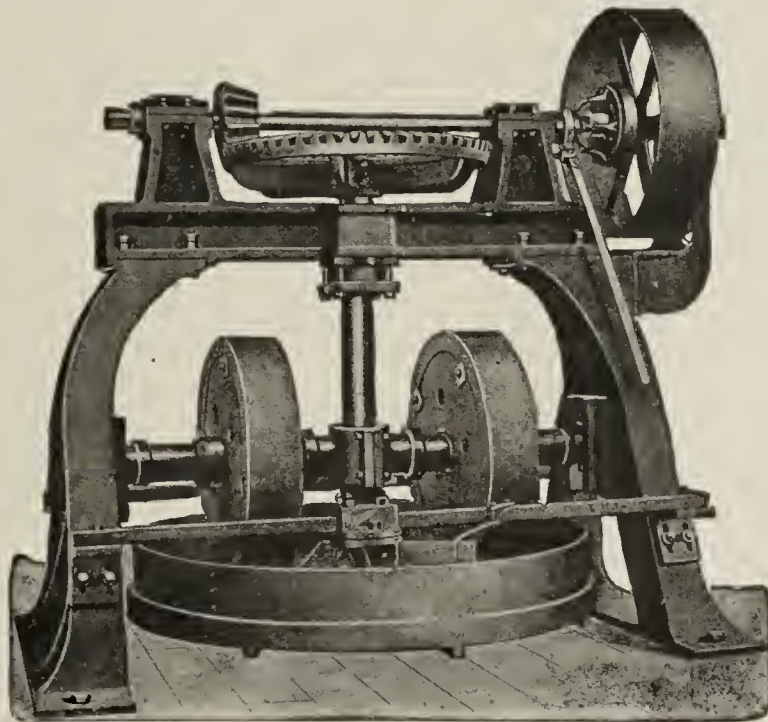
When writing for Prices state
kind of Clay or Material to be
ground and capacity required.

Eastern Sales Agents

BORTON & TIERNEY CO.,

Stephen Girard Bldg.

Philadelphia, Pa.



Mention the CLAY-WORKER

When writing to Advertisers.

FOR SALE—One Raymond No. 999 brick machine with cutting table, complete. Apply, SHAWMUT BRICK WORKS, 5 3 d Shawmut, Elk Co., Pa.

FOR SALE—Two Eagle represses. Never been used. Price, \$500 each, f. o. b. St. Louis. Address NO. 333, 4 tf d Care Clay-Worker.

WANTED—Position as superintendent or foreman of a brick, tile and sanitary plant, vitrified or glaze brick, or floor tile of all description. Twenty-five years experience. References of the best. Address, 5 3 d WOOD, care Clay-Worker.

FOR SALE.

One 9-foot dry pan, iron frame.

One revolving screen.

THE T. B. TOWNSEND BRICK AND CONTRACTING COMPANY,

5 tf d

Zanesville, Ohio.

OPPORTUNITY.

Ironton, Ohio, and vicinity, is destined to be the greatest clayworking center of the United States. This region has unbounded supply of clays and shales of all kinds, except kaolin. Railroad facilities are unexcelled. Fuel the cheapest. We can supply you with common or preferred stock in going concerns, or sell plants outright, or sell you clay lands, or furnish sites for plants with clays on royalty. Right people financially assisted. Paving, or fine pressed brick, terra cotta or fire brick propositions will find this locality superior. Reference, any responsible person in Ironton.

THE TRI-STATE IMPROVEMENT CO., 5 3 dm Ironton, Ohio.

FOR SALE.

The Memphis Stoneware Company, of Memphis, Tenn., lost by fire almost its entire plant July 1st. The insurance is not sufficient to rebuild the plant, hence the company desires to sell what is left, which consists as follows:

One lot with 500 feet railroad frontage, with all necessary side tracks.

Four down draft kilns, 22 feet inside diameter.

Two 100 h. p. boilers.

Warehouse and stable.

Several jigger wheels, with blocks and cases.

Pug mills, disintegrator and rolls, and a great deal of machinery.

Memphis is the best location for a pottery in America, as it is the best home market. Memphis uses more stoneware than any city in the Union. We have a better rate to all common points in Texas and all points southeast of the Mississippi river than any other pottery.

Memphis buys \$50,000 stoneware per annum.

Here is a rare opportunity for a practical stoneware man with some capital. Address, MEMPHIS STONEWARE CO., 7 3 cm Memphis, Tenn.

[Continued on next page.]

FOR SALE—

Immediate delivery. Two 6 ft. diam. by 68 ft. long hardening cylinders; 125 lbs. working steam pressure. One removable head, complete with track, head crane, safety valve, steam gauge, trap and head wrench.

FRANKLIN BOILER WORKS CO.,
TROY, N. Y.

WANTED, FOR SALE, ETC.

WANTED—To buy a second-hand potters pug mill of small capacity, in good condition. Address, with description, THE IRONTON SPECIALTY CO.,
7 1 d Ironton, Ohio.

FOR SALE—A first-class tile and brick plant in Iowa, capacity 15,000 brick, and tile in proportion. Reason for selling, age. Address, H. L. SWIFT,
5 3 c Riverside, Iowa.

FOR SALE.

Two complete sets brickmaking machinery, including Chambers brick machines, elevators, clay rolls, granulators, hoists, etc. Also, one Frey-Sheckler brick machine, at present in operation. Address, ILLINOIS BRICK CO.,
7 3 d Chicago, Ill.

FOR SALE.

One No. 26-48 pug mill and one No. 40 hollow ware auger machine, both American Clay Machinery type. Used only six days on a very plastic clay, which did not brighten blades. Are in perfect condition. Reason for selling, will not work our clay. Are replaced by wet pan and steam press. Address, THE CAMP CONDUIT CO.,
5 3 cm Akron, Ohio.

FOR SALE—Only building brick plant in city of 30,000 people. Steel town. Orders greater than capacity of works. Sixteen acres of good clay. Abundance of shale. 30,000 daily capacity. 125 h. p. boiler and engine, two 9-ft. dry pans, 8 30-ft. round down draft kilns, 150 steel dryer cars, 10 tunnel improved Shearer dryers. Works new. Have been run only two years. 1¼ yard steam shovel. Owners have other business. Address, J. V. ROSE,
5 3 d Sharon, Pa.

FOR SALE—Steele & Sons No. 4 brick machine and cutter, pug mill, disintegrators, crushers, winding drum, cars, etc., used one month, same as new. Inquire, BOX 463,
7 5 cm Ft. Wayne, Ind.

FOR SALE—Two brick and tile machines, Nos. 9 and 10 Brewer. Have made 5,000 per hour on No. 9 and 10,000 on No. 10. All in good condition. Reason for selling, clay not suitable for stiff mud process. Will change to dry press. Address, D. A. LAYTON,
7 tf d Marion, S. C.

SUPERINTENDENT WANTED.

A practical man acquainted with both dry press and stiff mud, must understand setting, burning and kiln building, be steady, sober and not afraid of work. State experience, salary expected and give references first letter. ANCHO BRICK & TILE CO.,
7 1 dm Ancho, New Mexico.

FOR SALE—Modern press brick plant, located in Ohio, making red, chocolate and all shades of buff. Well established, with abundant supply of raw material; exceptional railroad facilities and home market. Running full capacity successfully and profitably. A rare opportunity. Address, A. B. C.,
6 2 d Care Clay-Worker.

FOR SALE.

One steam power and one h. p. soft clay machines.
One feed water boiler heater.
One wheel scraper.
A number of dryer cars.
Two second-hand dump carts, practically as good as new.
All of the above in first-class condition. Address, THE HORTON MANUFACTURING CO.,
6 tf L Painesville, Ohio.

FOR SALE—Two single die Steele power represses, with dies 9½ by 4¾ inches. In good working order. Will be sold cheap to quick buyer. Address, OSTRANDER FIRE BRICK CO.,
7 1 c Fords, N. Y.

FOR SALE.

A well equipped brick yard in central New York. Fifteen acres of clay, which burns a first class red, 30 to 50 feet deep. Capacity, 25,000 per day, stiff mud. Market for all brick made. Good shipping facilities. Address, EDW. E. BALLARD,
7 1 d 1702 Midland Ave., Syracuse, N. Y.

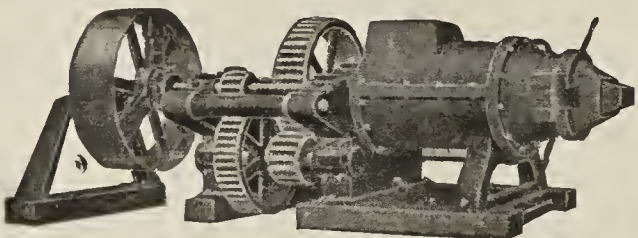
FOR SALE.

One Raymond rotary automatic cutting table with all carriers, belts and pulleys. One Raymond Victor repress. Both comparatively new. Mock's system of trolley dryers, with pallets and trucks for handling. All complete and in good order. Will sell all or part, cheap. Reason for selling, going out of the brick business. Address, NEWPORT CLAY WORKS,
6 tf d Newport, Ind.

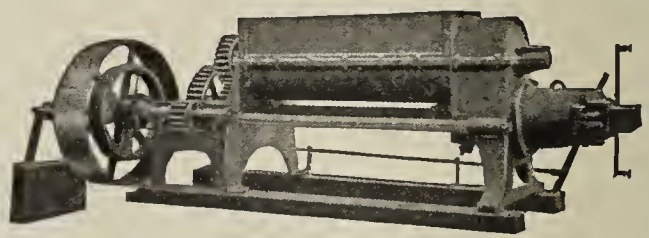
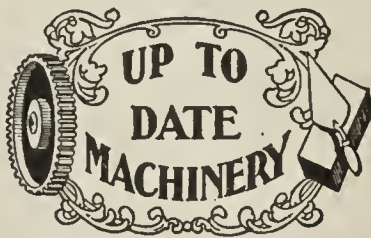
FOR SALE.

Modern brick and tile plant in central Iowa, now in successful operation. Fully equipped with up-to-date machinery, waste heat dryer, dryer cars, four round draft kilns, in good condition. Eighteen acres of clay land. Principal product is drain tile, which is of excellent quality. First class shipping facilities and good, close market. Good yard trade. Good reasons for selling, but must be sold soon or be taken off the market. A splendid opportunity for a good, live man. Satisfactory terms will be made any one worthy of credit. Write us without delay. Address, 7 3 cm OWNERS, care Clay-Worker.

[Continued on page 77.]



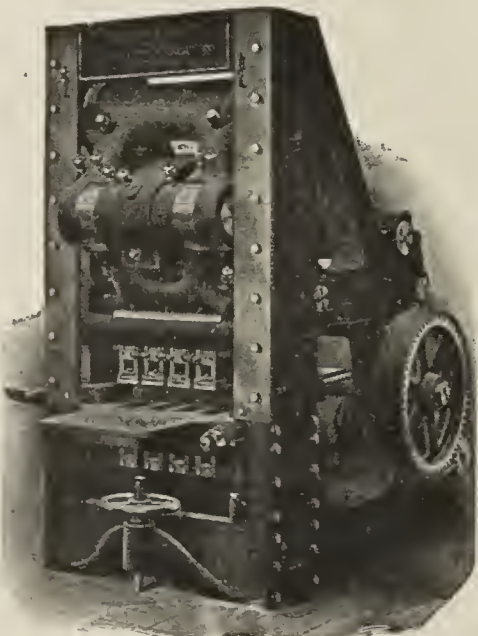
Auger Machine.



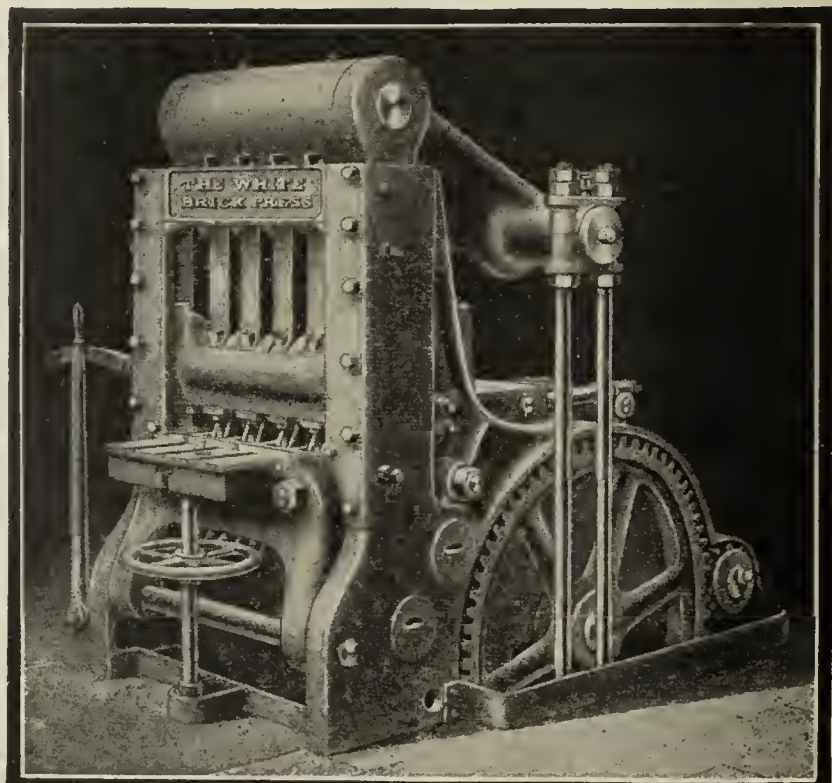
Combination Machine.

Up-to-Date Machinery

For Making

ALL KINDS OF
BRICK.Specialty for 1907
Rocking Grates
for Kilns.CHICAGO
BRICK MACHINERY
COMPANY,77 JACKSON BLVD.,
CHICAGO.

Berg Press.



White Press.

A BIT OF HISTORY.

Evolution of the Heraldic Bird Which is So Lively Just Now.

On July 4, 1776, after the Declaration of Independence had been read to the Continental Congress, it was resolved that a committee prepare a device for a seal of the United States. They reported on August 10, and the shield-like design they recommended had in one of its six divisions an eagle—a very insignificant little fellow, by the way—that played a most unimportant part on the device.

The two main figures were the Goddess of Liberty and the Goddess of Justice, who stood beneath the "Eye of Providence." On this design we meet officially for the first time that well-known expression, "E Pluribus Unum." The committee's report was laid on the table. Nothing further was done until March 25, 1779, when the matter was referred to a new committee. After some debate their report was ordered to be recommitted to a new committee.

Two years later the records show activity in the efforts to evolve a suitable device for a seal, and in the meantime the committee reports were referred to the Secretary of Congress. The assistance of William Burton, M.A., a resident of Philadelphia, was also sought, and he submitted an elaborate design, which contained very little that was subsequently used. But it is here that the eagle for the first time prominently appears. In the description of the device the bird is mentioned as being "emblematical of sovereignty."

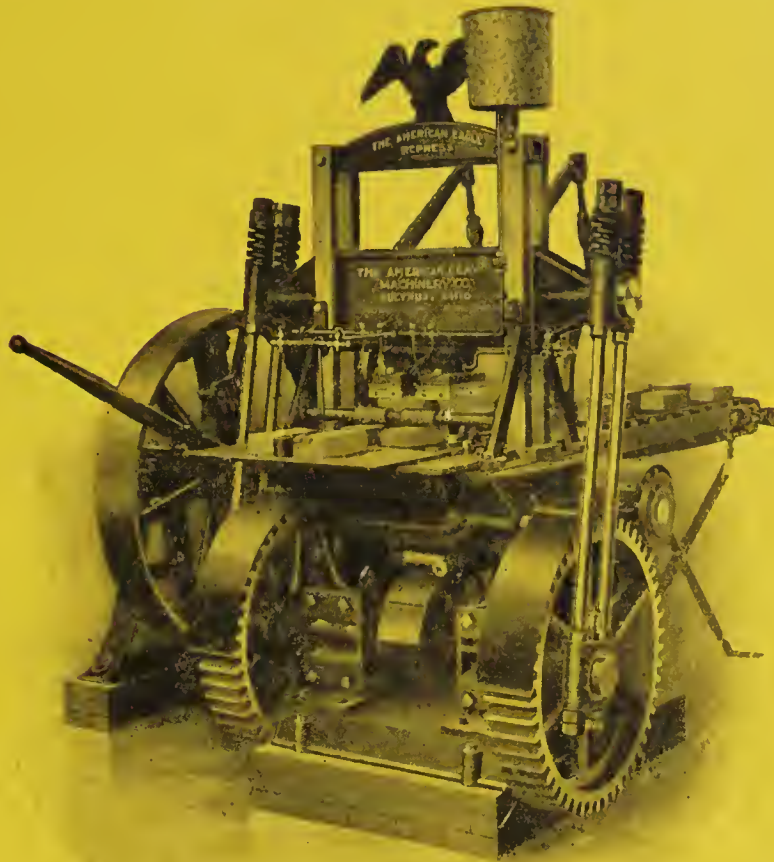
Another design was submitted by Charles Thomson, the Secretary of Congress. Here we still further trace the process of evolution in the American Eagle. Though we aim to divest this little history of the "boast of heraldry," the following description conveys an excellent idea of the device:

"The shield borne on the breast of an American Eagle, on the wing and rising proper. In the dexter talon of the eagle an olive branch, and in the sinister a bundle of arrows. Over the head of the eagle a constellation of stars, surrounded with bright rays, and at a little distance clouds. In the bill of the eagle a scroll with the words, 'E Pluribus Unum.'"

The next and last report is indorsed "Mr. Barton's improvement on the Secretary's device."

This made some slight alteration in the secretary's design, and, after itself undergoing certain changes, it was adopted. So, all things considered, we suppose we are justified in saying that the great, glorious and indestructible American eagle was born not quite 116 years ago.

The American Eagle.



ON the Nation's Birthday, July 4th, is a fitting occasion to publish a history of the American Eagle, the emblem of our country. We attach it for your pleasure and information. The history of the Eagle Repress can be given more briefly: From its first conception it has been a success, growing in favor and gaining in popularity as it became better known. Not a single machine in the clayworking line from New York to San Francisco is so well known as the Eagle Repress, and none can approach it in its record of success. There are no Eagles which are not a credit. Each one is a success, each owner a satisfied advocate of the Eagle's greatness. The record of the Eagle is but a duplicate of every machine we build. The superiority of the principles upon which they work, abundantly protected by patents, is the ground work upon which our success is built. The excellence of the material embodied in their

construction, the watchful care with which each part is manufactured, the attention given to each minor detail, the rigidity of tests before shipping, all combine in placing in your plant, ready for operation, machinery from which you may confidently expect to get full satisfaction. There are no machines which will do as much work in a given time, and do it as well as ours. Have you used any of our machines? If you have you know their worth. If you have not we can give you testimonials from those who have been successful and who attribute a part of that success to our machinery.

We manufacture all classes of machinery for manufacturing Dry Press, Stiff Mud and Soft Mud Products, and give careful attention to special machinery. A postal and a minute will bring you a reply

The American Clay Machinery Co., Bucyrus, Ohio, U. S. A.



A New American Eagle



On July 4th new stars are added to the American Flag. It is therefore appropriate that in honor of the Fourth we introduce to the Clay Trade a new American Eagle. Our new Eagle is much like the old in design and quality, but it is designed for heavier work and for pressing larger blocks. This machine has been styled "THE DOUBLE EAGLE" in honor of the original. It has a number of new features which will prove attractive. A full description will be sent upon application. We build any machine for making any clay product by any process for any power.

Catalogue upon request.

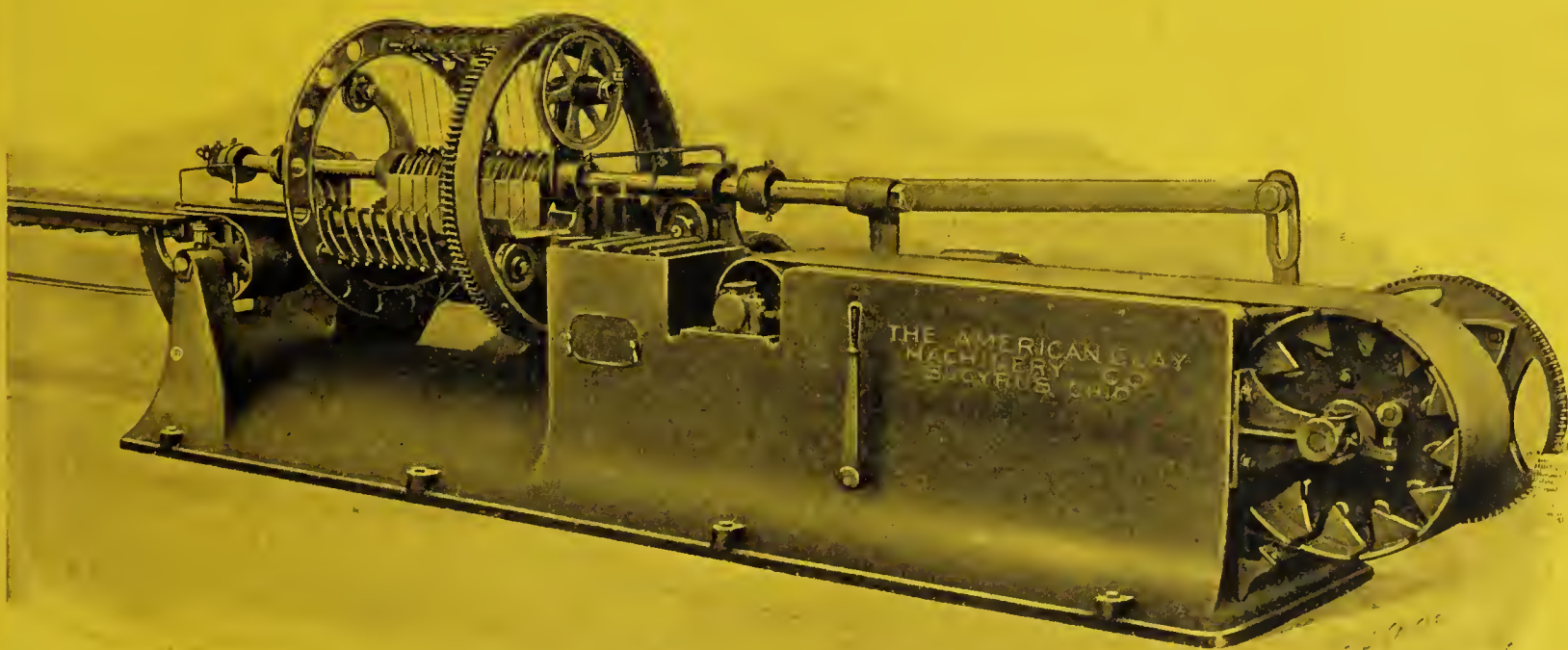
The American Clay
Machinery Co.,
Bucyrus, Ohio, U. S. A.



The American Revenue Cutter



The New No. 83 Automatic Brick Cutting Table of The American Clay Machinery Company is an easy leader of all other cutters. It is by far the largest capacity cutter on the market, and has a range from a few thousand brick per hour to the full capacity of the fastest brick machine ever built. Could two ordinary brick machines combine their efforts in pushing a column of clay into this cutter, it would easily take care of the output and deliver it in the form of faultless brick, every one perfect and of the same size, free from crooked or odd shapes, and all of a quality to make repressing unnecessary.



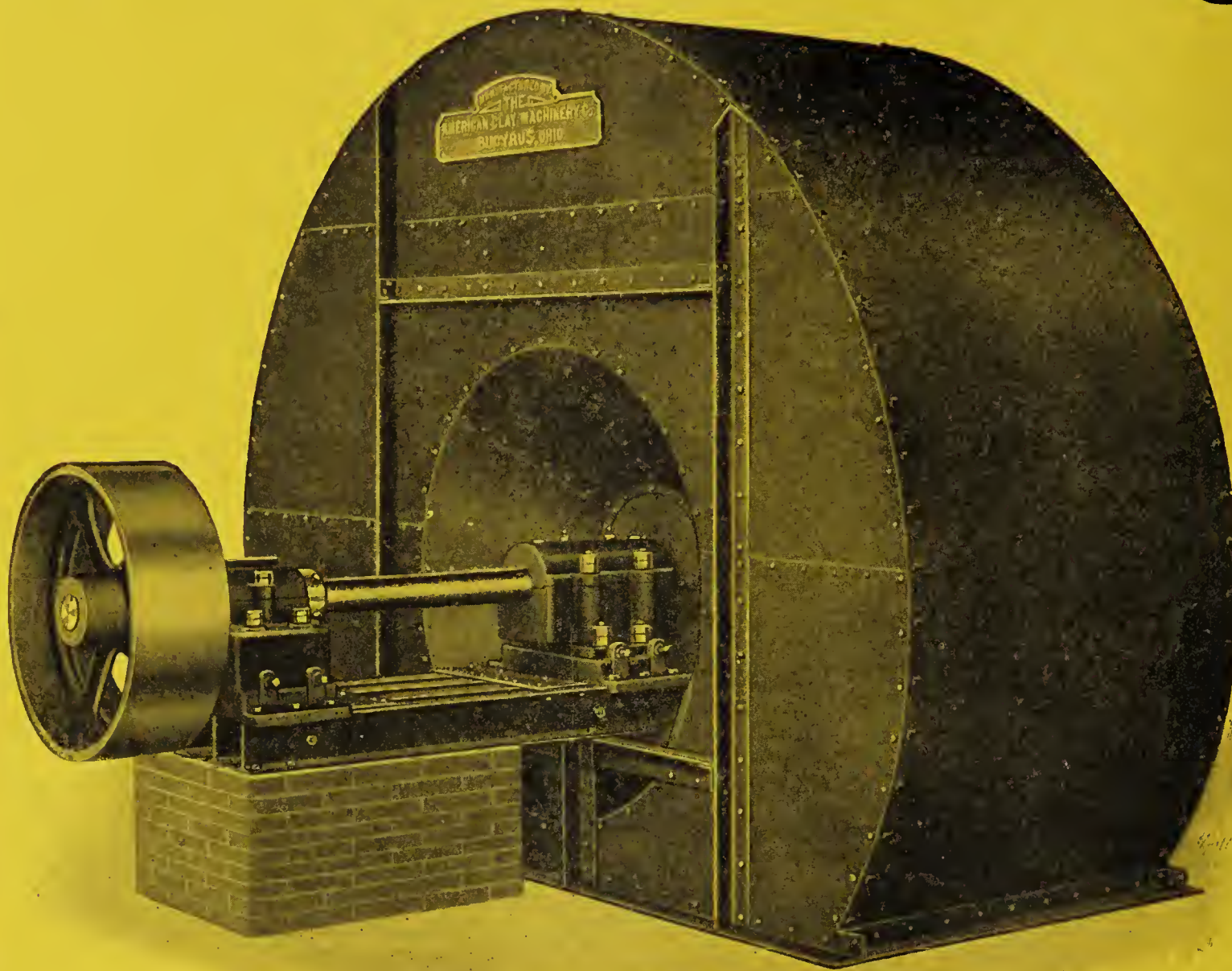
No. 83 Cutting Table, Front View.

The illustration shows the heavy construction of the No. 83 Cutter. It has a massive cast frame which insures a substantial base to carry all moving parts. The bearings are ample, the movement continuous and easy. The oiling is automatic. The reversal of the cutter is jarless. The wire fasteners simple. The governing mechanism most accurate and sensitive. In brief, this cutter is the very best permanent investment you can make. Full particulars for the asking. We build every machine and appliance for making every class of clay products by every known process, including Sand-Lime Brick. Your plant complete in one shipment is our specialty.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.



American Blower Dryers



American Waste Heat Dryers are good Dryers because we **BUILD** them instead of buy them. We know the quality and can guarantee them. They save you drying expense. Get particulars. We also build other Dryers. All good.

THE AMERICAN CLAY MACHINERY CO., BUCYRUS, OHIO.

American Sand=Lime Line

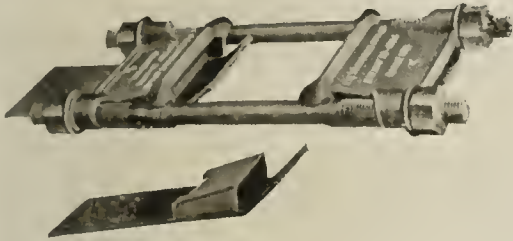


As builders of machinery for the manufacture of brick by every known process, we have placed upon the market a complete line of Sand=Lime Brick Machinery and appliances. There is no line of machinery so complete for making this class of brick. We have every machine or appliance necessary and equip the entire plant from our own factory. Every machine is substantially and carefully built of the very best material. Being constantly under the supervision of our own foremen, we are able to guarantee the quality.

We also build the largest line of Clayworking Machinery and appliances in the world.

AMERICAN CLAY MACHINERY CO., Willoughby, Ohio, U. S. A.

Philadelphia **LINK-BELT COMPANY** Indianapolis
New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY



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Because we have just what you are looking for. The **Best and Cheapest** Band Lug on the market. Will ship your requirements subject to your order.

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RACINE, WISCONSIN.

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of

BRICK AND POTTERY CLAY

at Meridian, Miss. The only similar deposit south of St. Louis. Large local demand for brick at good prices. Fine shipping facilities. This property can be easily and cheaply developed and will pay enormous profits. Owners unable to develop it will sell at a great sacrifice.

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Banker and Broker,

New York, N. Y. Charlotte, N. C.

Money to Loan on
Good Business.
Well Located City
Property in Large
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of the U. S.

We Manufacture

These Buckets

In All Styles, Sizes and Gauges.

Orders Shipped Promptly.

**COLD ROLLED
SPIRAL STEEL CONVEYOR.**



We Also Make Shafting,
Pulleys, Friction Clutches,
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WEARS BEST, Costs No More.

**WE MAKE this Conveyor in All Styles
and Gauges.**

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SALEM BUCKETS



**Elevator
Buckets**

All sizes, shapes and weights for
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Sole Agents for

Genuine Salem Buckets

made only by W. J. Clark Co.,
Salem, Ohio. Fill readily, carry
maximum load, empty clean.

**Belts, Chains, Pulleys, Sprocket
Wheels, Shafting, Bearings, Other
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17th St. and Western Ave.

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New York St. New Orleans
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Clayworkers who are having trouble of
any sort in the operating features of their
plant, whether in the making, drying or
burning, to know that my experience of
twenty-five years enables me to give val-
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further loss and trouble, if skill and knowl-
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can accomplish that purpose. Terms rea-
sonable and contracts made contingent
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any price, address

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Real Estate Expert,

965 Adams Express Bldg.,

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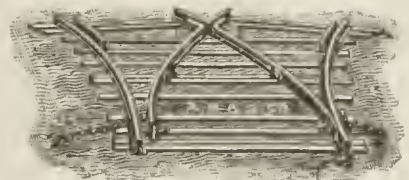
Steam Shovels, Cars, Locomotives of all
kinds and Rails.

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Right and left hand one, two and three way
switches of various gauges, radius and weight
rail, at special prices.

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Instructions how to improve burning Paving Brick, Drain Tile and Face Brick. Saves Coal, Time and Labor.

New simple method to create draft from the start of the fires.

Down-draft kiln plans for sale.

The least expensive and most effective kiln on the market.

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H. H. Wright, Maitland, Mo., writes under date of May 22, 1907, "I am just emptying a kiln today—splendid burn. I can say truly that I never before burned a kiln so easy, as I have this one under your instructions. We always made hard work of it."

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Established by the Legislature
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Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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DR. W. O. THOMSON, President.
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That Never fades.

Tried out for 20 years.

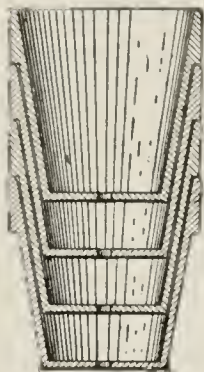
For mortar, brick, cement,
stone, etc.

Red, brown, buff, purple and
black.

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COX'S Special Drawn Coil Wire is
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires For End-Cut, Side-Cut
and Automatic Tables.
GEO. S. COX, East Liverpool, Ohio. Satisfaction guaranteed.
Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine
(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

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**The Kiln of Kilns is the
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A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

For full particulars please apply to

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MANUFACTURERS OF

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NEEDLE WIRE

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We manufacture BRICK AND TILE
CUTTING WIRE, drawn especially
to withstand abrasion.

Send for prices of wire in coils.



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Wooden Brick Pallets.
WRITE US
BARCHARD & Co., Limited, 135-151 Duke St.,
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Books for Brickmakers

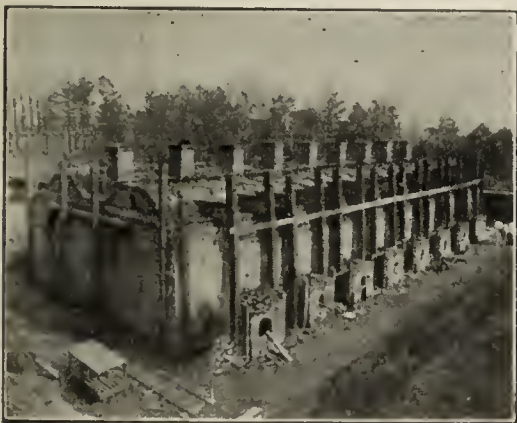
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Something New in Brick Kilns and Brick Dryers

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A set of plans with all information on how to set and burn either my double or single kiln for \$100.00. This offer is to give every one a chance. It will stand good for but 60 days.

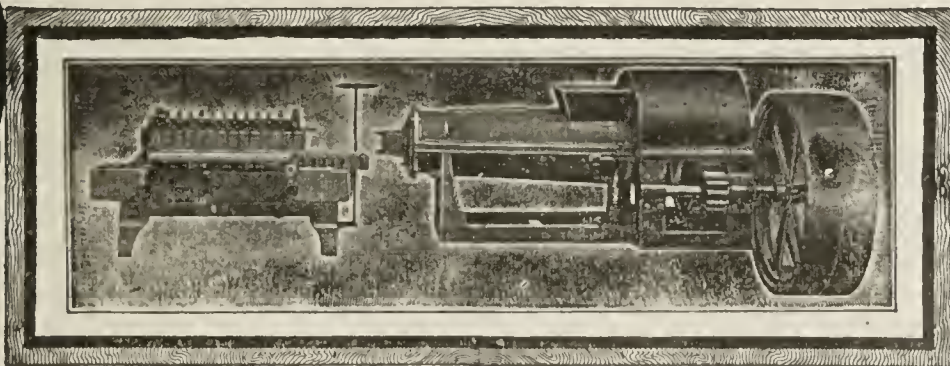


Double Up and Down Draft Kiln.

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Dear Sir—I have been running the brick yard for the Capital City Brick Company over three years and have been using two of your double up and down draft kilns, also two of your hot air brick driers. The kilns hold over 300,000 brick each, and we think the kilns will burn brick at less cost than any other down draft kiln. We burn all hard brick.
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Wood burning kilns changed to coal burning.
Brick plants installed and put in operation.
Write for booklet. Correspondence solicited.

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It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

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FOR ALL USES.
LUMP, GRAIN AND GROUND
60-70% 70-80% 80-90% OXIDE.
CLAY WORKERS GOODS A SPECIALTY.
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Largest Manufacturers in
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Correspondence solicited.

Samples and estimates cheerfully furnished
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The only preventative for seum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

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Mortar Colors,
Red, Brown, Buff, Black.**

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Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrlfied Pavlng Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," \$1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

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Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

Do you want to buy a

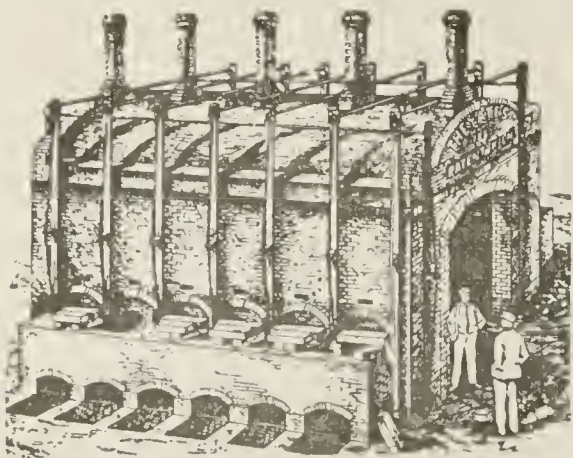
Good Clay Screen?

If So

Correspond with

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For Economy of Fuel and Percentage of Hard Burned Brick, This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns. Hot air dryer. Continuous and muffle kiln.

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White Pine Pallets

**For Brick, Roofing Tile,
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The Best Are the Cheapest.

Send Specifications and Get Prices.

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"Yours very respectfully,

"Signed: VALLEY BRICK & TILE Co."



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The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

**We build and equip complete
SAND-LIME BRICK PLANTS,
SHALE AND CLAY BRICK PLANTS.**

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Testing and Controlling Apparatus for Clayworkers.

Draft Gauges, Pyrometers, Cones, Watersmoking and Dryer Thermometers. Test Kilns, Electric Furnaces, Experimental Ball Mills. Automatic Brick Counters, Watchmen's Clocks and other apparatus. All designed to keep a record of your business. Prices on application.

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TO PRODUCE POTTERY ECONOMICALLY
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CROSSLEY MACHINERY

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If you intend to build or rebuild your brick plant acquaint yourself with the

Chmelewski Patent Kiln

That's just the thing you need to get prosperous.
For descriptive booklet write to

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THE secret of **successful burning** of any clay product lies in the **right application of heat**. To apply heat **where it is needed** it is obvious that **draft control is necessary**. **Positive draft control is provided by our**

IMPROVED FLUE SYSTEM

which has **the right principle** and is simple and easy in operation and construction.

Our kilns are profit makers, burning the brick with the **minimum fuel, shortest time; all the same color and all hard**.

We welcome correspondence from those who intend building new kilns, and from those having old kilns that are not giving satisfaction. Address

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ESTABLISHED 1862.

— AN — Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



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Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

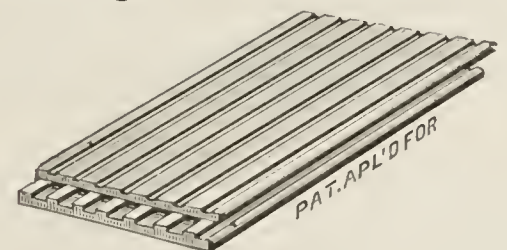
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Rock Island-Frisco Lines,

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Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles. Dies for all shapes, Hips, etc., in metal or plaster.

Special Roller and Auger Presses for Shingles, Interlocking Spanish Tiles. Automatic Shingle Cutting and Punching Tables. Special Tile Tables.

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Terms
reasonable.

First-class
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If you have trouble with Clay, Machinery
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(25 years practical experience)

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Special attention paid to dry clay press
processes and down-draft kilns.

Contracts made contingent upon suc-
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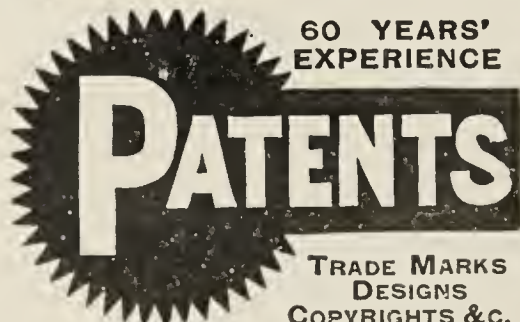


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Lowest priced reliable steam-
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or driven wells. No
valves to freeze, clog
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Always ready for in-
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Prices from \$7.00 to \$75.00. Satis-
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Laclede Fire Brick Mfg. Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

**Fire Brick for
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Factories:
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ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

— Made by —

MITCHELL CLAY MFG. CO.,

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ST. LOUIS, MO.

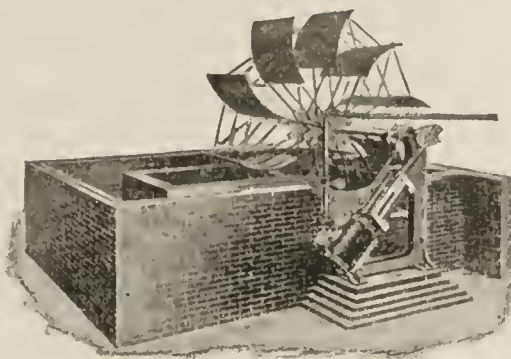
\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

Waste Heat Fans.

While we frequently have to repair other fans than ours we have never yet in years had to repair our own.

Durability is a strong feature and the use of a Brick fan house insures low first cost.

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A New Clay Feeder and Mixer.

Send for full descriptive circular.



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Main Yard and Office, South Boston, Va. Branch Yard, Banister River Branch N. & W. Ry.

Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

South Boston, Va., Jan. 19, 1907.

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The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.

If...

You Want to Sell or Buy...

Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

If... You Want a Man

for any position or a position in any connection with the Clayworking Trades use the

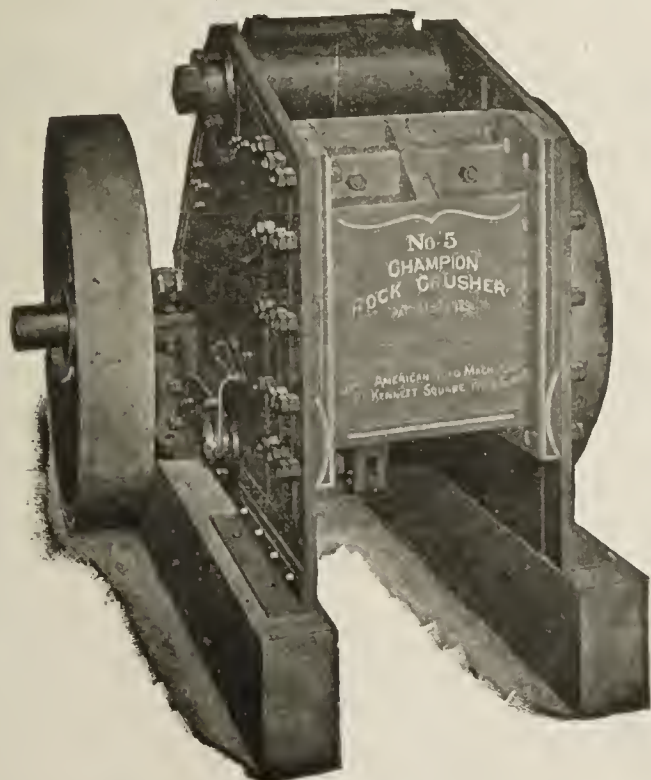
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It Looks Good on paper.

It Looks Better

crushing shale, fire clay, rock and other hard material.

THE CHAMPION CRUSHER

is expensive, to do without, because it saves you money.

Catalogue is free on application. Address

AMERICAN ROAD MACHINE CO.

KENNETT SQUARE, PA.



HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

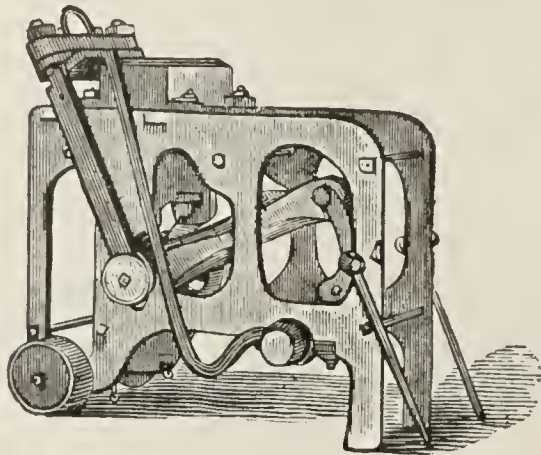
Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

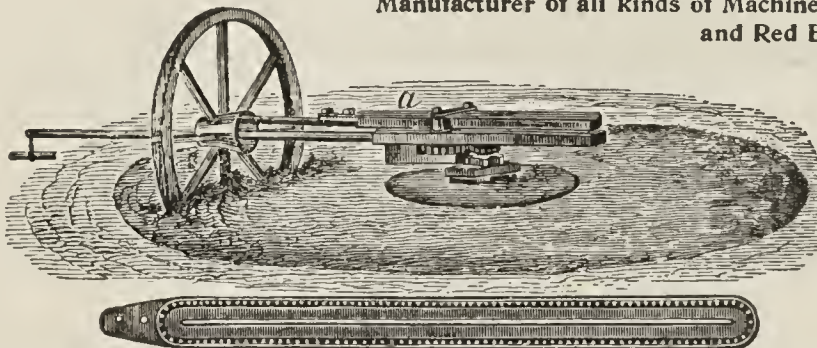


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

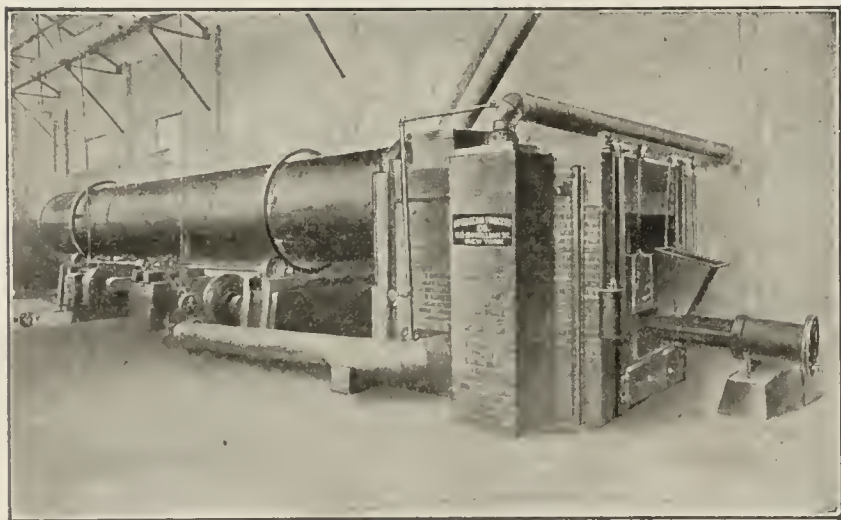
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

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Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.



PUMP OUT YOUR CLAY HOLES

with a pump that gritty, muddy water cannot injure.

THE PULSOMETER STEAM PUMP

requires no special foundation, but may be swung from a beam or tripod and raised or lowered as occasion demands without interrupting its work. No engine, belt, oil, packing or skilled attention needed. No easily deranged mechanism. Write for catalog telling all about these pumps.

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**ROESSLER-HASSLACHER
CHEMICAL COMPANY,**

100 William Street,
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As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

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General Sales Office—Chamber of Commerce Bldg., Chicago.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Green Bay, Wis., Dec. 3, 1906.
Mr. J. C. Boss, Elkhart, Ind.

Dear Sir—Your BOSS SYSTEM for burning brick which I used last season is very satisfactory. Where coal is cheap and wood high it is certainly a money saver. I am pleased to recommend it.

Respectfully yours,
H. A. BARKHAUSEN.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

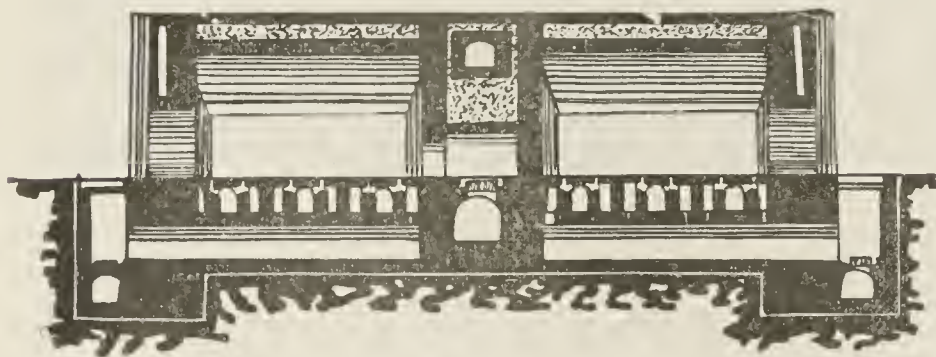
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Office: Room 405 Monger Block.

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German Kiln and Construction Co. (Incorporated)

Engineers and Contractors,
71 and 73 Nassau Street, New York City, N. Y.



All Styles of Kilns in the Ceramic Industry.

Hoffman's Continuous Kiln.

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Kiln with Movable Fire Box.

Up and Down-Draft Kilns, Round and Square.

Shanks and Two-Story Kilns, largest in the world.

Muffle Kilns for Glazing and Enameling.

Chimneys built of radial brick.

We guarantee satisfaction, the best work and lowest prices. Correspondence solicited.

An Old-Time Favorite.

Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & CO.,
P. O. Box 756. Rome, Ga., U. S. A.

Hampton's Patent Down-Draft Kilns BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906.

Pittsburg Kiln Construction Co.,
Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of	5,000 each,	15,000
2 " 4 "	"	3,000 "	6,000
1 " 5 "	"	2,040 "	2,040
2 " 10 "	"	550 "	1,100
2 " 12 "	"	415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.
The 10 " " 6 ins. and 4 ins.
The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.



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**We Are
PRACTICAL BRICKMAKERS.**

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick. Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

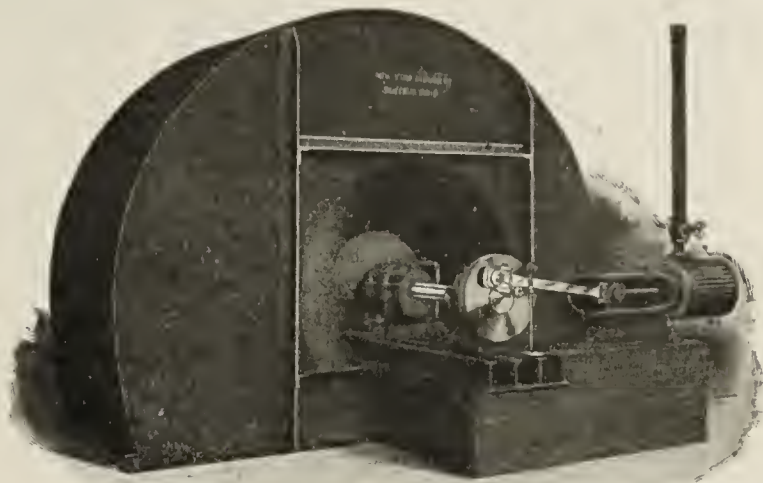
BECHTEL'S,
Waterloo, Ont., Can.

COAL—HEAT MONEY

All Saved by Using Our
WASTE HEAT DRIERS.

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ESTIMATES AND PLANS FREE.



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THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

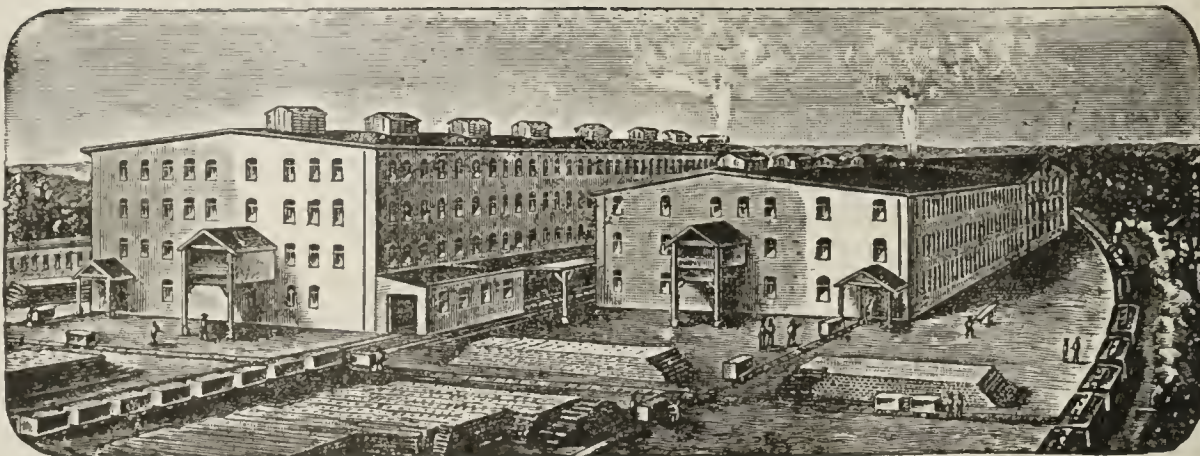
We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



~~~~~ Jacob Buhrer's Technical Bureau, ~~~~~ CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In Buhrer's Shortened Kiln (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in $1\frac{1}{2}$ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

STEAM SHOVELS FOR BRICK YARDS.



We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co., Marion, Ohio.

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

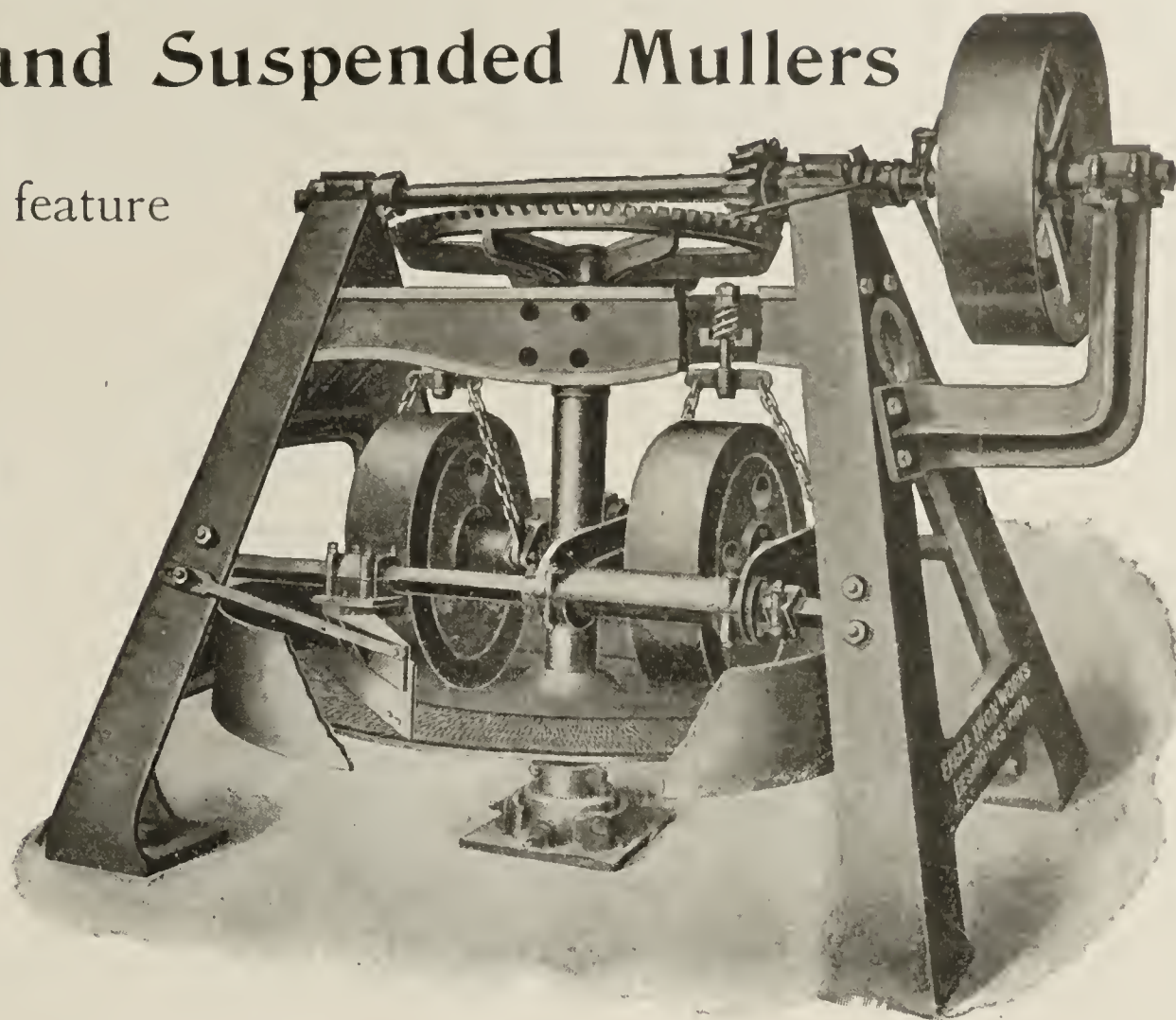
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Independent and Suspended Mullers

the distinguishing feature
of our

DRY PANS.

Other valuable
features which our
catalogue fully
describes.



EAGLE IRON WORKS, Des Moines, Ia.

Handle Your Clay With One Man and The Thew Steam Shovel.



Type No. 0—Ohio Brick Company, Toledo, Ohio.

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

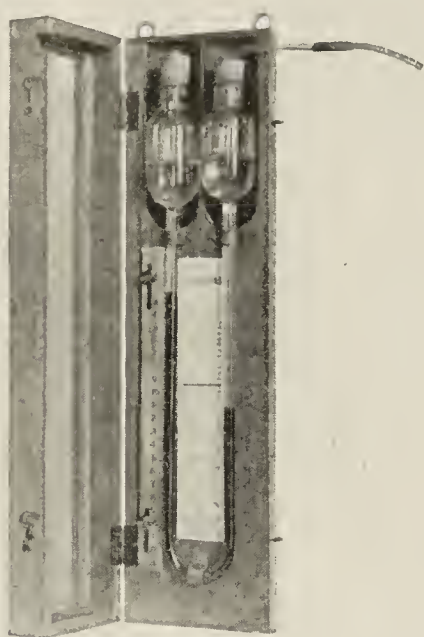
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THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

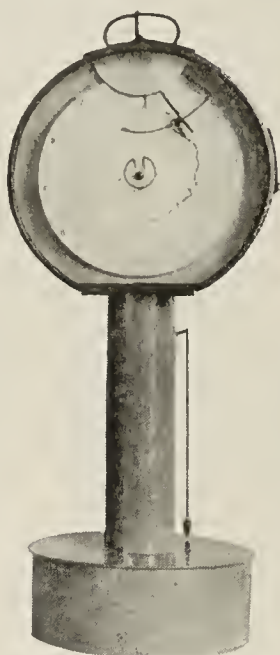
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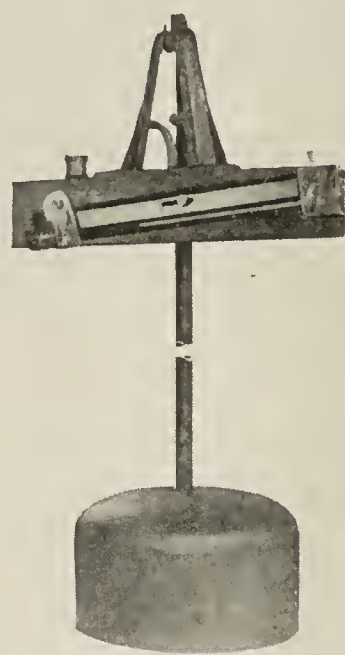
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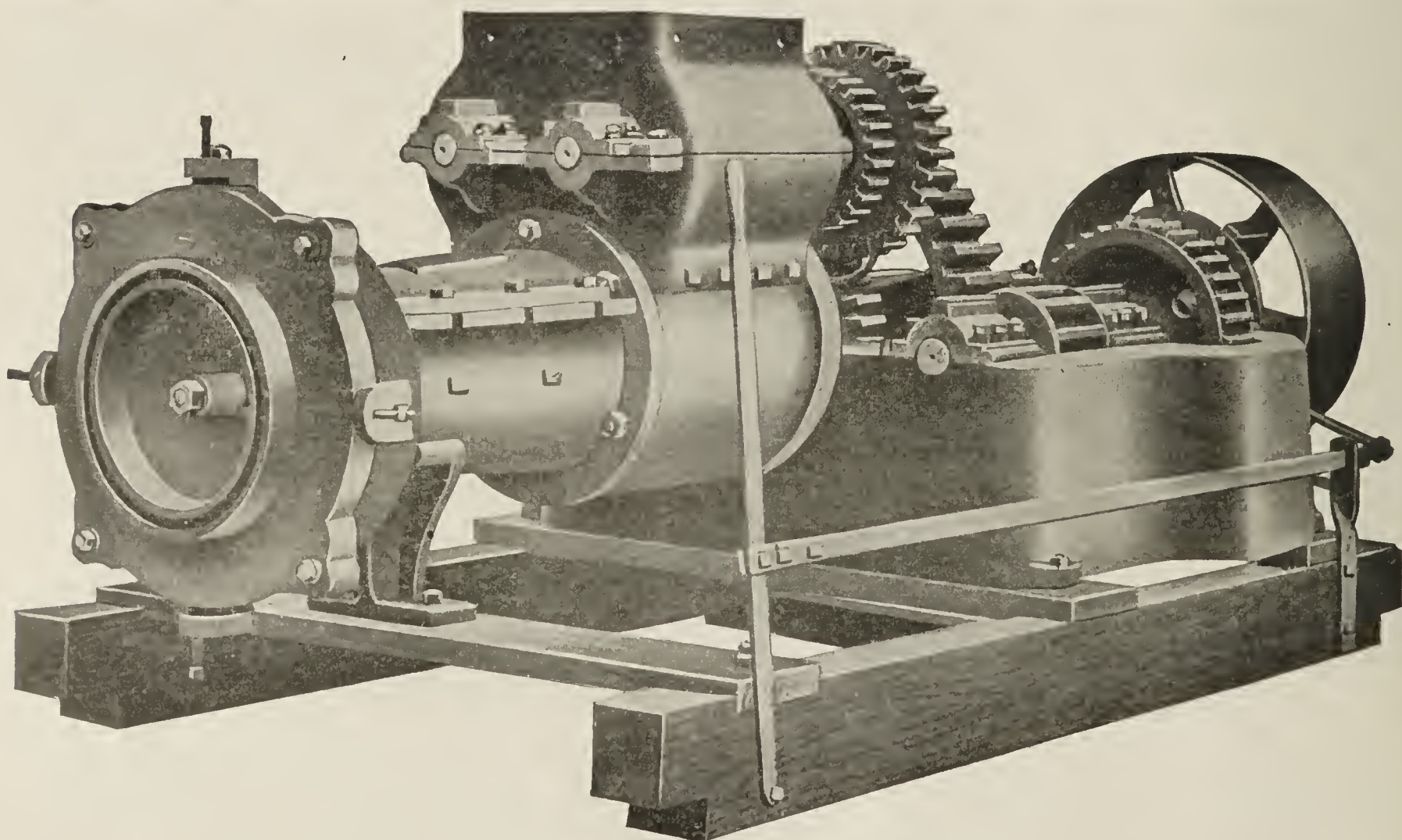


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Pyrometers, Thermometers, Hygrometers, Electric Furnaces, etc.

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NEW MODEL STIFF MUD MACHINE.

Write us for
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MADDEN & CO., Rushville, Ind.

BRICKMAKERS WHO FAIL

to take advantage of every opportunity to reduce the cost of manufacturing their products are working on a smaller margin than is necessary.

Every dollar's worth of labor or fuel saved is clear profit to the brickmaker.

Our new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud or soft mud brick.

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7TH AND CHESTNUT STS., ST. LOUIS, MO.

EXHAUST STEAM DRYING.

THE LAWRENCEVILLE BRICK AND TILE CO.

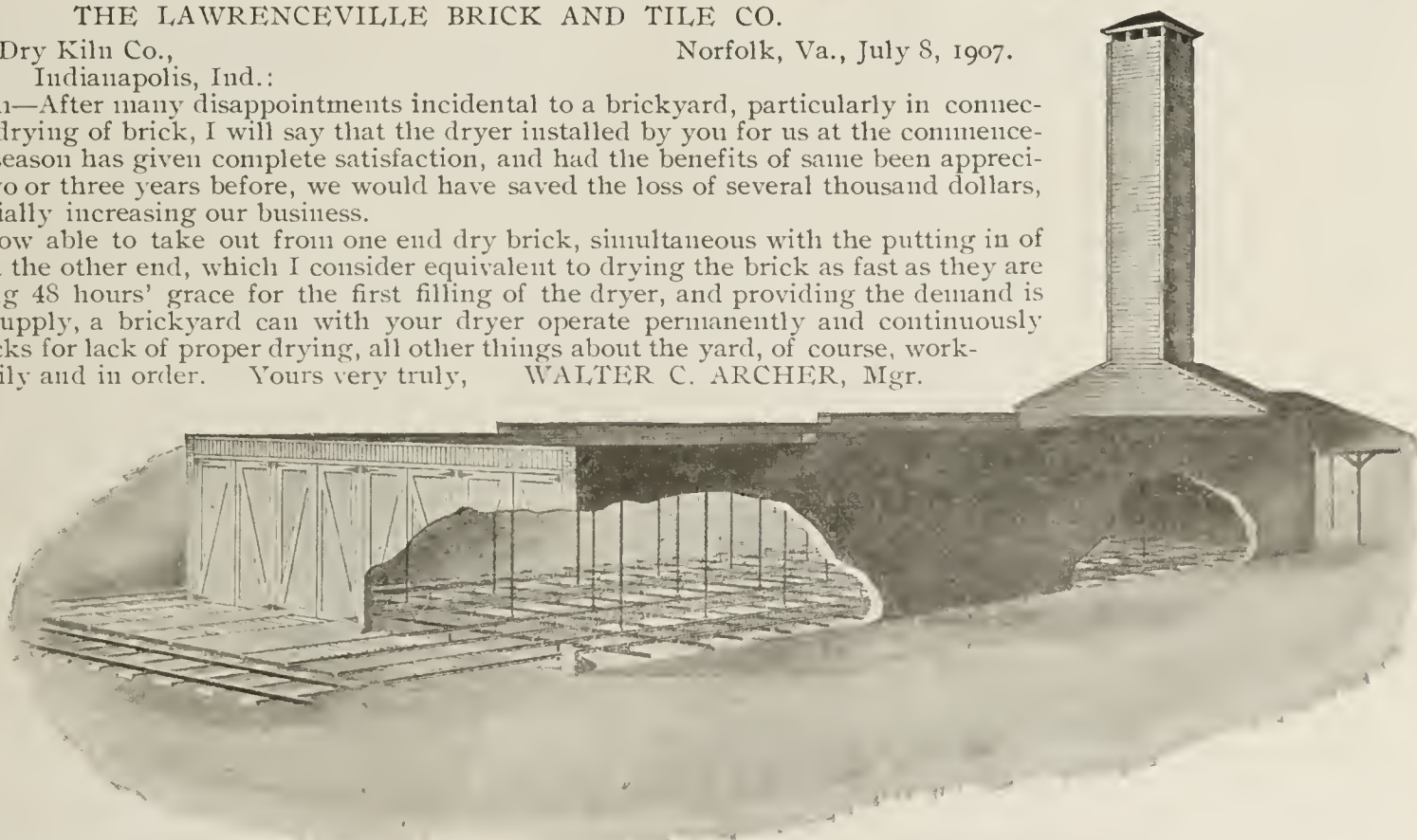
The National Dry Kiln Co.,
Indianapolis, Ind.:

Norfolk, Va., July 8, 1907.

Gentlemen—After many disappointments incidental to a brickyard, particularly in connection with the drying of brick, I will say that the dryer installed by you for us at the commencement of this season has given complete satisfaction, and had the benefits of same been appreciated by us two or three years before, we would have saved the loss of several thousand dollars, besides materially increasing our business.

We are now able to take out from one end dry brick, simultaneous with the putting in of green brick at the other end, which I consider equivalent to drying the brick as fast as they are made, allowing 48 hours' grace for the first filling of the dryer, and providing the demand is equal to the supply, a brickyard can with your dryer operate permanently and continuously without setbacks for lack of proper drying, all other things about the yard, of course, working satisfactorily and in order. Yours very truly, WALTER C. ARCHER, Mgr.

No Fan
No Engine
No Fire
Danger



STEEL Foundations, STEEL Roof Supports, Roller Bearing Cars, Transfers and Turntables.

Send for our large catalogue.

C. H. BEALE, Manager Southern States, Montgomery, Ala.
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THE NATIONAL DRY KILN CO., Indianapolis, Ind.

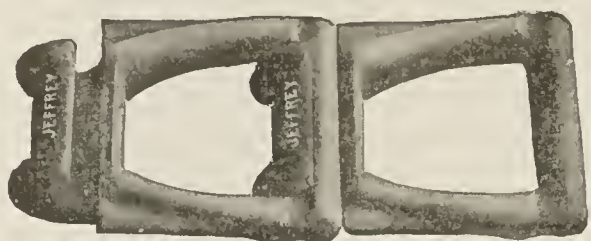
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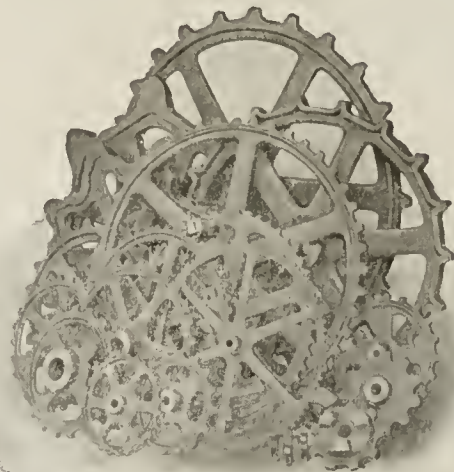


Spiral Conveyers Made in Any
Length Desired



Chains—All Styles

Let us send you our General
Catalog No. 80



Sprocket Wheels



Elevator Buckets for
Stone, Ore, Coal, etc.

THE JEFFREY MFG. COMPANY,

Columbus, Ohio, U. S. A.

New York Chicago Boston Denver St. Louis Pittsburg Knoxville Charleston, W. Va. Montreal

Success Brick Machinery Co.,

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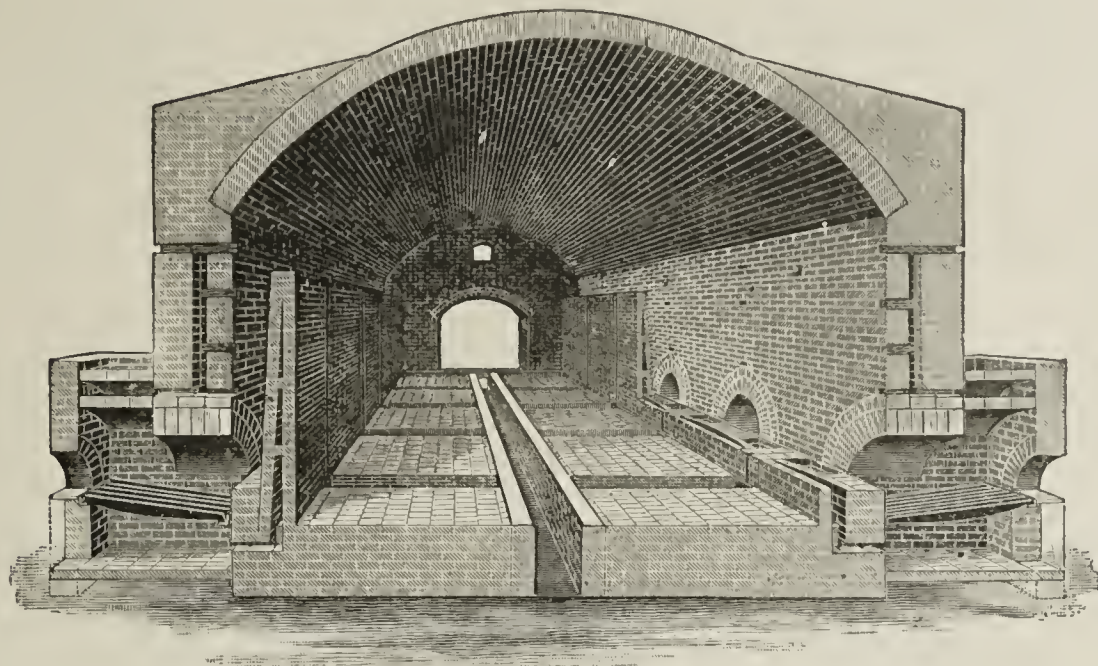
Equippers of COMPLETE Plants.

Let us figure with you on your machinery and supplies. Investigate our brick barrows, trucks, cutting wires, "Perfection" brick moulds, and other supplies.

Our REID'S SUCCESS ELEVATING BRICK CARS AND DRYING SYSTEM [the most modern method of handling your brick] now built in our own shop. Let us install an outfit in your plant. It will save you money.

The EUDALY DOWN DRAFT KILNS

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

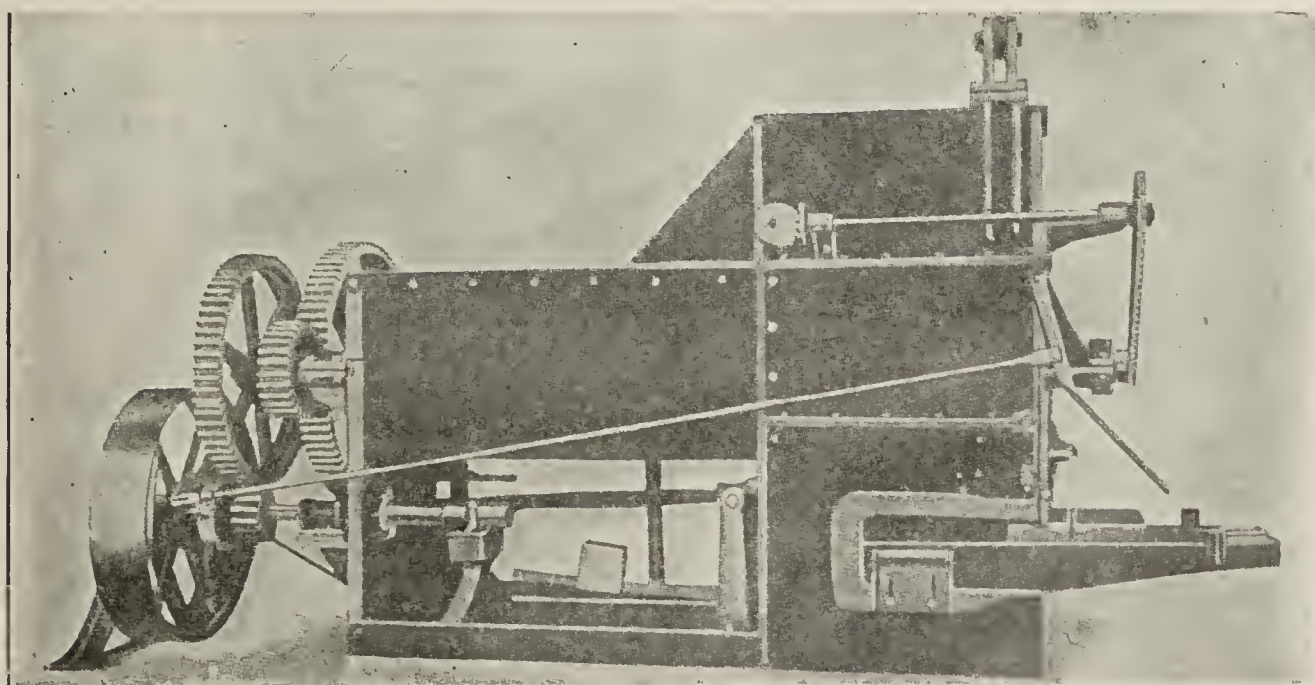
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal, or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

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The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine, of large capacity strong and heavy, with vertical press. To meet this demand we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

For small capacity yards there is nothing that is quite as good as the "QUAKER" Machine, which is made for horsepower as well as steam.

James W. Hensley,

Indianapolis, Ind., U. S. A.

Let me give you full particulars.
List of users furnished on application.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO
Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untying knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

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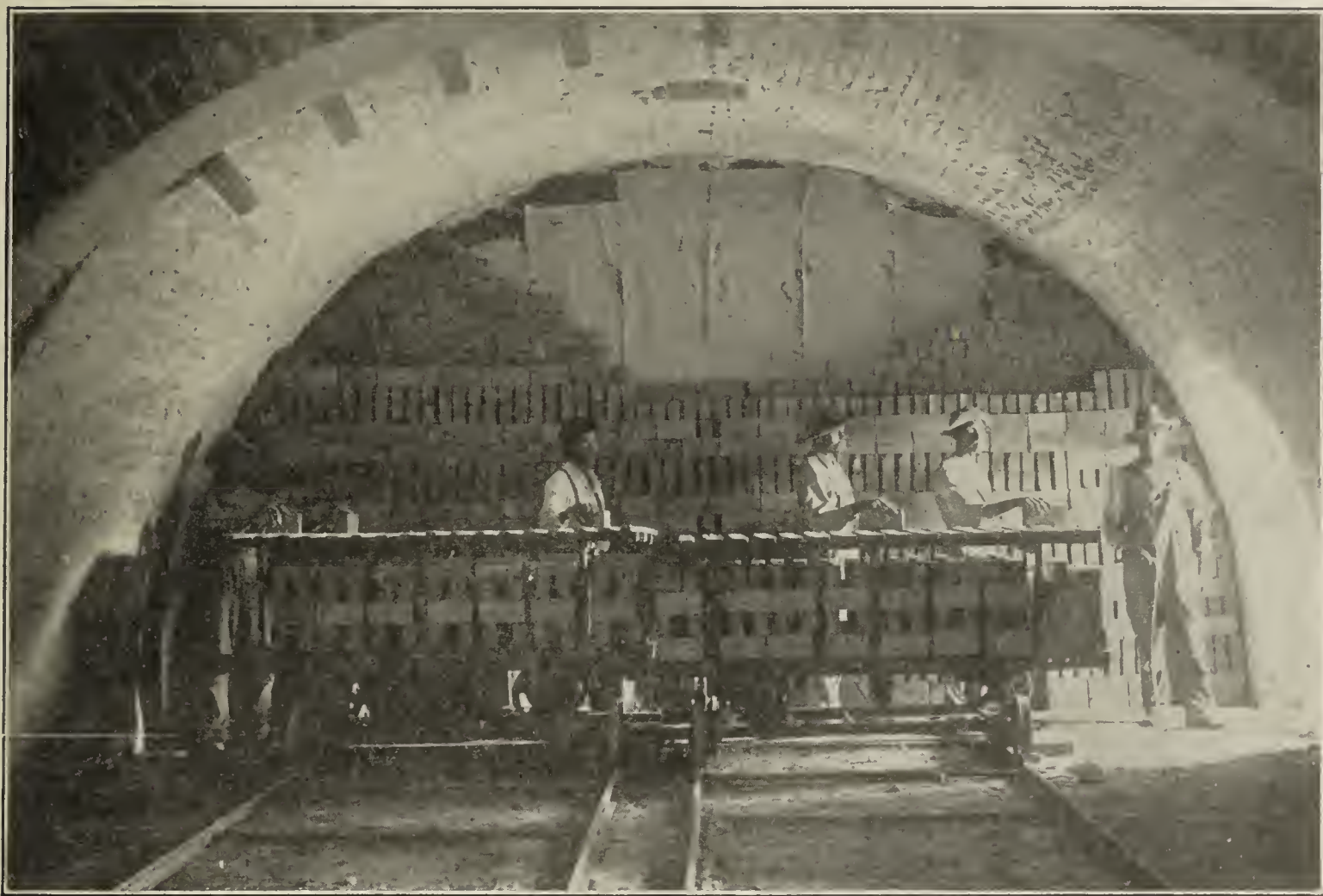
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The Youngren Continuous Kiln Producer Gas Fired.



SETTING BRICK IN THE YOUNGREN CONTINUOUS TUNNEL KILN.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

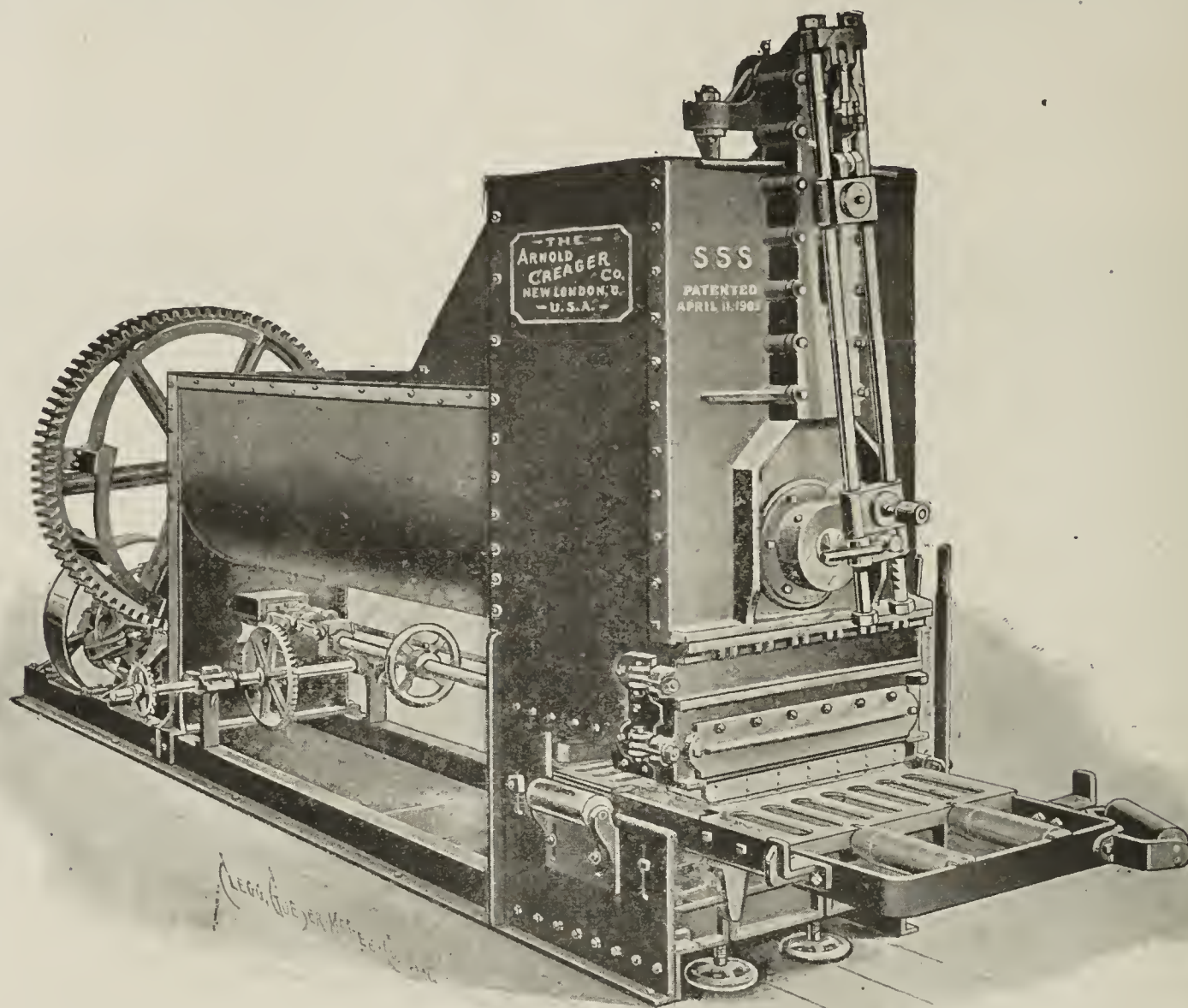
Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

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HONESTY IS THE BEST POLICY.



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Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

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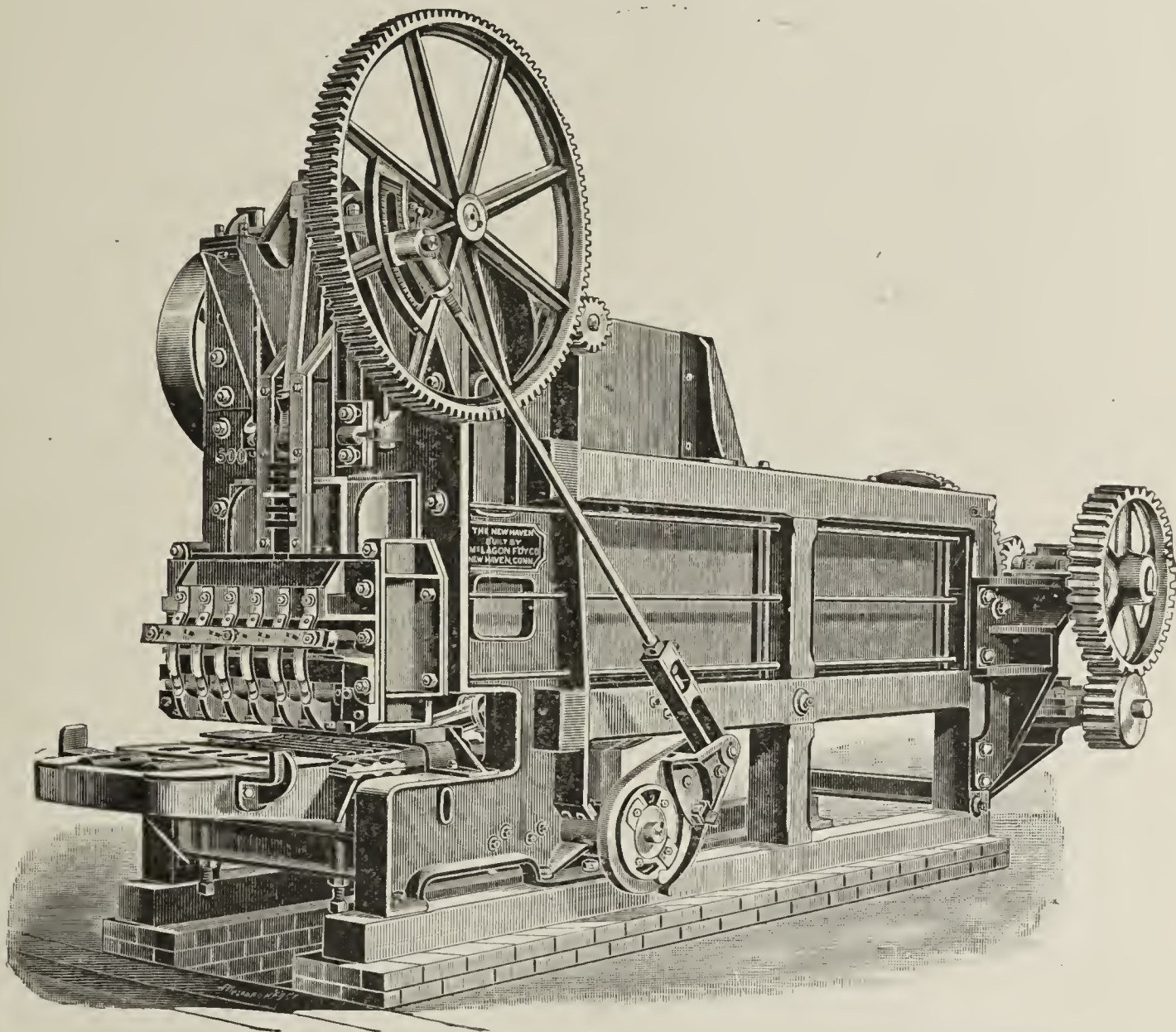
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CABLE "AUTOMATIC".

SOFT MUD BRICK MACHINES

Are the only kind we build and we build them well. We build them with the greatest strength placed where it is the most required. We build them with stout shafts, long bearings, large oil holes, strong gears, steel liners, and all other details in proportion. We build them so they

DO NOT BREAK DOWN EVERY DAY.



"New Haven" Horizontal Brick Machine.

NEW HAVEN BRICK MACHINES

are popular at home because of their superior qualities. More than three-fourths of the brick made in New England are the product of **New Haven** machines. For hard service they are sure to satisfy where others fail. That is the reason why each New Haven machine is a standing advertisement, and why all users recommend them.

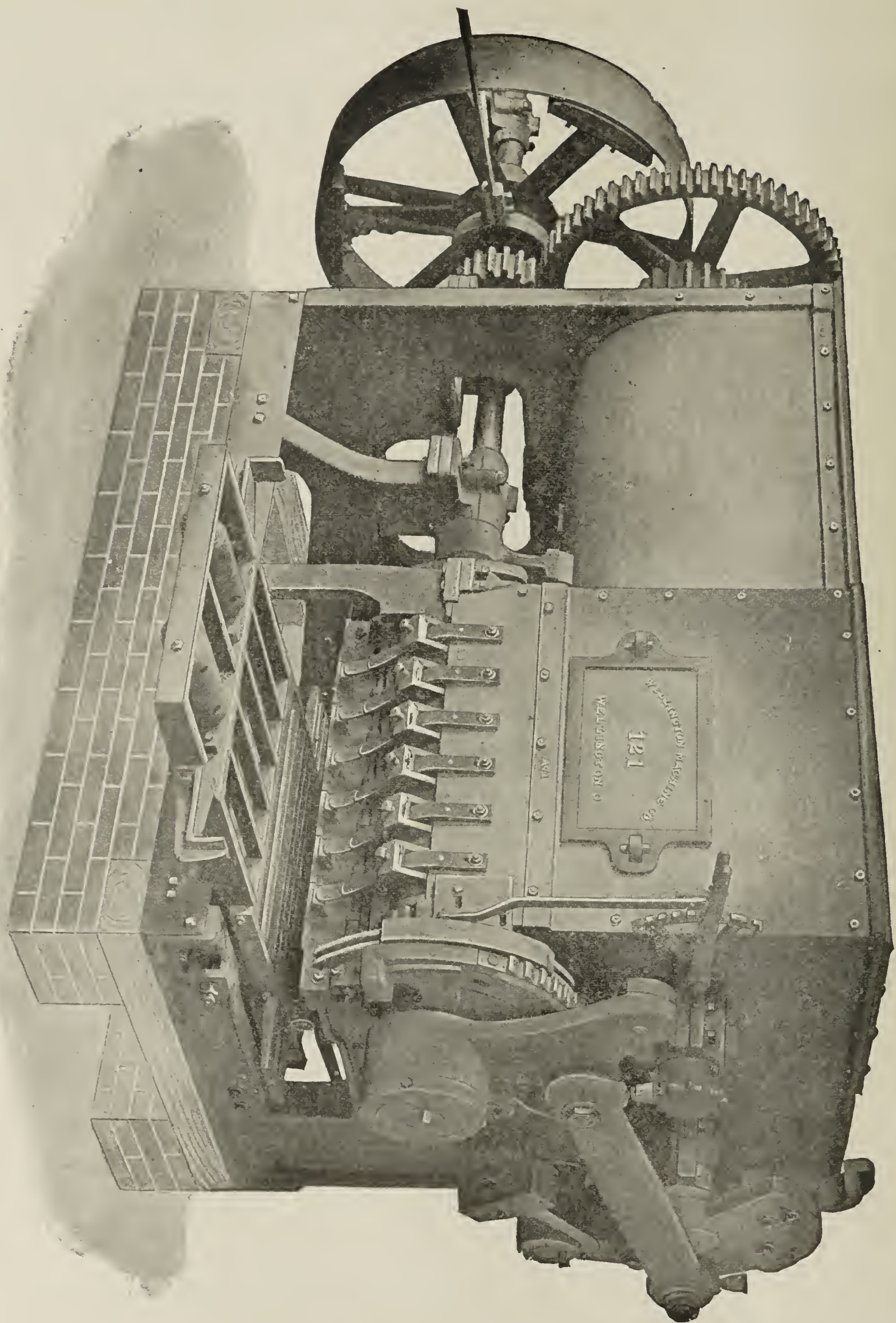
The EASTERN MACHINERY CO.,

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OVER
235
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WRITE
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Elevators,
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and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

**ROLLER-BEARING
BARROWS.**

The Wellington Machine Co.,

WELLINGTON,

OHIO.

Send for Catalogue.

Sand Mould Brick Plants

OUR SPECIALTY.

The Potts Horizontal Brick Machine is well built, of the best material, simple in construction, strong and durable, has no equal for making brick having clean sharp corners and smooth surfaces.

The Potts Disintegrators are the standard machines of this class. Heavy frames, large steel shafts, adjustable secured steel cutting bars; rolls made from special iron thoroughly chilled.

The Potts Mould Sander, simple in construction, does not waste or spill the sand. A boy can operate it.

The Potts System Rack Pipe Dryer, the best drying system on the market, is built on scientific lines; every advantage taken to save fuel. Exhaust steam used during day, live steam at night. Brick thoroughly dried in 12 hours or less.

Let us tell you about it. There is no plant of machinery on the market today that can be compared with it for Quality, Quantity and Cheapness of Operation.

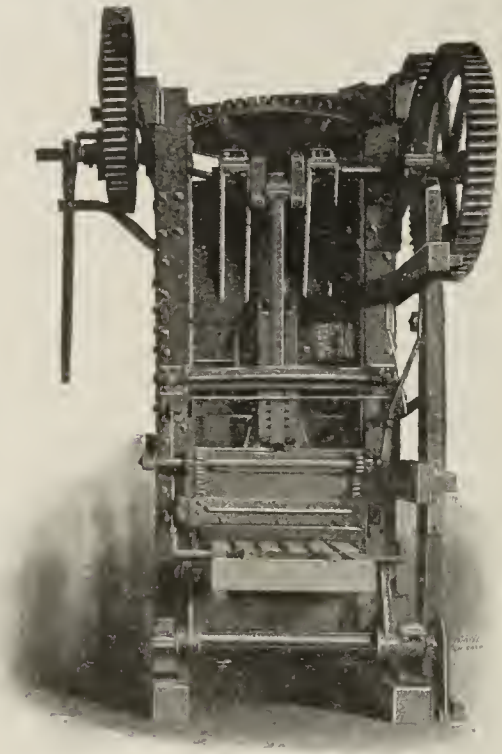
C. & A. POTTS & CO., Indianapolis, Ind.

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THE "MARTIN"
CLAYWORKING
MACHINERY &

YARD SUPPLIES ARE BUILT OF THE BEST MATERIALS



MARTIN'S STYLE "A"
STEAM POWER BRICK MACHINE

We test your clay and
advise as to the best
way to handle same.

Our Engineering De-
partment is ever at
your service==Con-
sultation Free.

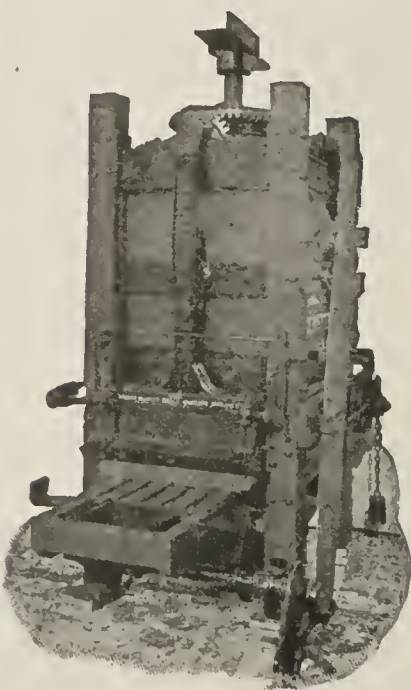
NOTICE FROM THE CLAY BANK TO THE
KILN==WE EQUIP BRICK PLANTS
THAT PRODUCE GOOD RESULTS.

We Guarantee Our Machinery==Let Us
==Send You Our Complete Catalogue==

Illustrating and Describing
"EVERYTHING THE BRICKMAKER NEEDS"
From the Bank to Finished Product

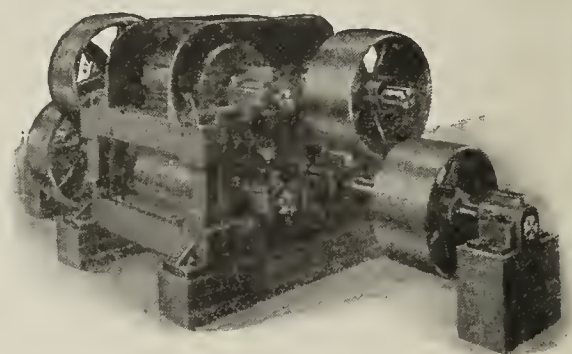


HORSE POWER MACHINE



WITH THE "MARTIN PATENT
SYSTEM" SKILLED LABOR
IS NOT REQUIRED==AND
HENCE A SAVING IN THE
PAY-ROLL. THE "MARTIN"
MACHINERY DOES THE WORK

WE CAN GIVE YOU
THE BENEFIT OF
MANY YEARS EXPERIENCE



HIGH SPEED DISINTEGRATOR

UP-TO-DATE CRUSHING MACHINERY

THE HENRY MARTIN
BRICK MACHINE MFG. CO. Inc.
LANCASTER, PA., U. S. A.



BRICK DRYERS

The "MARTIN SYSTEM"
STEAM RACK PIPE
DRYING & CONVEYING

BRICK==ARE FULLY COVERED BY "PATENTS" GRANTED

NOTICE

==PATENTED==

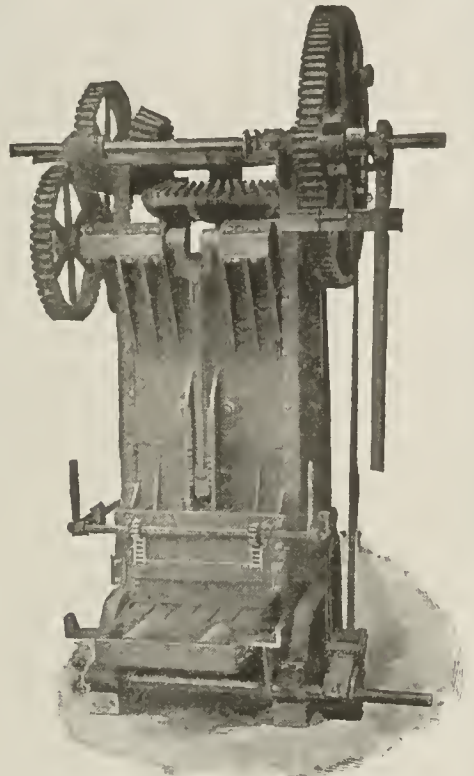
February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.

OWNED
AND
CONTROLLED

BY THE HENRY MARTIN BRICK MACHINE
==MFG. CO., INC.==LANCASTER, PA.==



ADAPTED FOR SOFT-MUD OR STIFF-MUD
BUILDING BRICK==LABOR-SAVING THROUGHOUT
NO FANS, BLOWERS, TUNNELS, ENGINES OR CARS.



MARTIN'S STYLE "P"
STEAM POWER BRICK MACHINE

The "Martin Patent
System" of Drying is
Superior in Every
Respect to Any Other
System==Quick to In-
stall and Low in
Price and Takes up
Very Little Yard Room

STYLE "B" BRICK MACHINE



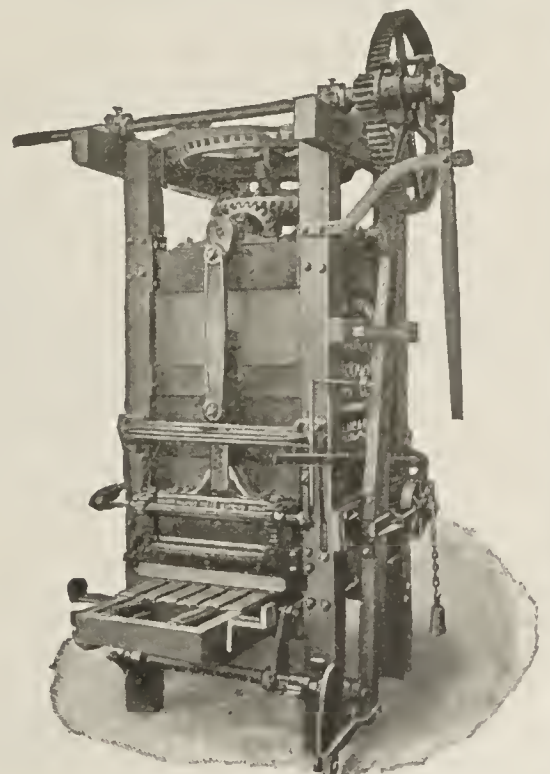
5-7-9-FT. DRY OR WET PANS

THE SALE AND THE CONSTRUC-
TION OF THE "MARTIN" PATENT
SYSTEM" DRYER IS UNDER
THE DIRECT SUPERVISION
OF THE FACTORY OFFICE
AT LANCASTER, PA., U. S. A.

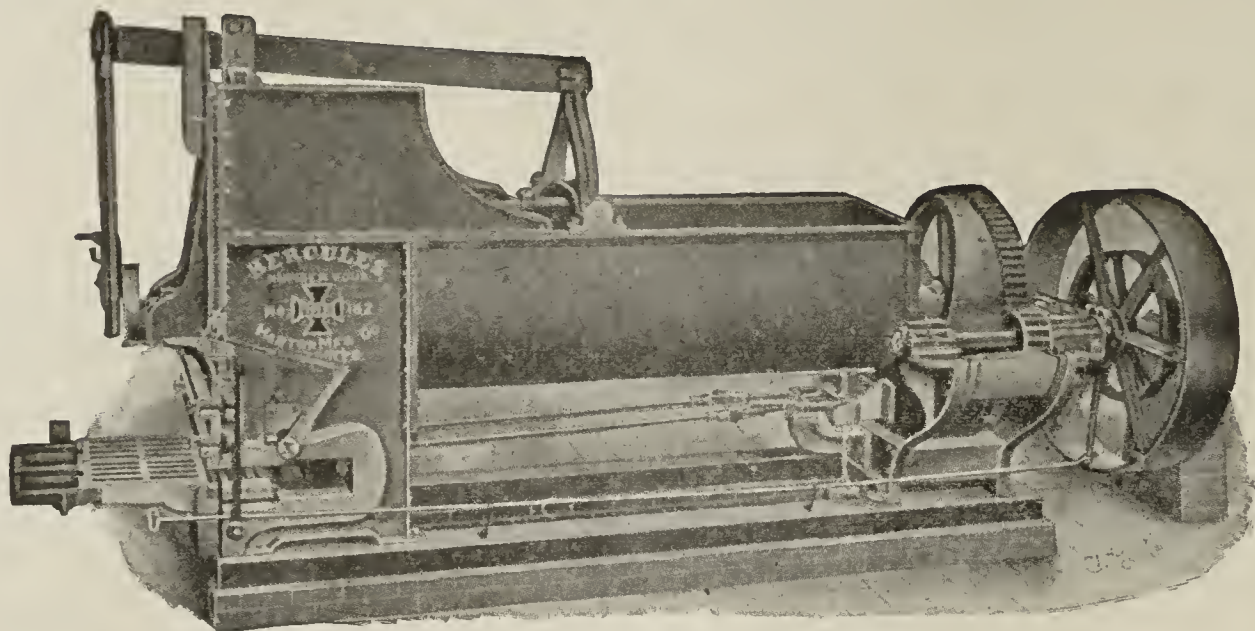
LET US MAKE
YOU AN INTER-
ESTING OFFER



THE HENRY MARTIN
BRICK MACHINE MFG. CO. Inc.
LANCASTER, PA., U. S. A.



Do Not Miss This Opportunity.

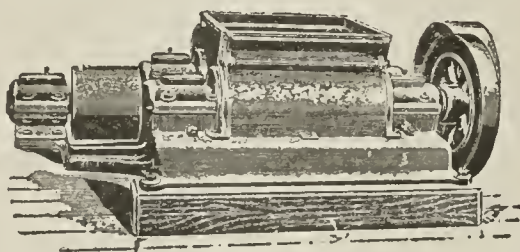


Hercules No. 4 Brick Machine.

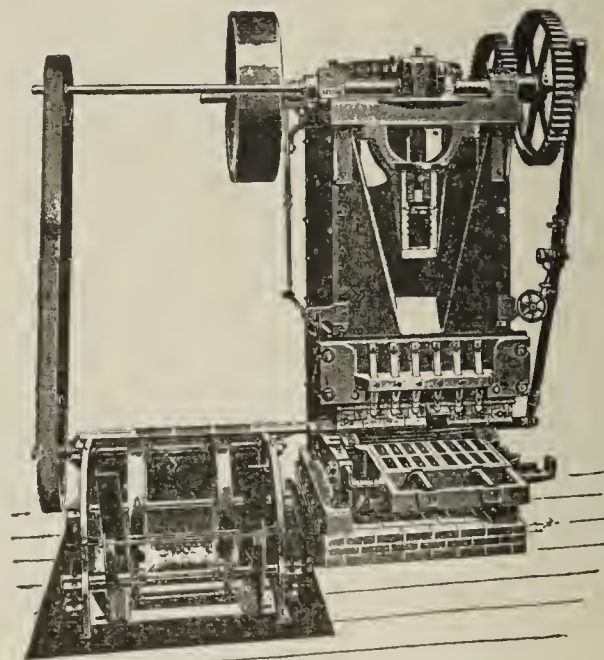
Let Us Have Your Inquiries Today.



Ideal Horse Power.

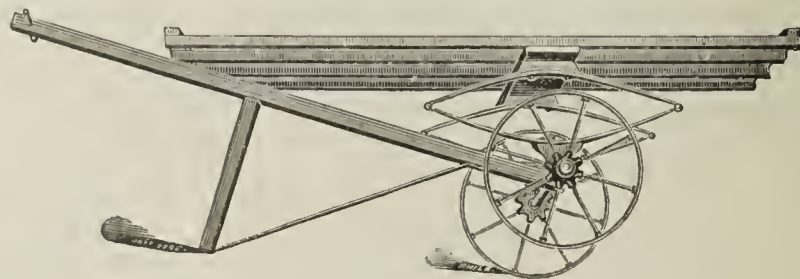
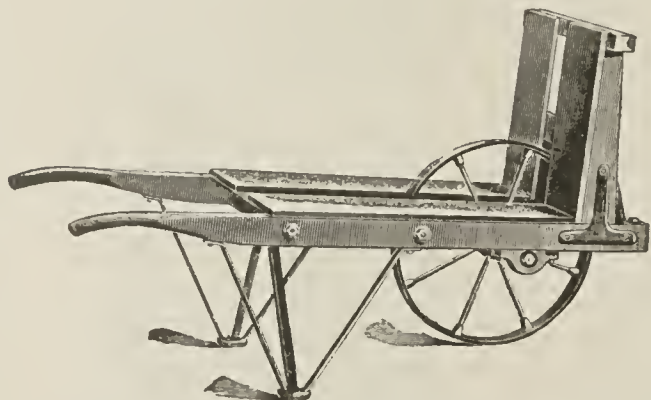


Disintegrator.



Ideal Steam Power and Sander.

OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.

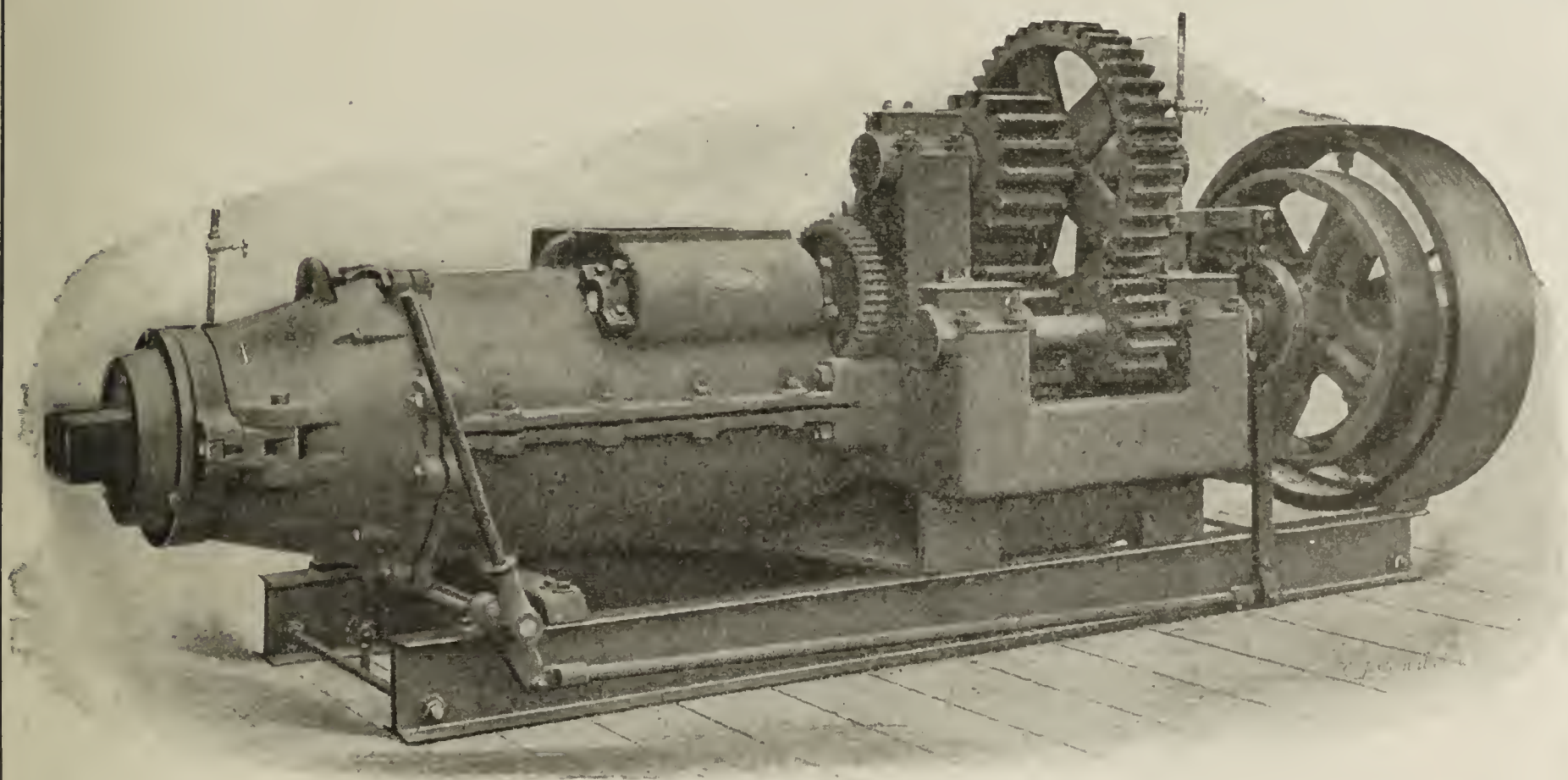


Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

HORIZONTAL BRICK MACHINES

Brewer's new line comprises three sizes of horizontal brick machines, all of which are of high-grade design and construction; capacity ranging from 5,000 down to 2,000 bricks per hour with a big margin of safety. Buy a Brewer and be satisfied.



This is How They Are Built:

The gear frames are cast in one piece. The knives are forged from hard high-carbon steel. The screws and screw casings are made of white iron. The back thrusts are self-oiling, self-aligning, and adjustable. The bearings are self-oiling. Gears heavier and wider face than usual. Self contained mounting upon steel I-beams.

The machines are good and the prices are consistent.

**H. BREWER & CO., TECUMSEH,
MICHIGAN.**

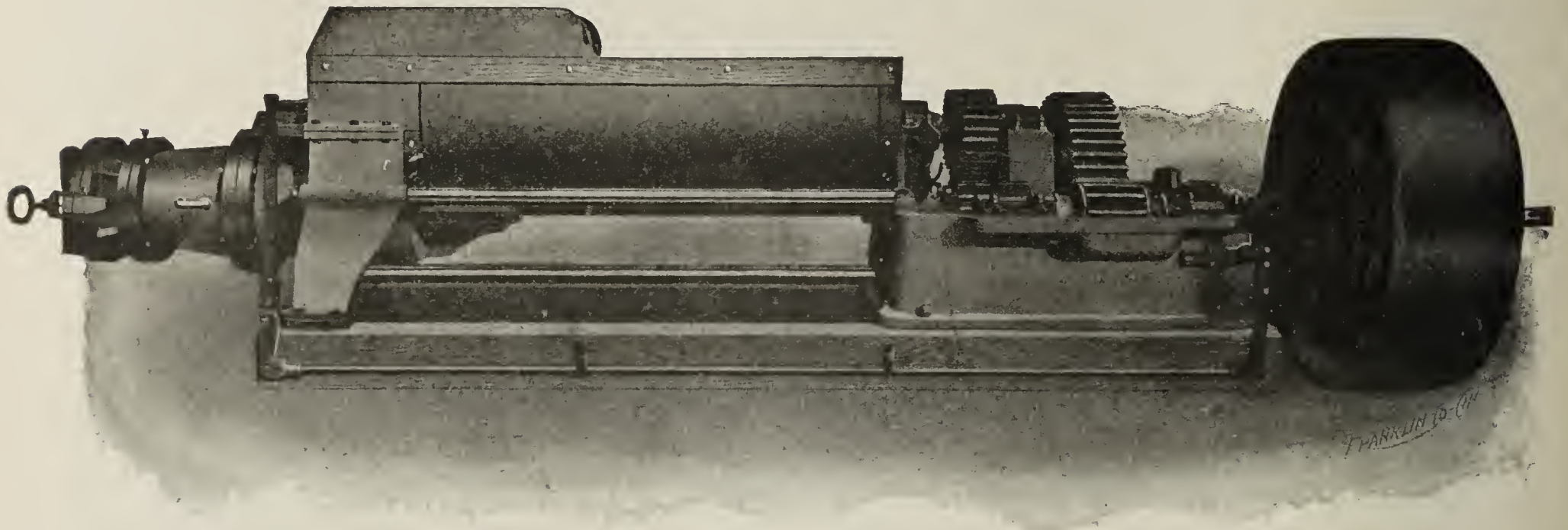


The J. D. Fate Co.

Richland County,

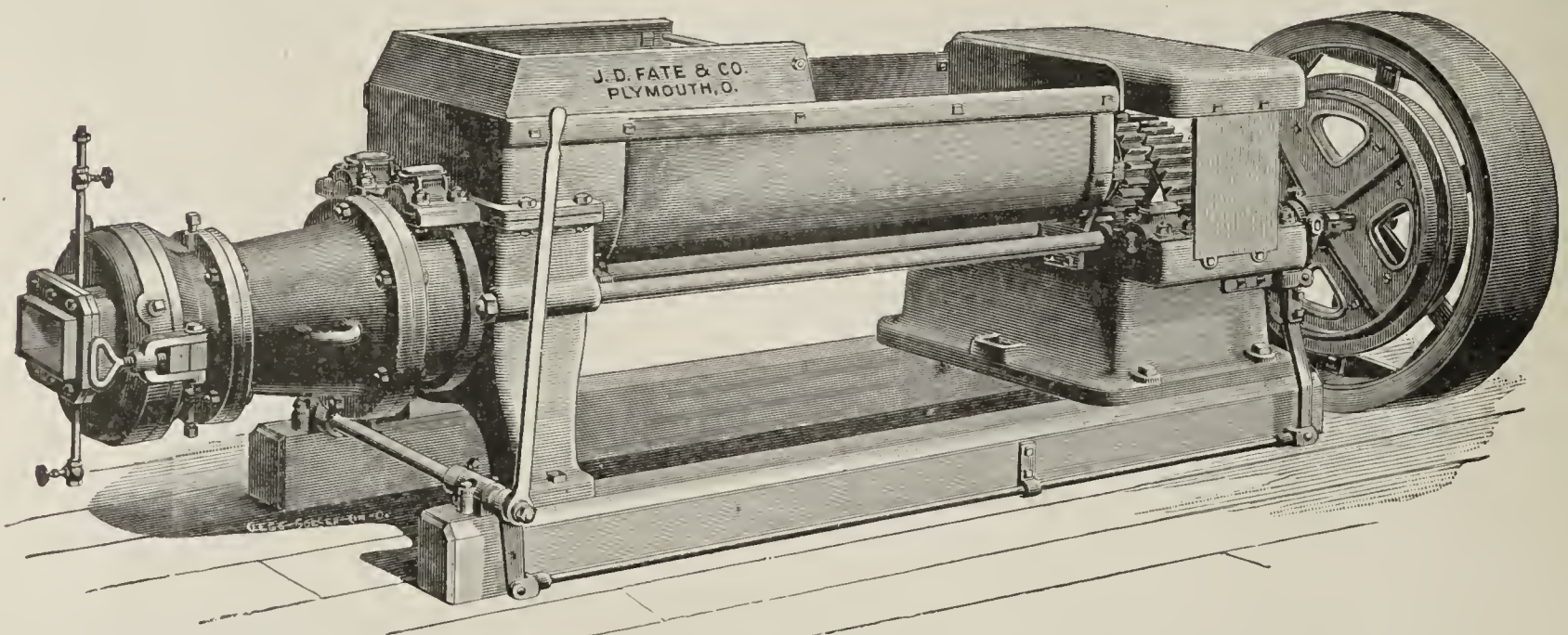
Plymouth, Ohio.

Imperial Combined Machine.



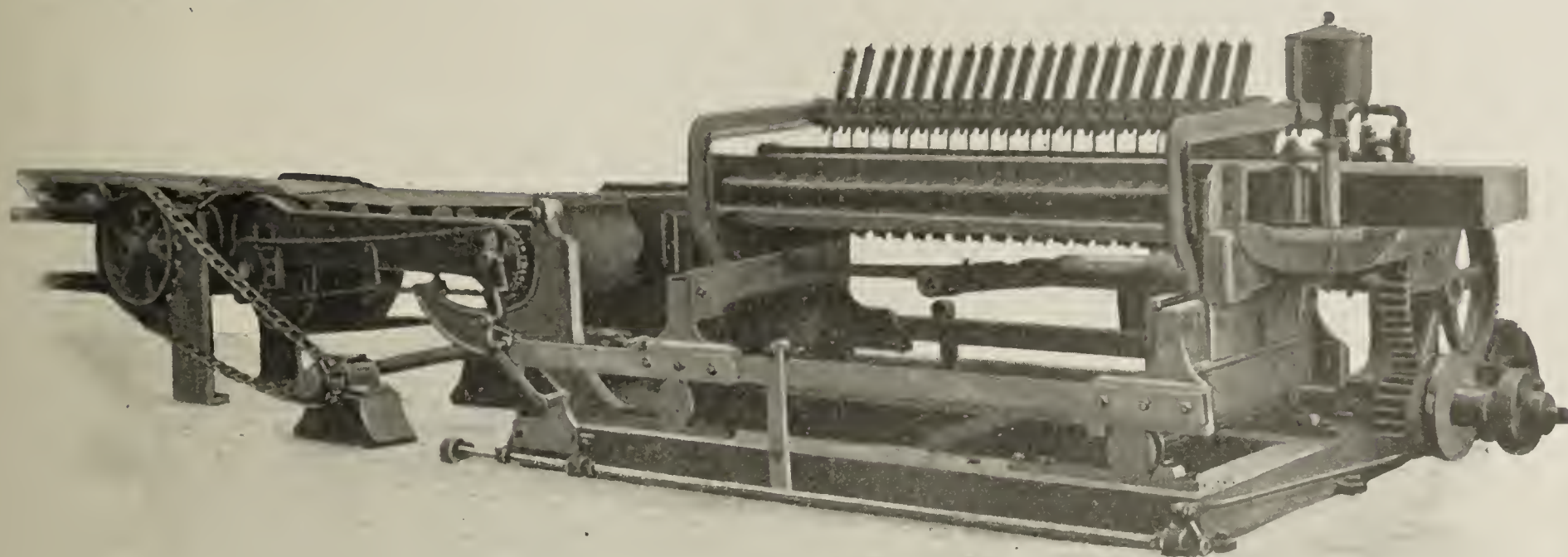
This is our middle size Combined Machine and is a favorite with the brick maker who wants to make from 30,000 to 40,000 brick per day, and more so with the tile maker who wants very large capacity in drain tile, combined with the very finest quality. Look at the cut of this machine with vertical attachment.

Hummer Combined Machine.



This was the first of our Combined Machines, and one of the best for the clayworker with a medium capacity plant, either of Brick or Tile, or both.

Modern Clayworking Machinery.

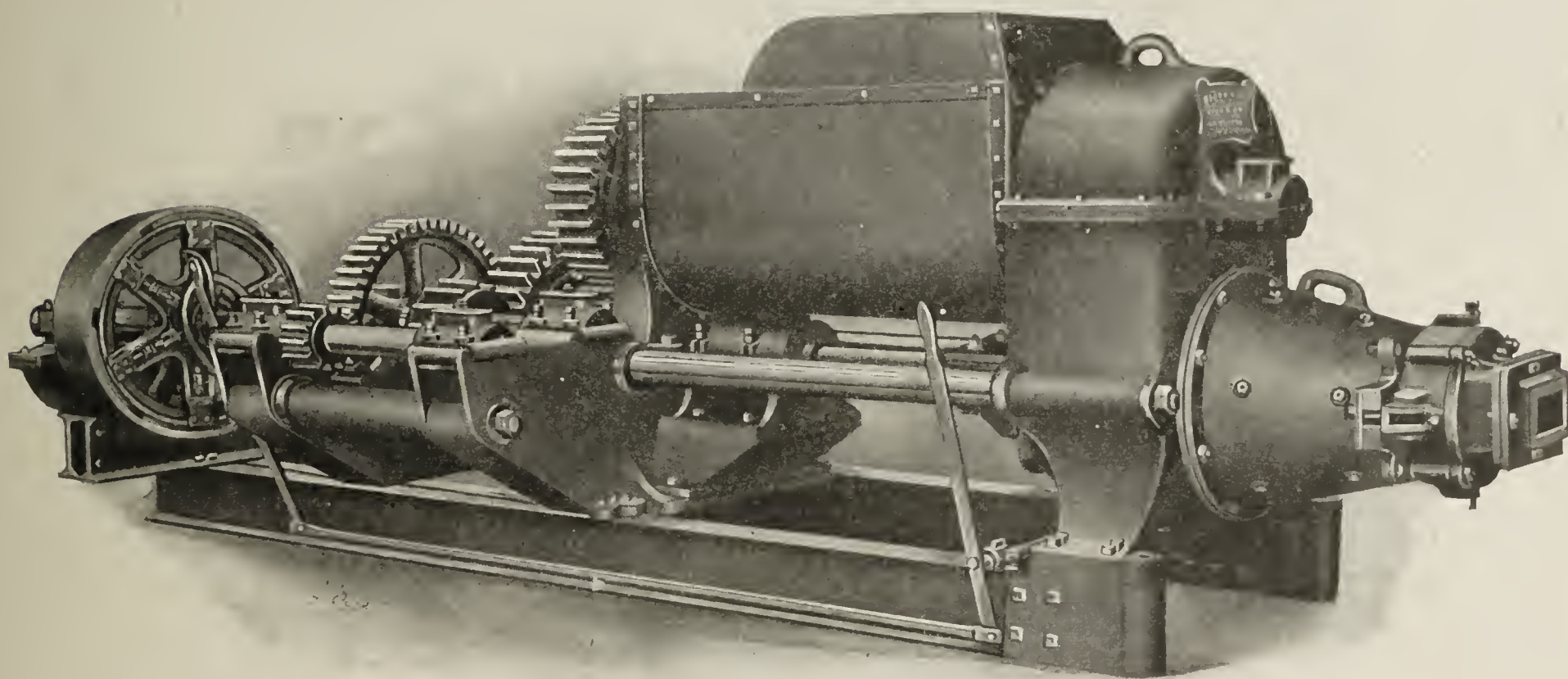


Automatic Side-Cut Table.

Cuts brick 28 inches from brick machine die.

Short cutting wires.

Capacity 25,000 to 125,000 brick in 10 hours.



No. 6 Combined Brick Machine and Pug Mill.

Steel gears throughout.

Self-contained on steel I beams.

Length of pug mill five to thirteen feet.

Interlocking hubs and independent knives.

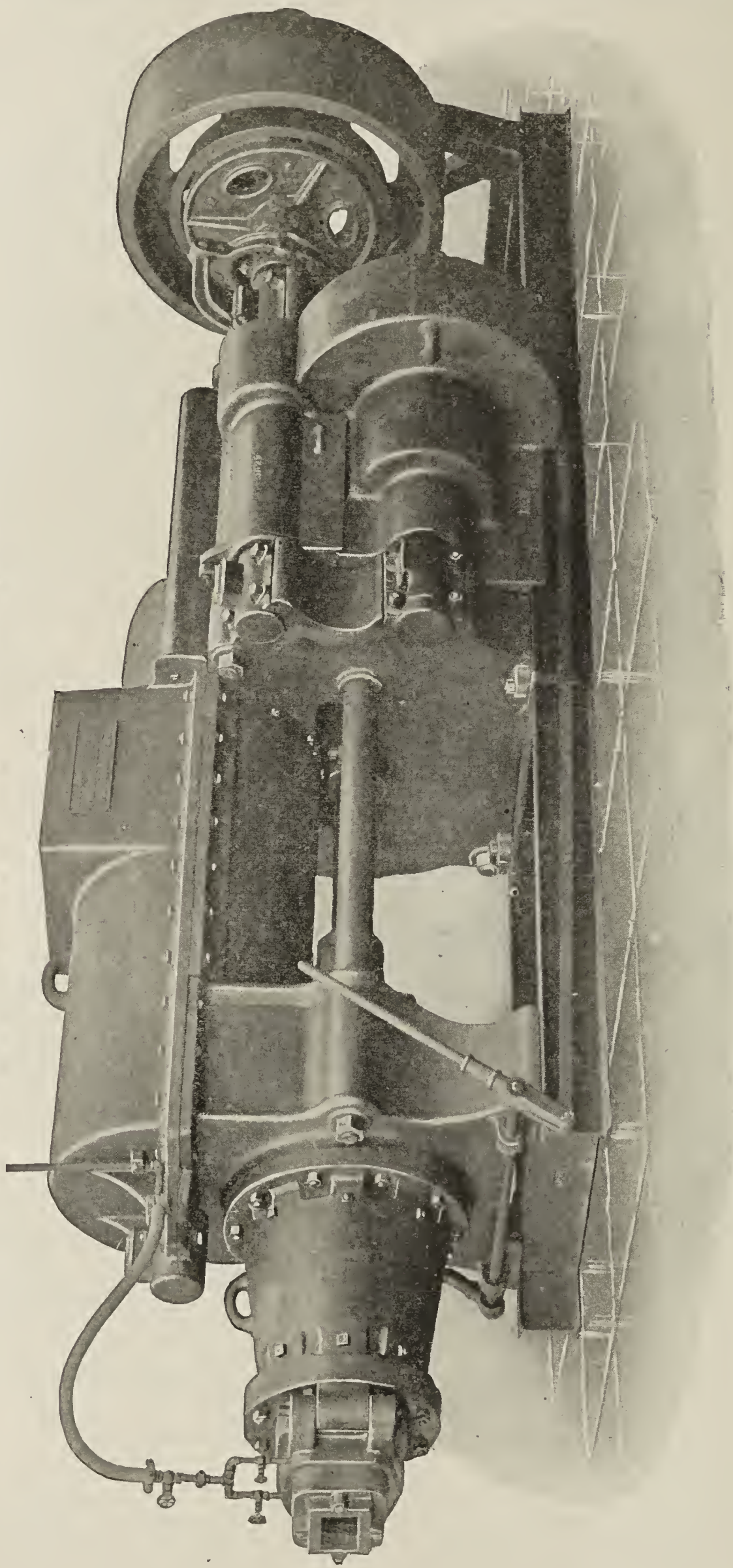
Capacity 50,000 to 75,000 brick in ten hours.

Our Piano Wire Screens Are Doing Excellent Work.

THE BONNOT COMPANY, Canton, Ohio.

Write for Circular No. 12.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

Size of hopper, 26-in. x 26-in.

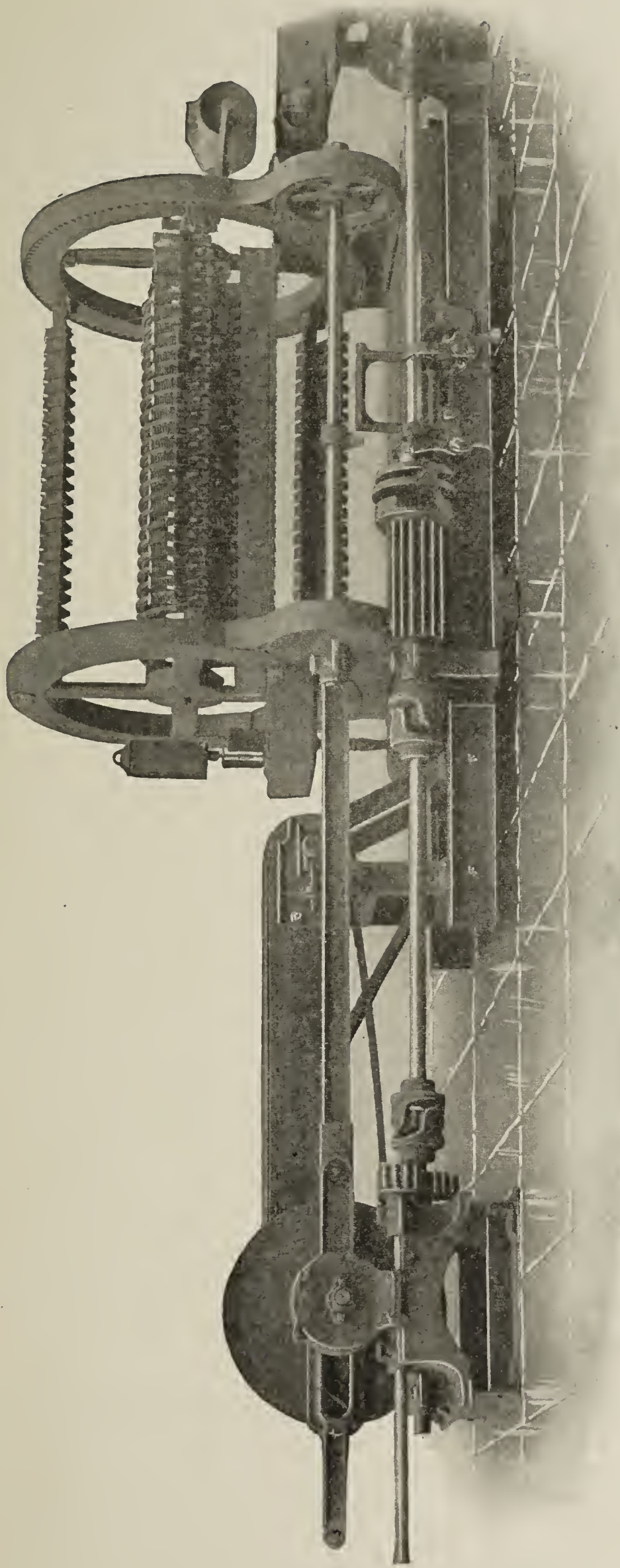
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

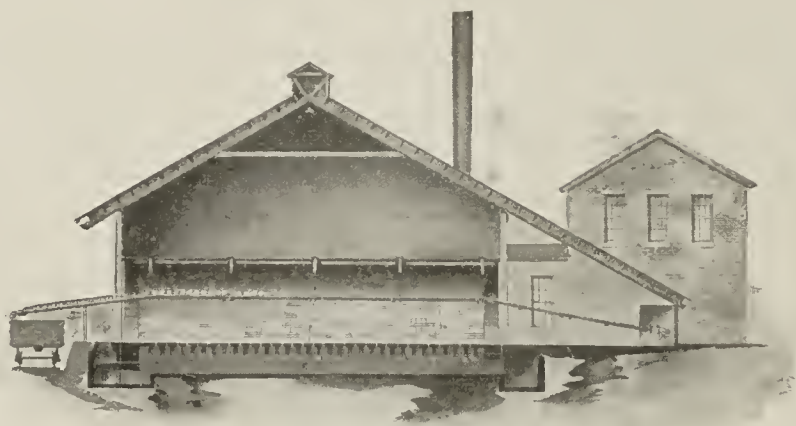
E. M. FREESE & CO., Galion, Ohio.

NOTICE=

WHEREAS, one Chas. Weller is offering for sale a patent, also the yard rights to the use of same, which patent simply covers the location of certain ducts to be employed for admitting heat and air to the brick kilns, for the purpose of drying the bricks set therein, and as same can not be used except in combination with other features of the so-called Scott System, all of which are fully covered by several basic patents controlled by the undersigned, notice is hereby given that any and all infringements of same will be promptly prosecuted.

Scott Kiln-Drying Company,
Detroit, Mich.

[Licensees Alex. A. Scott Patents.]



CROSS SECTION OF A SEMI-CONTINUOUS KILN

Showing method of loading cars in a yard equipped with

Scott Kiln=Drying System

(Alex A. Scott Patents)

by means of which brick are being made and burned—every expense included from the bank to the finished product—for \$1.85 per thousand.

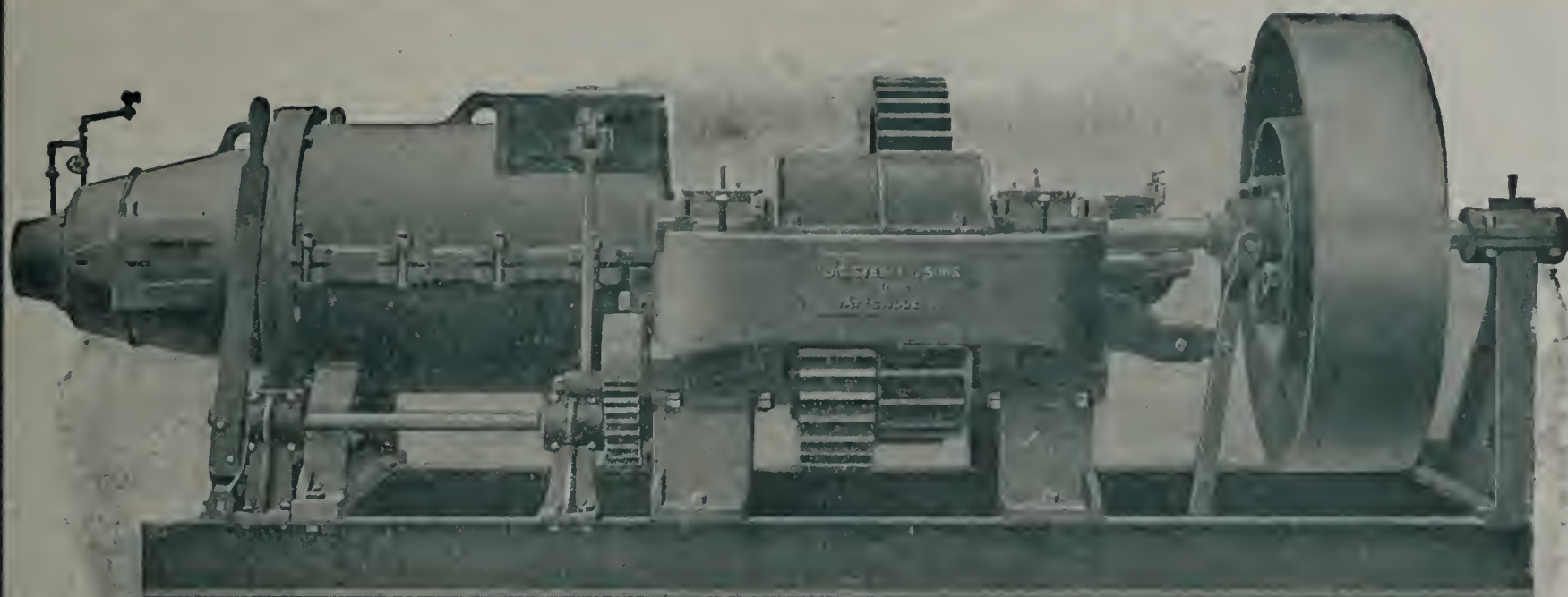
Shall we send you our Catalogue No. 213C?

American Blower Company
Detroit, Mich.

141 Broadway
 New York

Empire Bldg.
 Atlanta

Marquette Bldg.
 Chicago



**No. 5. CAPACITY 50,000 to 100,000
PER DAY.**

**Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.**

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen:—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

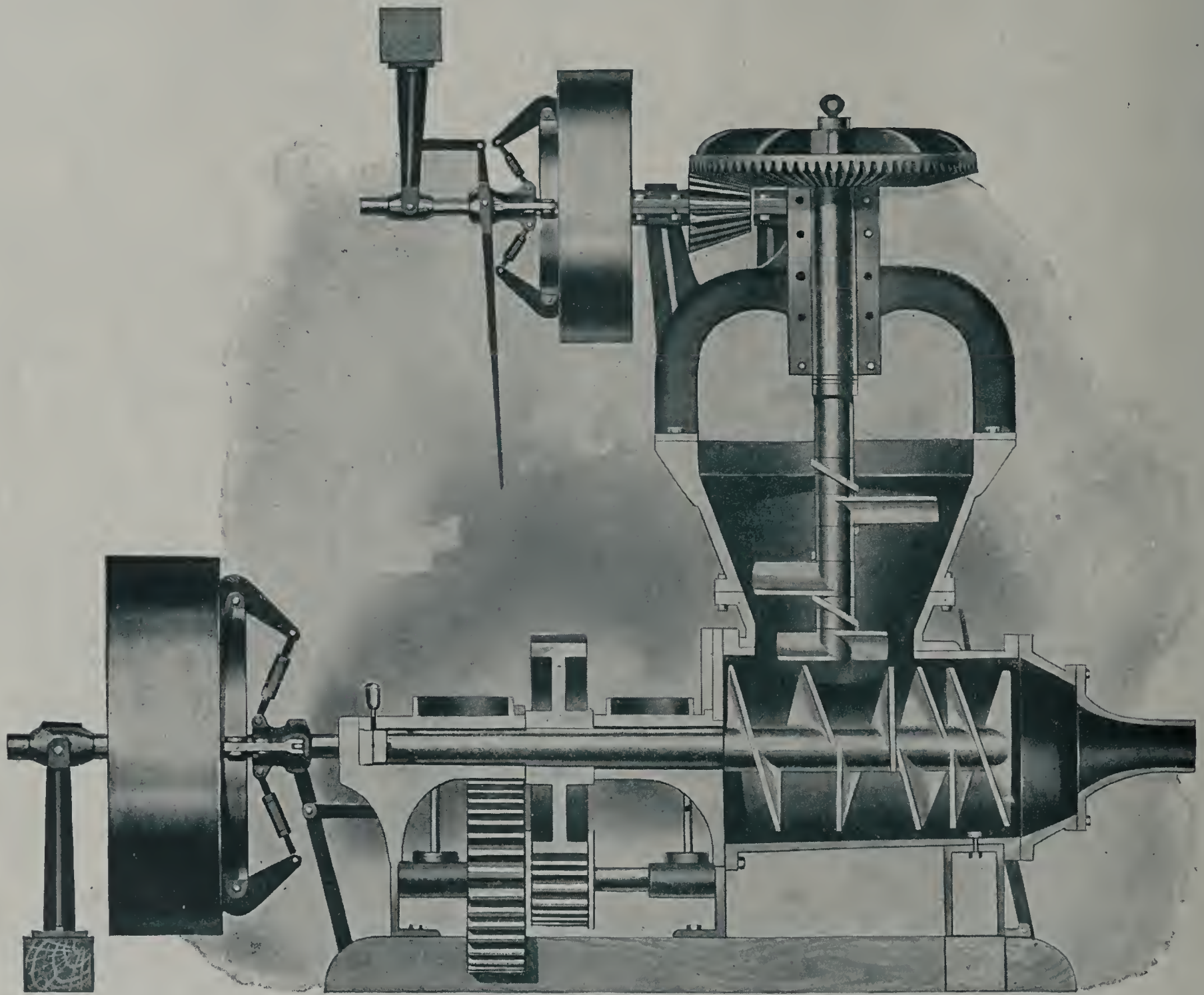
Success Brick Machinery Co., Memphis, Tenn., Western Agents.

OUR SPECIAL "ELI" BRICK MACHINE

LATEST IMPROVED.

Large Capacity. Runs Easy.

"Has all the merits of any machine and then some."

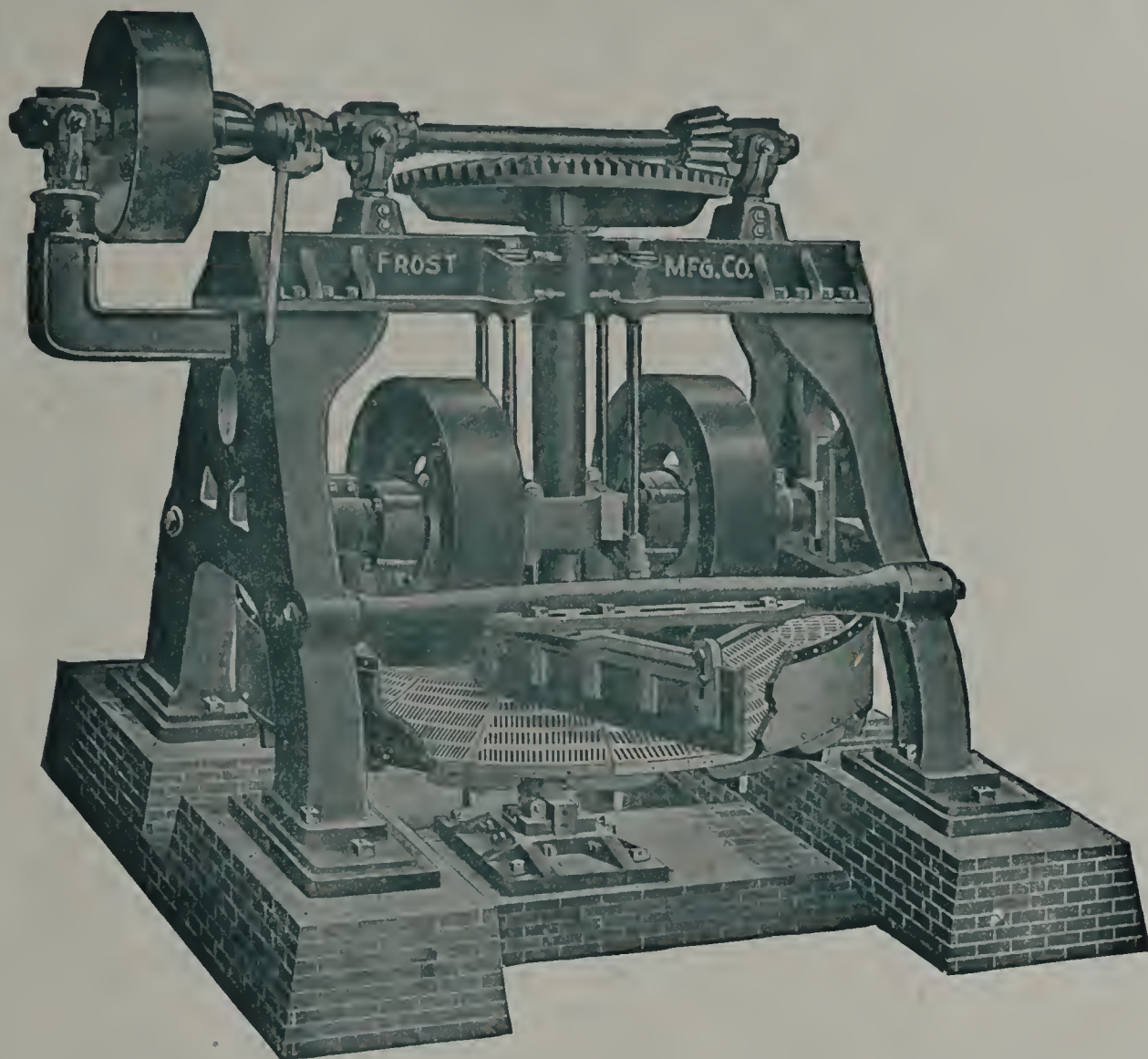


SPECIAL "ELI" BRICK MACHINE

Write for Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,
MORENCI, MICH., U. S. A.

FROST DRY PAN



When you buy a Pan buy a FROST Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.
SALES DEPARTMENT:
135 Adams St., CHICAGO, ILL.
Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN

Utilized in an "A B C" Dryer

insures ideal results.

Note the experience of the Blue Ridge Enameled Brick Co., Newark, N. J.: "We are very much pleased with the drying apparatus furnished us; it is doing all that could be expected or wished for by us, and in consequence do not hesitate to recommend it for one wanting a good dryer."

Catalogue No. 159-C tells about Dryers of this type.

American Blower Co.
Detroit Mich.

The Perfect Clay Screen in a New Dress.



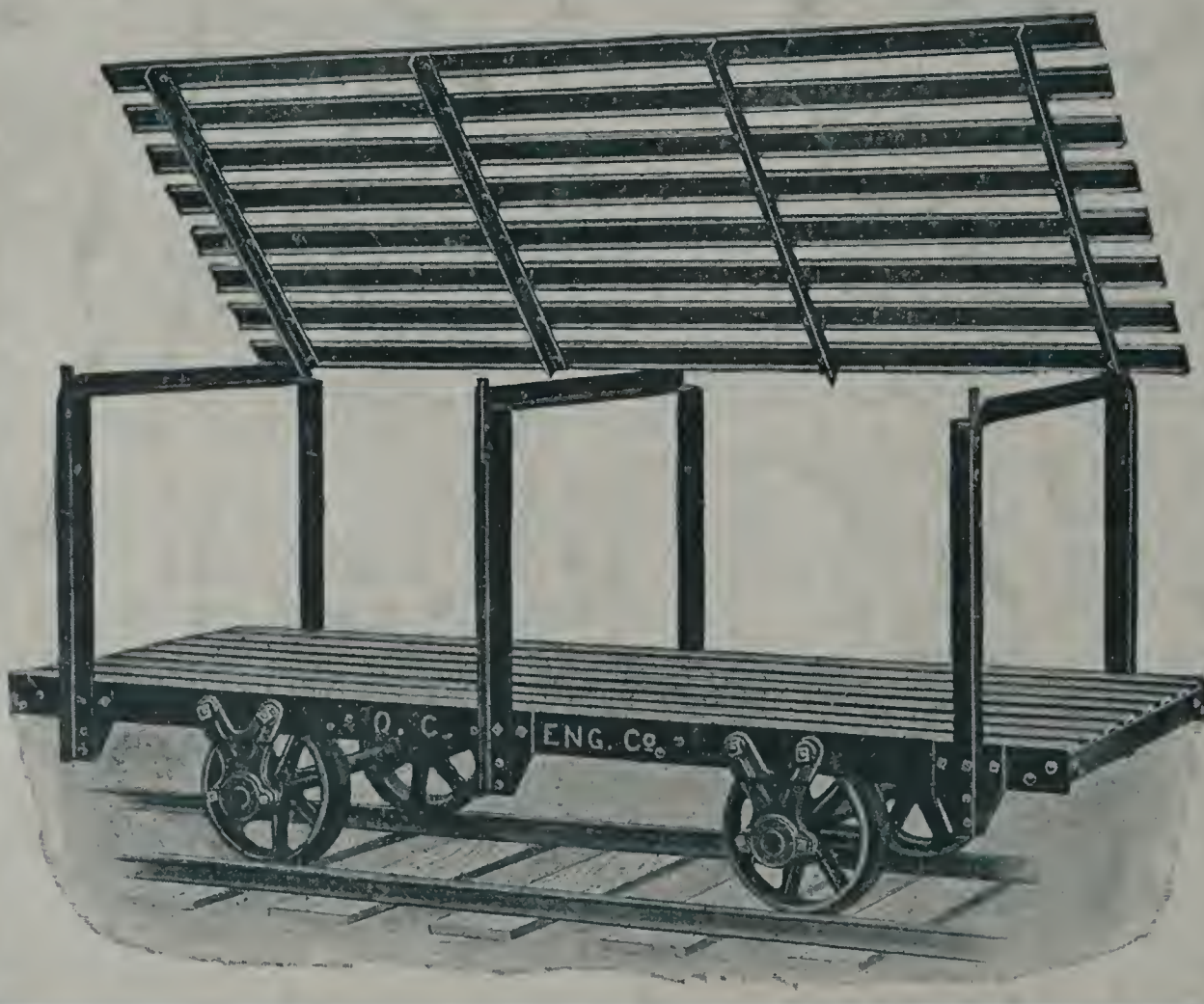
A piano wire plate that fits just the same as our perforated metal plates.

By using every third plate, you get more screening surface than is had with any other screen of this kind.

SPECIAL FEATURES. Short wires do not require high tension and are less liable to break. If a wire does break, take out the plate, put another one in its place. This can be done in an instant. If you want a piano wire screen without the frame and mechanical parts, four of our plates more than equal the area of any screen of this kind now offered. But with the mechanical features THE PERFECT CLAY SCREEN fills all requirements.

DUNLAP MFG. CO.,
Bloomington, Ill.

The Ohio Ceramic Engineering Co. CLEVELAND.



Our Improved No. 167
Double Deck Dryer Car
for Brick, Tile, etc.

Uprights outside of side rails.

Decks free from obstruction.

Easiest loaded car on market.

Top deck slats placed across if desired.

Length over all, 6 ft. 11 in.

Width over all, 35 1/2 in.

Track gauge, 24 to 28 in.

Weight, 550 lbs.

Cap, 500 to 600 brick.

**TURNTABLES, TRACK
CARS, ETC.**

THE CLAYWORKER

PUBLISHED MONTHLY BY
T A RANDALL & CO
INDIANAPOLIS.



Table Contents, Page 174.

AUGUST, 1907.

Index to Ads, Page 184.



We Are Manufacturers and Consulting Engineers of
INDUSTRIAL and PORTABLE
— RAILWAYS —



This illustration shows the **CLAY MINES** of the National Fireproofing Co., Pittsburgh, Pa., with **KOPPEL'S COMPLETE INSTALLATION OF INDUSTRIAL AND PORTABLE RAILWAYS**, Portable Track and Switches, Turntables and Steel Dump Cars.

WRITE FOR CATALOG NO. 41

ARTHUR KOPPEL COMPANY

PITTSBURG
1607 Machesney Bldg.

NEW YORK
136 Morris Bldg.

CHICAGO
1639c Monadnock Bldg.

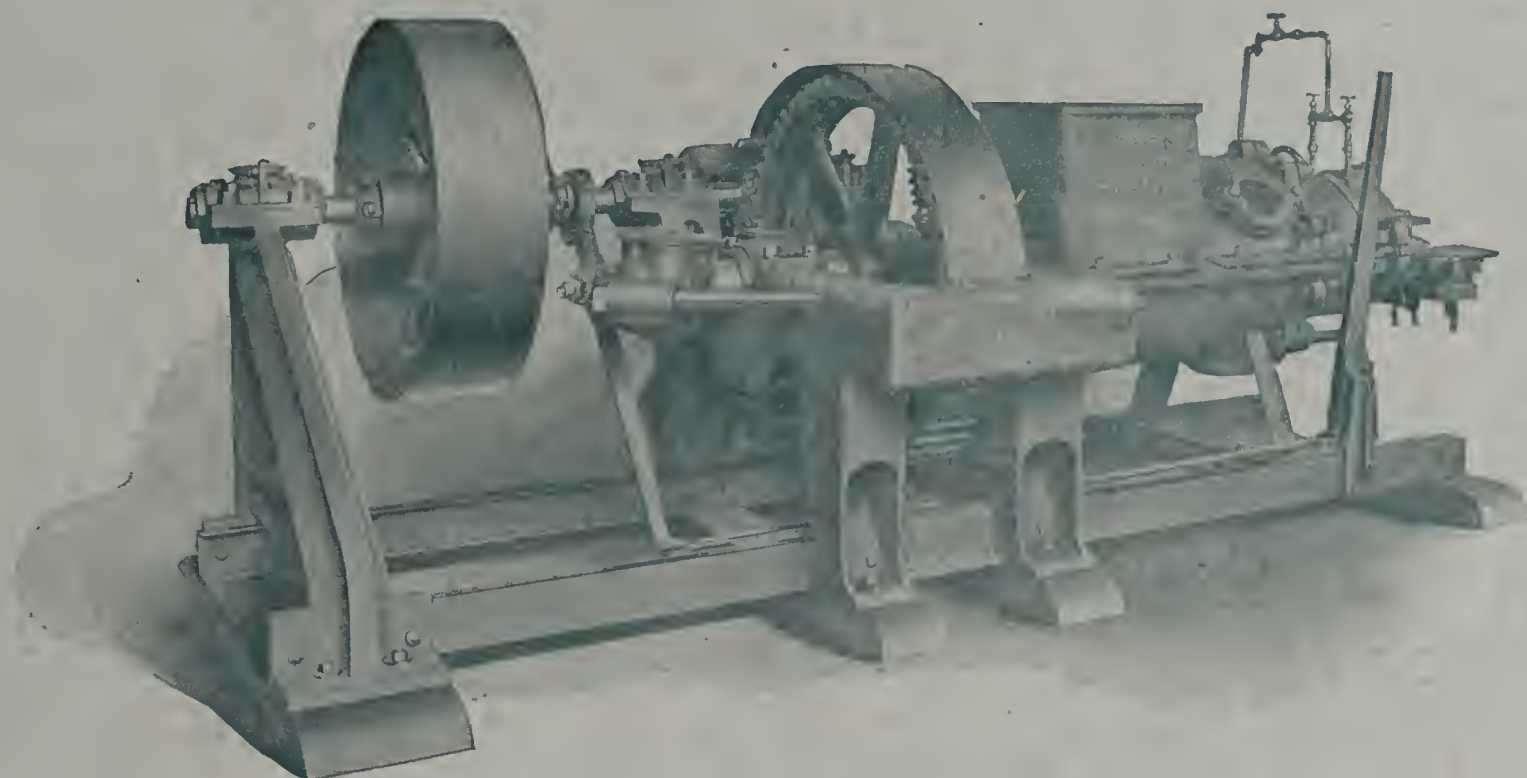
BOSTON
53 Oliver St.

SAN FRANCISCO
1515 Chronicle Bldg.

THE CHAMBERS BRICK MACHINERY

BRICK MACHINES

Of Various Sizes for Producing Sand Faced, End Cut and Side Cut Brick



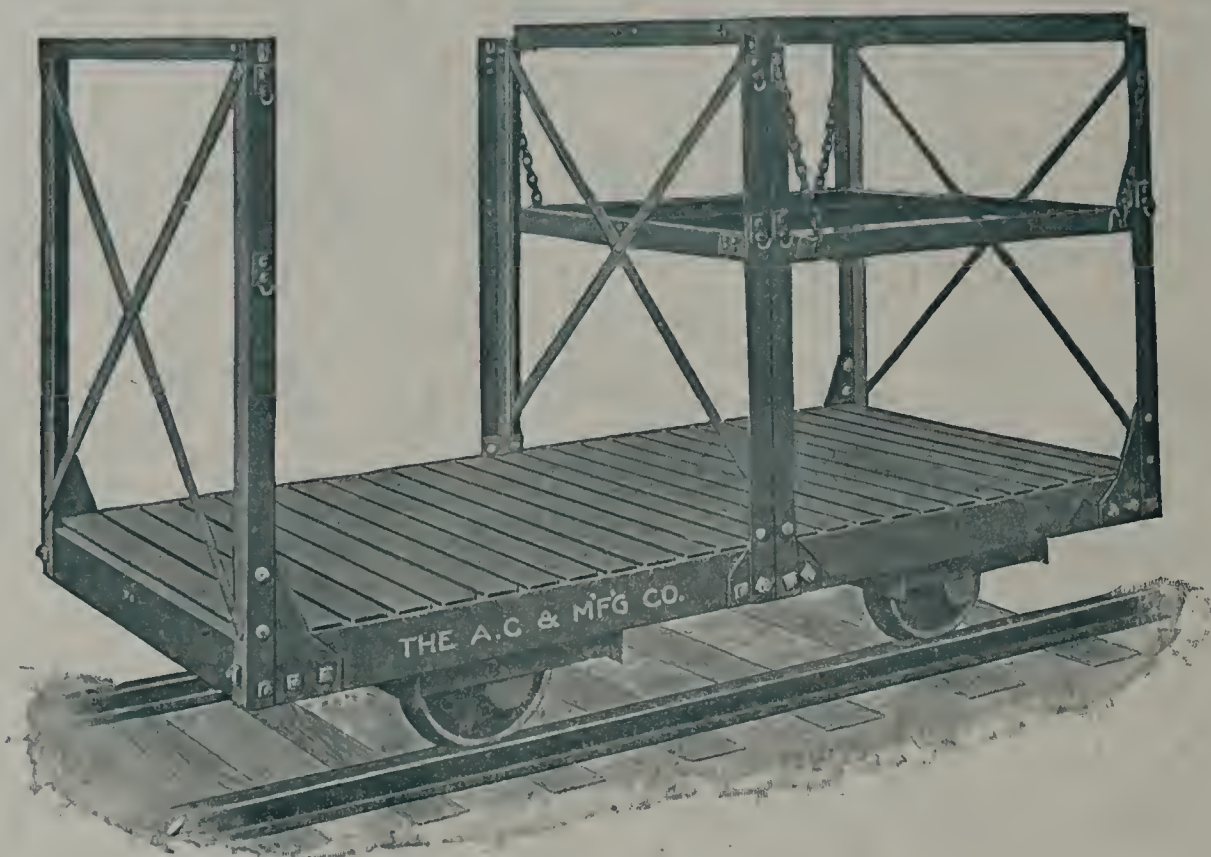
Strong, Heavy Machines with Steel Pinions and Shafts; Stone Extracting Crushers; Five Sizes Disintegrators; Dry Pans; Single and Double Shaft Mixers and Pug Mills; New Pattern Clay Elevators. ♡ ♡

Chambers Brothers Company

Fifty-Second and Media Streets :: :: PHILADELPHIA, PA., U. S. A.

59 West Jackson Boulevard, CHICAGO

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 179.)

G. E. LUCE ENGINEERING CO.,

601 Plymouth Building,
CHICAGO, ILL.

Practical Design and Supervision of Brick Plant Construction.

From our long experience in various clayworking fields we are able to offer suggestions which will bring your old plant to its highest efficiency or start your new one a little better than the best.

A careful study of the drawings we exhibited at the St. Louis Convention would convince you OUR PLANTS MAKE BRICK. If you were not there send for copy of one of the most complete Brick Plant drawings ever exhibited.

THE HARRINGTON AND KING PERFORATING CO



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.
For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.
For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,

CHICAGO, ILL., U. S. A.



YOU MAY BE CONVINCED



that your brick drying facilities are not what they ought to be, nor what you want them to be, but yet you put off from day to day the question of improvement. In such case procrastination is the thief of MONEY, as well as TIME, for a poor Dryer is a money-loser.

Best stop the thief AT ONCE and replace your money-losing Dryer with a

RODGERS WASTE HEAT DRYER,

which is a daily money-maker.

L. E. RODGERS ENGINEERING CO.,

Waste Heat Dryer Specialists,
Brick Works Engineers.

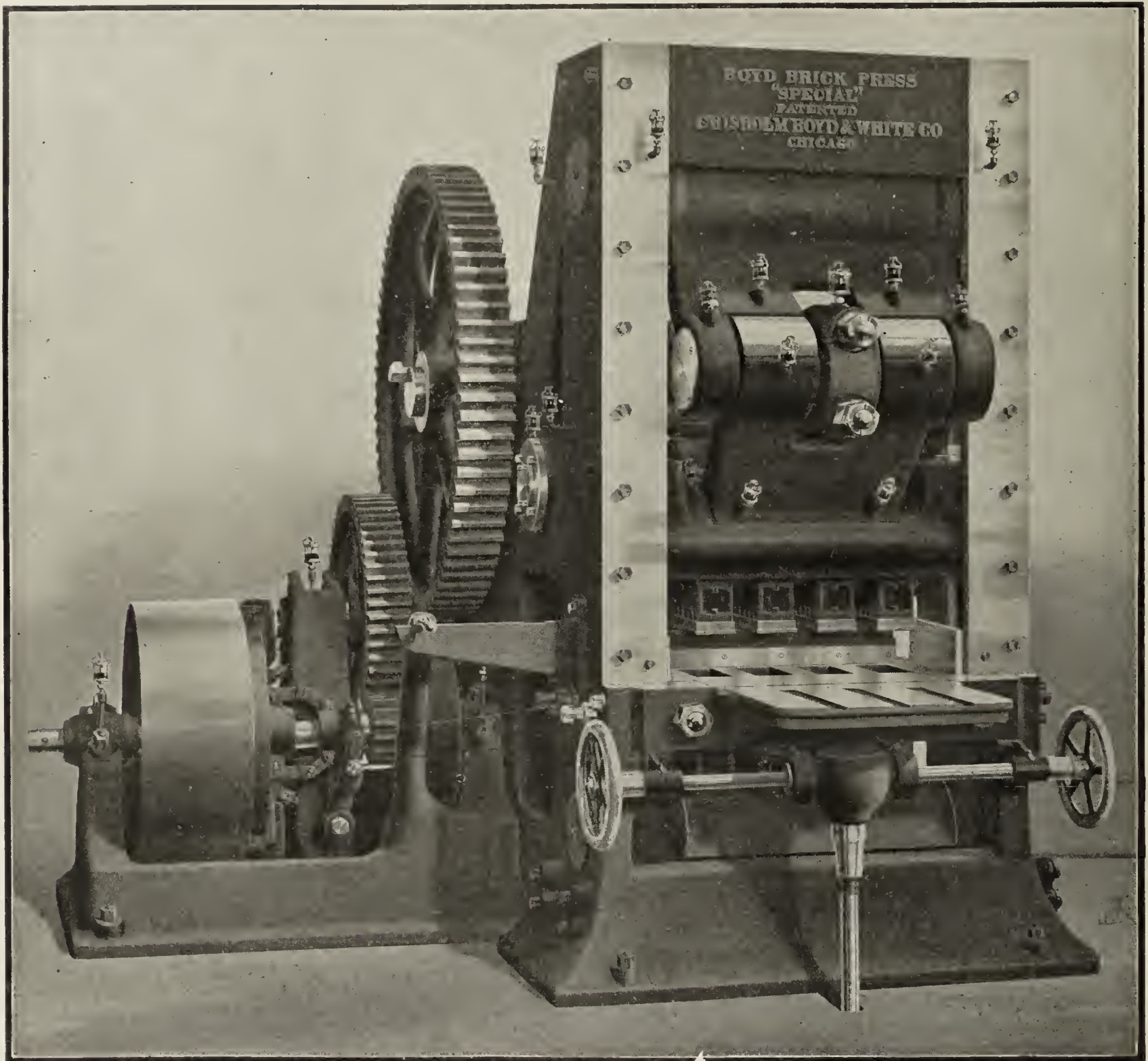
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Built in Two, Four and Six-Mold Sizes.



FOUR-MOLD SPECIAL.

BRICK PLANTS designed and complete machinery equipment furnished. Machinery and product guaranteed.

More Boyd Presses in use than all other Press Brick Machines combined.

The Boyd Press has great strength and endurance, great pressure and long dwell. Boyd Presses built 18 years ago are still in use and doing good work. Brick presses that last are the cheapest in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

C. C. WILSON, PREST.

ABRAHAM WHITE, CHM. OF BOARD

JOS. SHWARTS, V-PREST.

KAL SHWARTS, SECY. & TREAS.

TEXAS FIRE BRICK COMPANY

CAPITAL STOCK \$300,000

MANUFACTURERS OF

FIRE BRICK, FACE BRICK, ETC.

PLANT LOCATED
LASHER SWITCH
NEAR ELGIN, TEXAS

CORNICANA, TEXAS, May 30th, 1907.

Messrs. Chisholm, Boyd & White Company
Cor. Fifty-seventh & Wallace Sts.,
Chicago, Ill.

Dear Sirs:-

We are informed to-day from the plant that the Gear that they ordered from you had reached there.

We cannot overlook an opportunity to express to you our many thanks for the very prompt dispatch that you have responded to in forwarding the few little orders that we have given you, and which are a great convenience to us in operating our plant.

The writer is in charge of several large Texas Institutions, and transacts business in an aggregate sum of a very large amount; we have never though had anyone to pay as much attention to the quick dispatch of our business as your good selves.

We also wish to tell you that our present superintendent, Mr. C. T. Jackson, informs us that in his long experience he has operated fully a half-dozen presses of different makes other than yours, but for best results all the way round, none will equal the Chisholm, Boyd & White Four Mold Special.

It will no doubt interest you to know that the writer has secured four fairly good size orders for our brick out of five contracts he went after. We are expressing you some samples of our new Kiln #2.

Three or four Contractors have visited our plant and say that there is nothing equal to it in the South.

With assurances of our best regards and highest esteem, we remain,

Yours very truly,

TEXAS FIRE BRICK CO.

Per 
Secy. & Treas.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

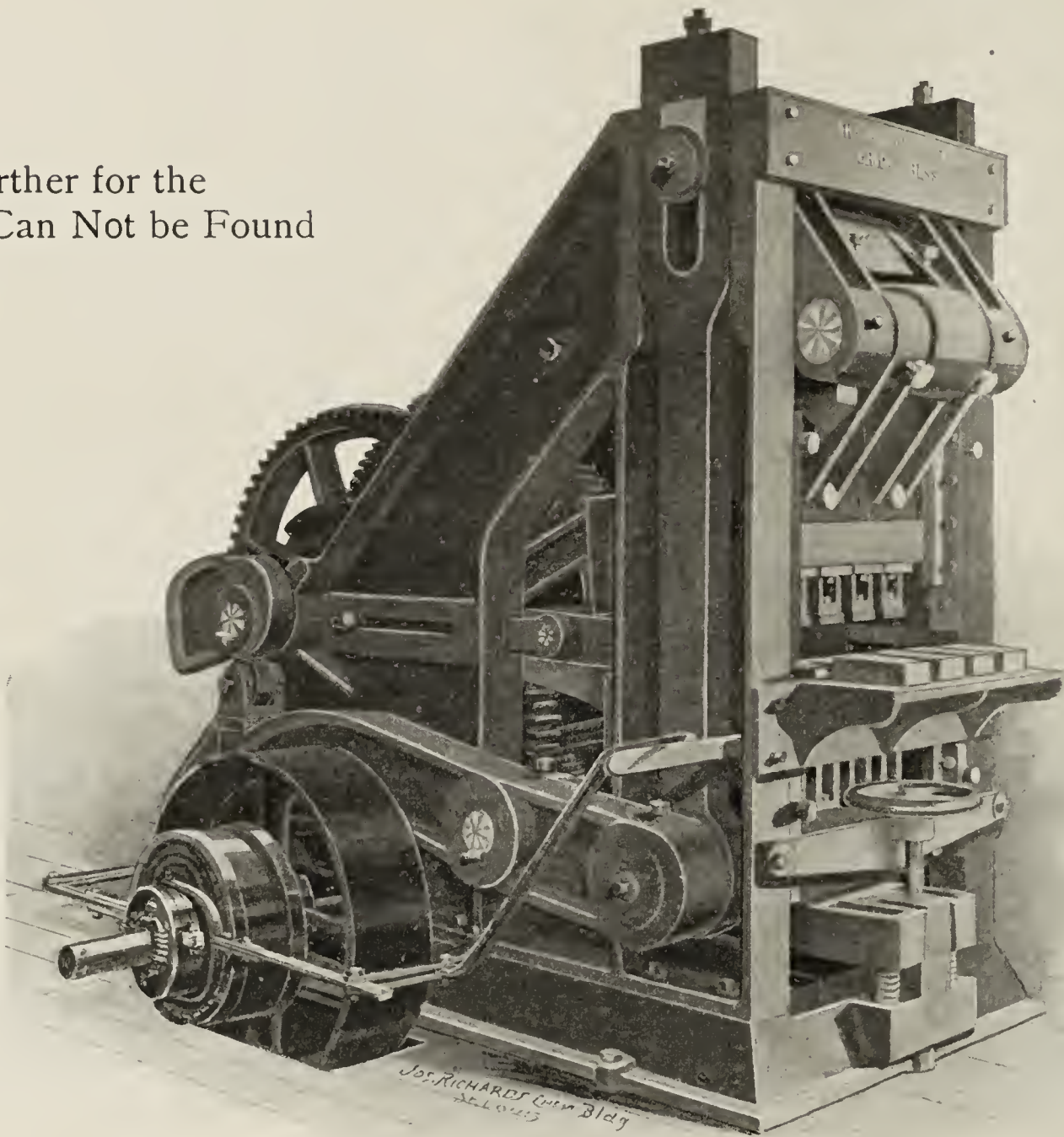
THE ONLY PERFECT BRICK PRESS

For SAND-LIME and DRY CLAY BRICK of Unequaled Quality.

FOUR MOULD MODEL.

Seek No Further for the
Equal Can Not be Found

The Best
is the
Cheapest
for the
Manufac-
turer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not top heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

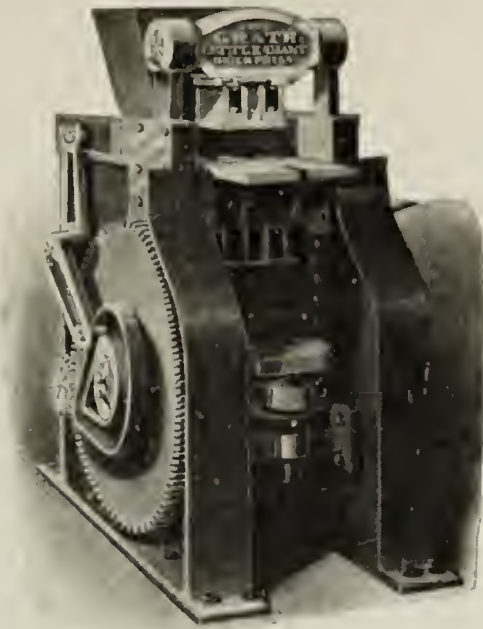
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

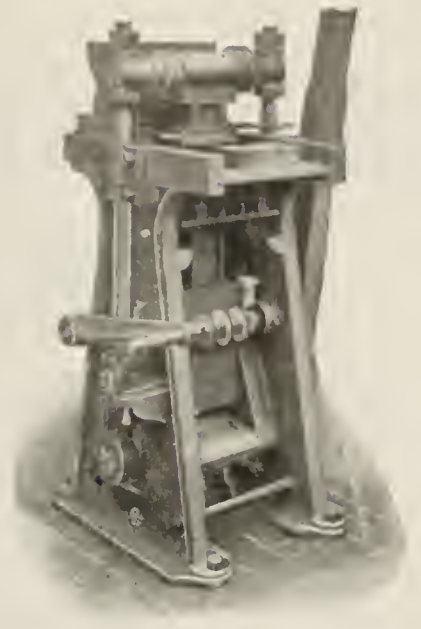
St. Louis, Mo., U. S. A.



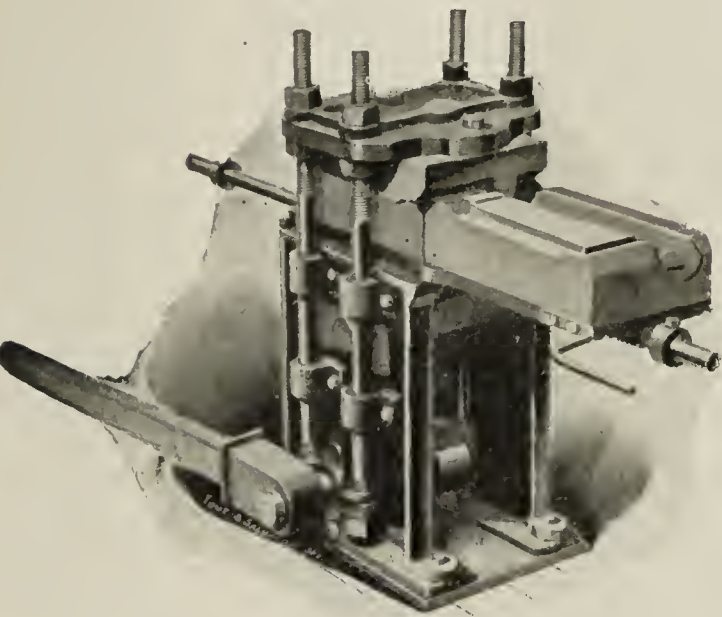
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



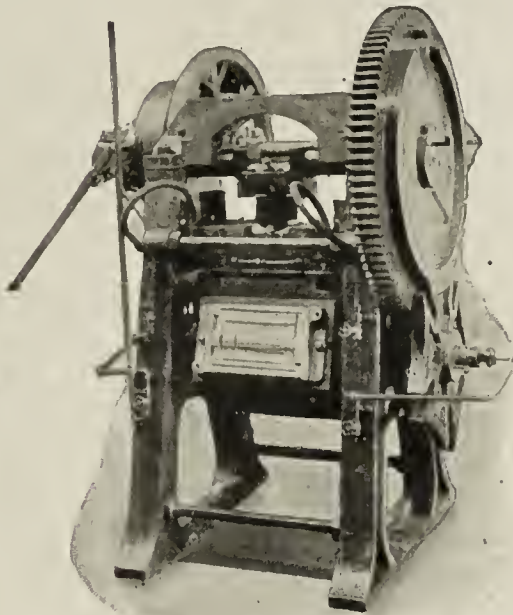
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



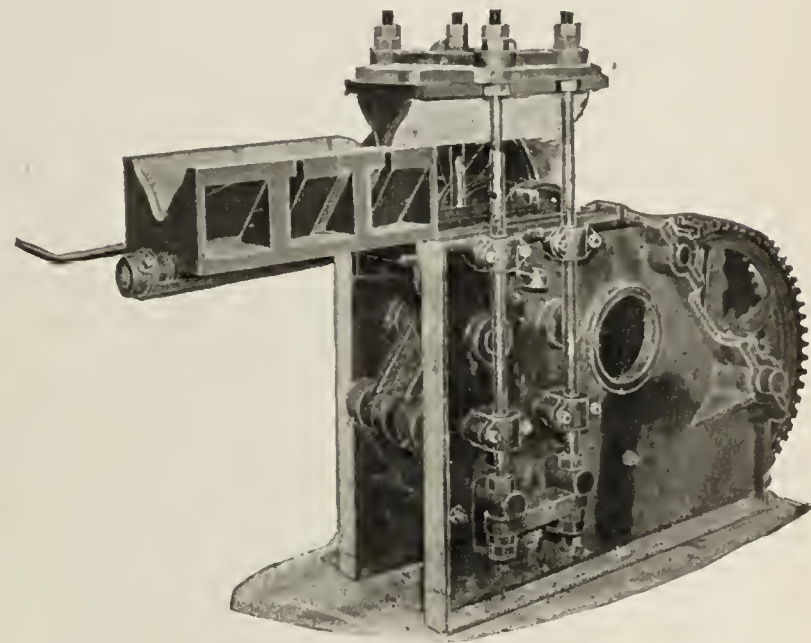
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

The New Grath Down=Draft Continuous Kiln.

Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the **ordinary single** down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get **advantage** of all **waste** heat from your burning chamber, which you **lose** and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in **same** manner as the direct, through the furnaces up the bag and down through the ware. **Simple** and **sure** in operation. GUARANTEED.

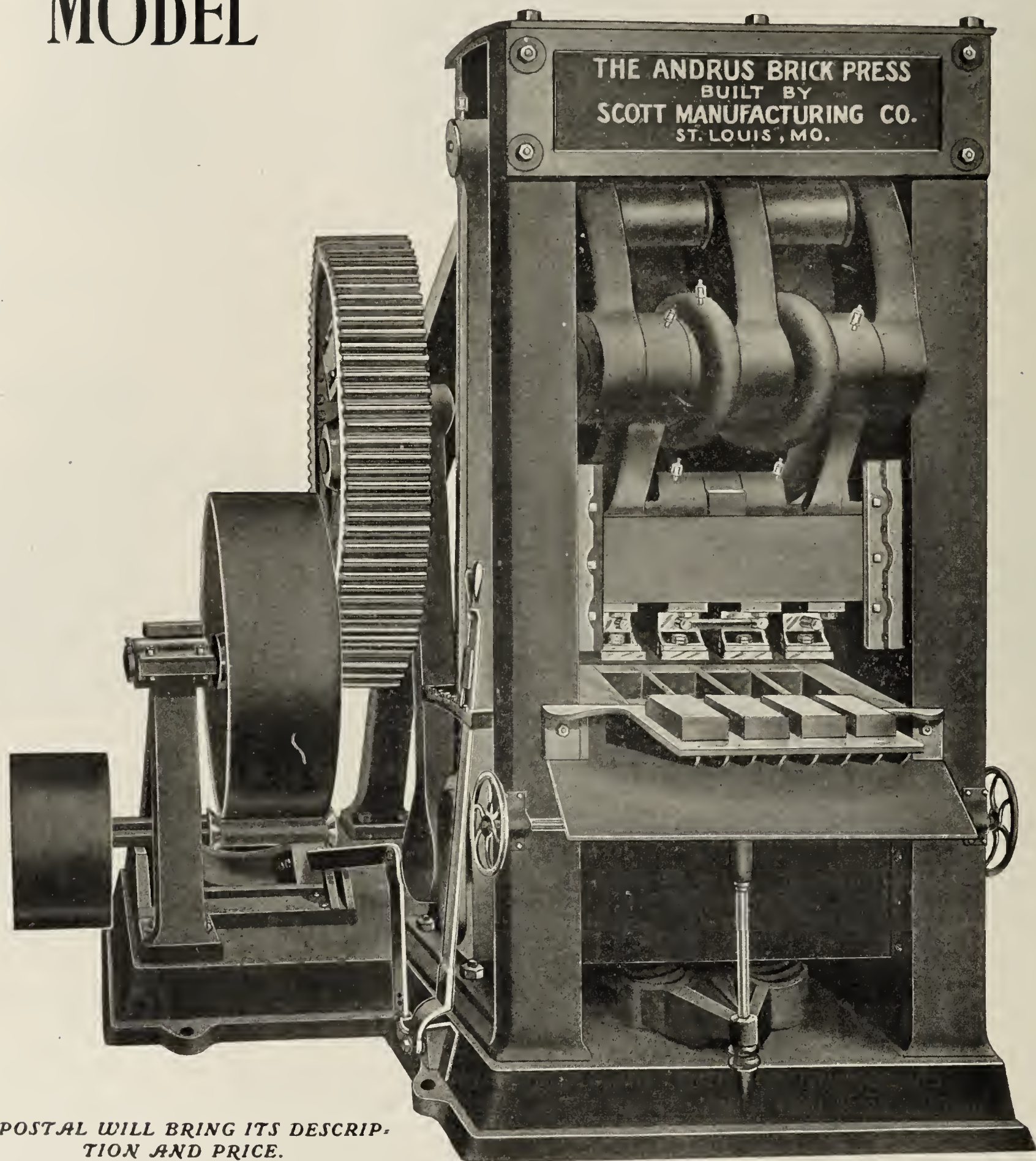
Lieber's Code.
Cable Address,
GRATH, St. Louis.

Illinois Supply & Construction Co.

HOLLAND BLDG.. ST. LOUIS, MO.

Long Distance
Phone
Bell, Main 235.

OUR LATEST MODEL



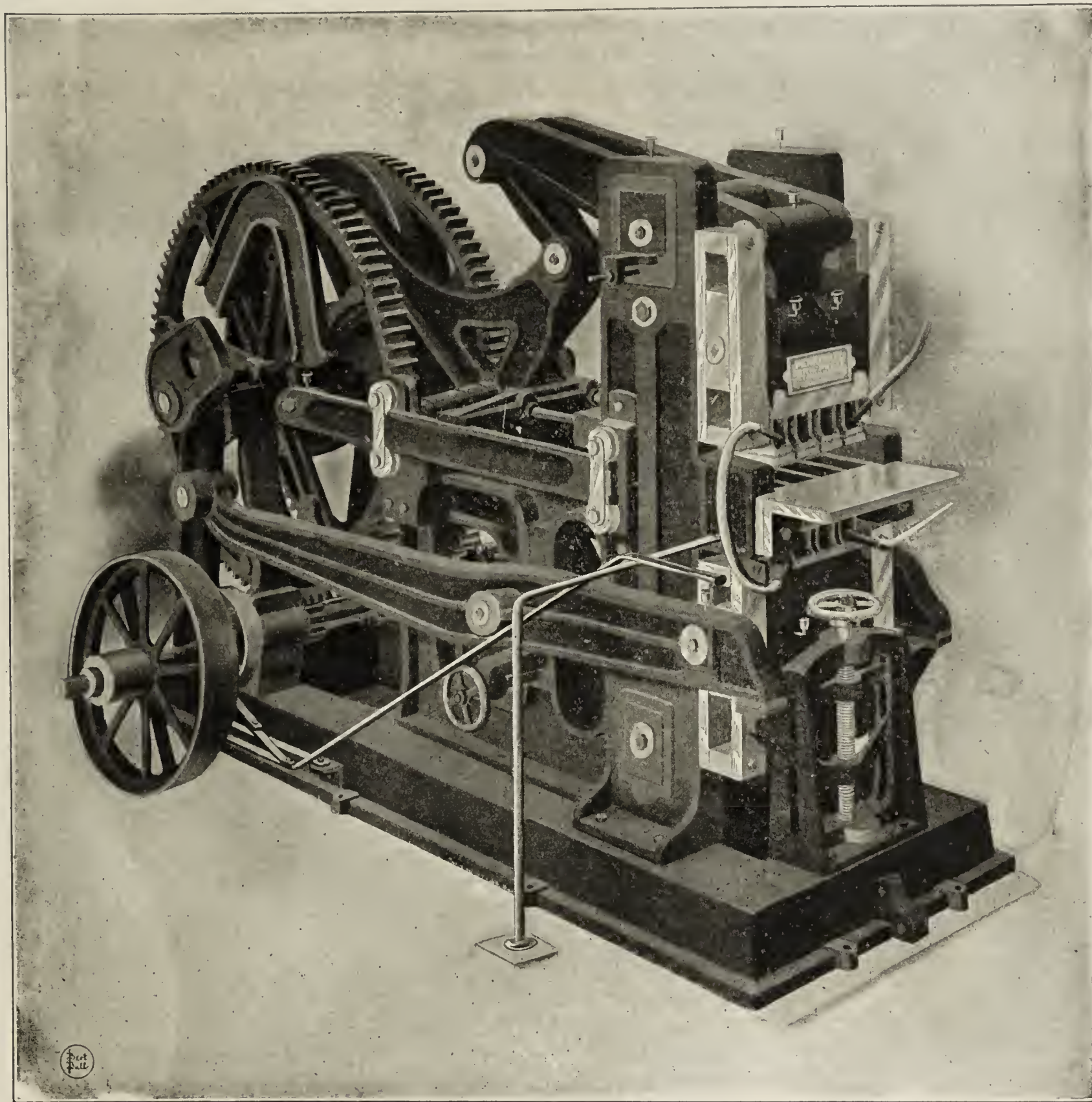
A POSTAL WILL BRING ITS DESCRIPTION AND PRICE.

THIS IS THE PRESS THAT SCOTT BUILDS.

Scott Manufacturing Company,
421 Olive Street, St. Louis.

The Fernholtz Brick Press.

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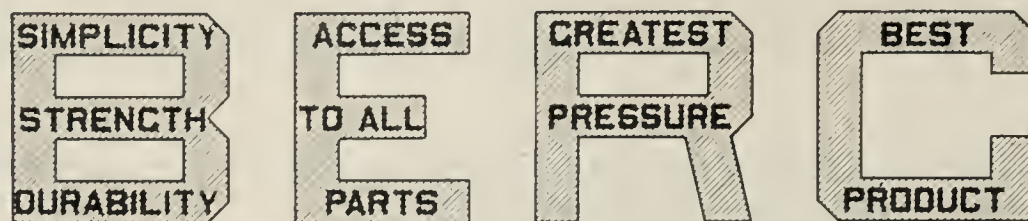


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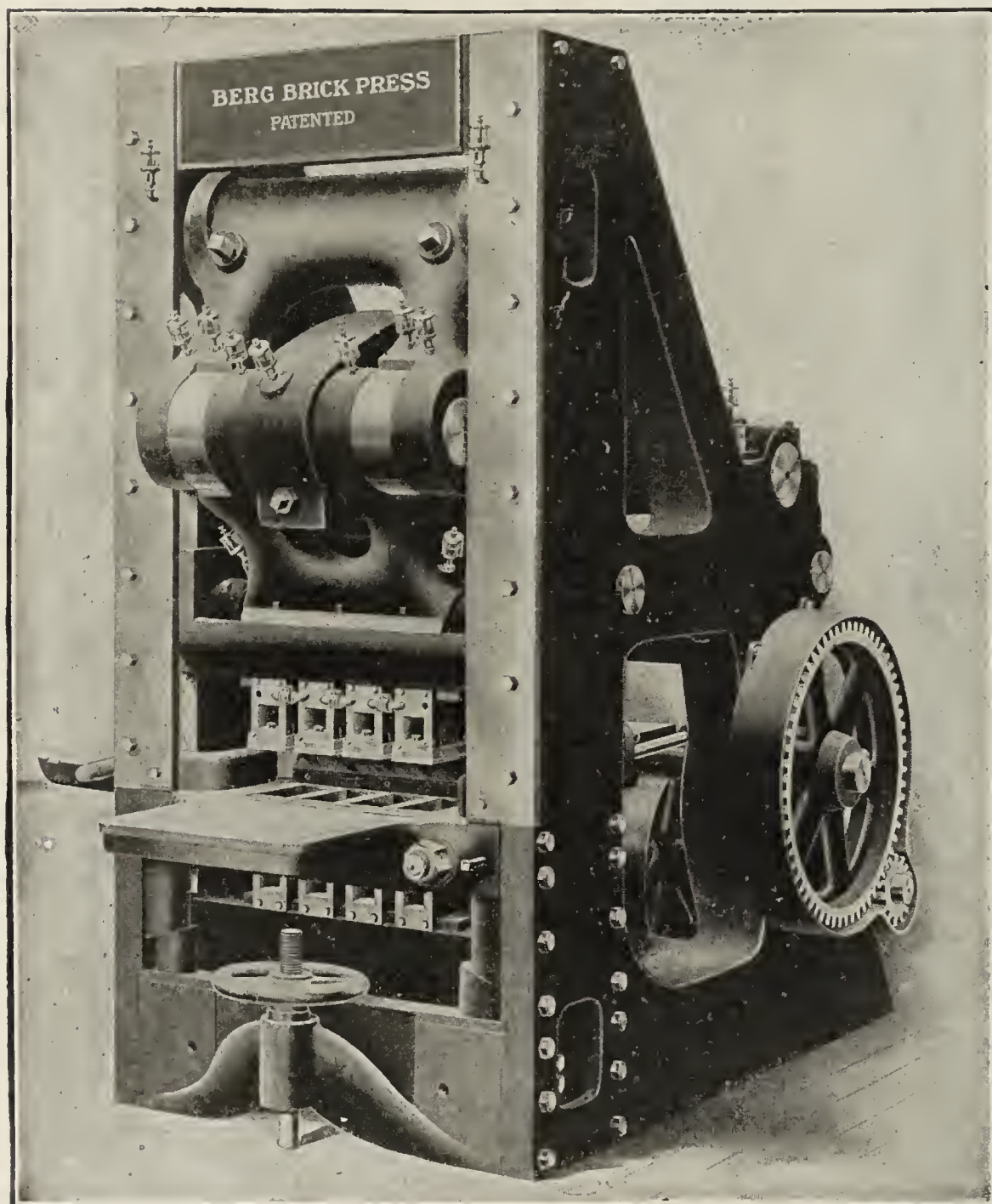
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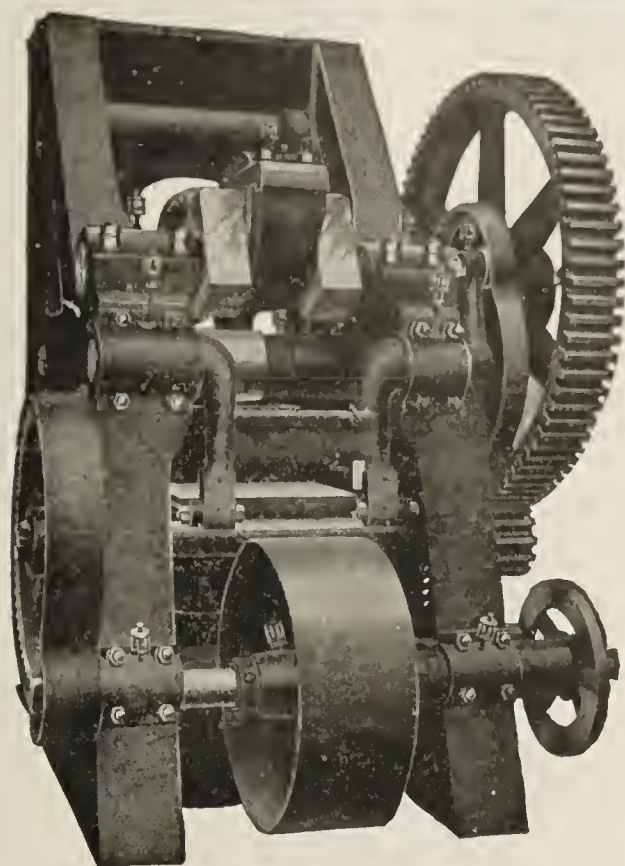
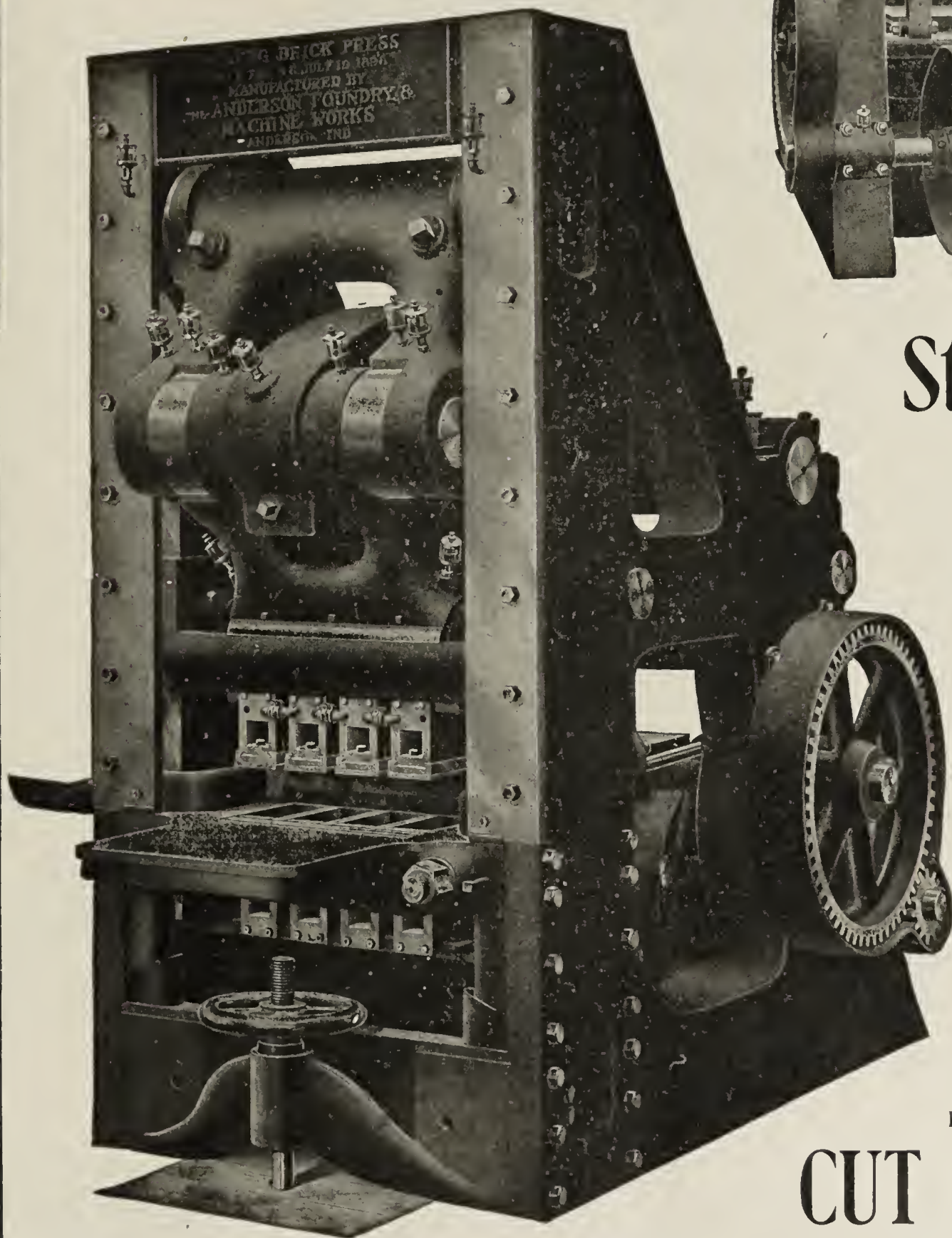
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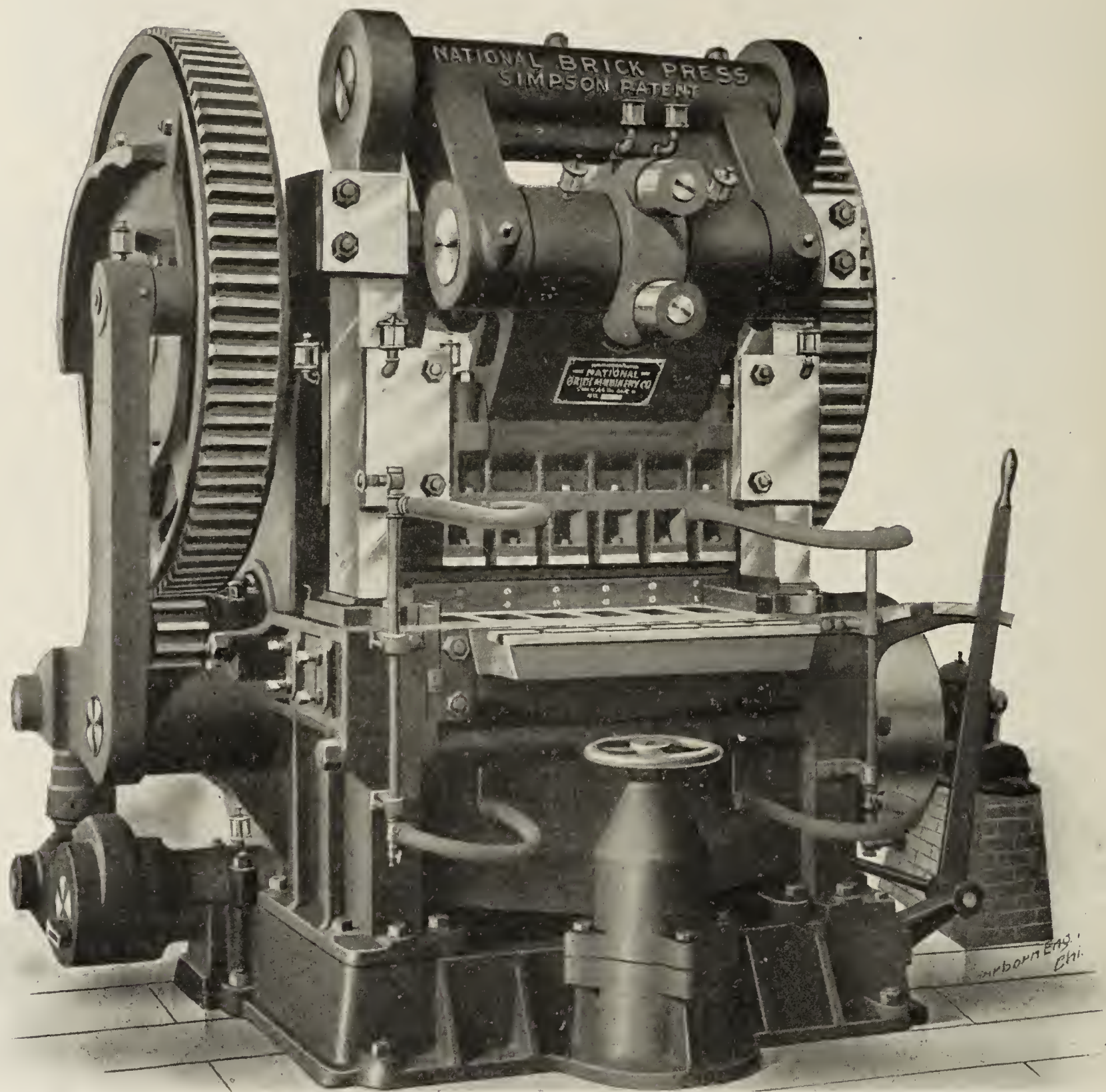
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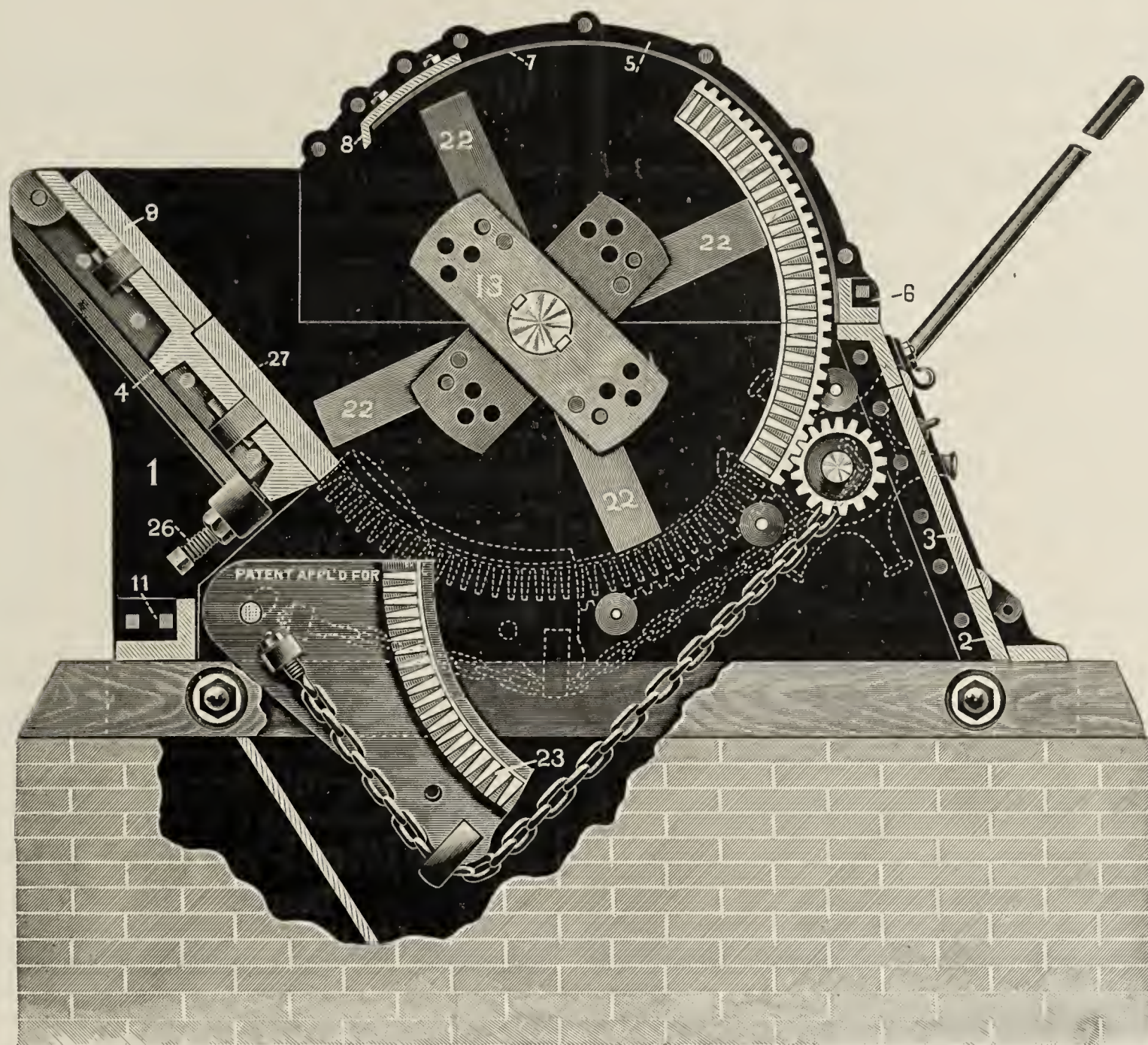
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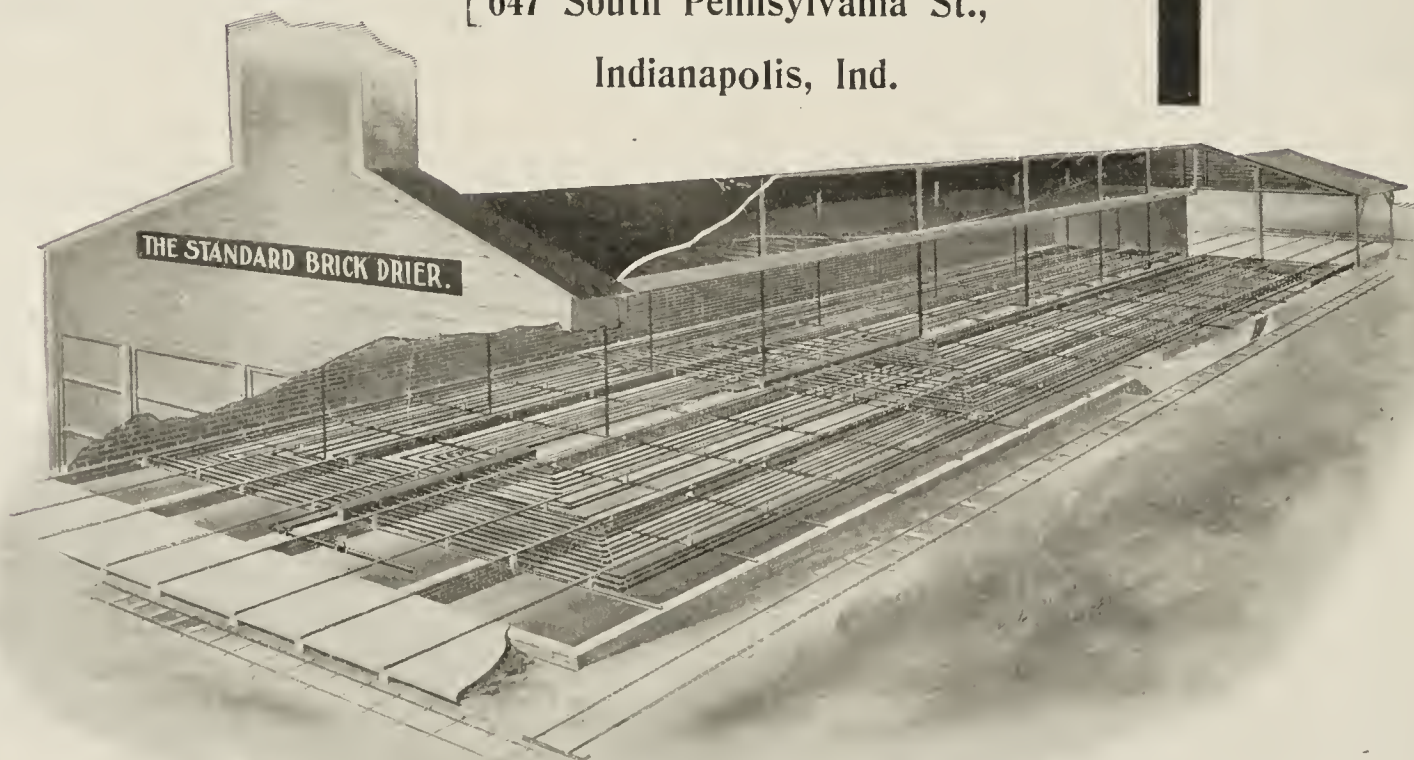
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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVIII.

INDIANAPOLIS, IND., AUGUST, 1907.

No. 2.

Written for THE CLAY-WORKER.

CHICAGO AND HER STREETS OF BRICK.

CHICAGO HAS VERY few perfect streets, very few attractive and pretty streets, very few streets devoted to traffic that present a decent appearance or are fitted for the daily use to which they are put. Chicago, in its streets and paving, is years behind Chicago, considered from the point of view of its great architectural achievements as exemplified in its downtown skyscrapers, in its smaller and more artistic down-town buildings, in its public buildings, in its commercial and textile structures and in its homes. Still more do the public streets and pavements of Chicago suffer in comparison with Chicago's great park systems, with their boulevards stretching for miles and miles, although there sometimes seems to be room for improvements in these same boulevards.

One admits these broad assertions as truisms—anyone does, and only the stranger, the newcomer who had little or no time for observation, asks, "Why?" The answer is brief. The problem and answer may be set off in one antithetical sentence:

Chicago has very few perfect or attractive streets; Chicago has very few streets that are paved with brick.

The streets in Chicago that are paved with hard, vitrified brick paving blocks have one or the other of the essential qualities uniformly lacking in most of Chicago's thoroughfares. If residence streets, the streets that are brick paved, almost without exception offer an attractive appearance. If they are business and traffic streets, compared block for block with streets paved with cedar blocks, macadam, or even the durable granite blocks, they show, even after years of service, smooth surfaces, good for horse, vehicle and driver, as against rough, pitted surfaces wearing on horses, destructive of wheels and springs of vehicles, and certainly not good for the nerves of the mortal who is bounced about.

There is something odd about the fact that the brick paved streets are as a rule more attractive in appearance—even apart from the aspect of the pavement itself. It is a fact, however, and can scarcely escape one whose eyes are open. It is explicable only on the theory which someone has termed "the psychology of brick."

There is something about a well-laid stretch of brick pavement that is conducive to neatness and cleanliness and even beauty in the borders and dooryards on either side. A brick paved street is a strong moral force in the community. For one reason, probably, it is a clean thing in itself. Of itself it does not give rise to dust in a residence district as does an asphalt or a macadam road. Its surface is too hard

and firm to disintegrate under any amount of pounding of horses' hoofs or grinding of heavy wheels or even the "suction-tear" of the speeding automobile wheels. The only dust that comes from a brick paved street is what is borne there by hoofs, wheels or winds. For the reason that it is possible, and indeed very easy, to keep a brick paved street clean the tendency is to make greater efforts to do it than are made on streets paved with any other material, except perhaps asphalt. Of asphalt pavements we shall say more anon.

Given, then, a brick paved street, and given that it is kept clean, the next thing is to watch the

dwellers along it get busy and clean up the lawns and the borders. The feeling seems to go abroad that it is up to them to spruce up a little. Living up to one's new brick pavement becomes a passion as controlling and consuming as living up to one's very best old blue china was to grandmothers and great-grandmothers in the long ago. The grass plats between sidewalk and curb are usually kept in order. The lawns are trim and neat, and with the aforesaid plots are kept well sodded. The trees are looked after, trimmed and encouraged to grow luxuriantly.

May street in far western Englewood offers a fine example



La Salle Street. Looking North from Washington. One of Chicago's Main Thoroughfares Where Traffic is Extremely Heavy.

of this sort of thing. From West Sixty-third to West Sixty-seventh street it is paved with the Purington paving blocks. This strip of four blocks has been down seven years, and is a splendid illustration of what brick paving means to a neighborhood, especially in a city like Chicago, where the property owner suffers from special assessment abuses probably more than in any other city. The paving might have been put down last year, for all the evidence there is of wear and tear, and yet it serves a street that is solidly built



West Sixty-Fifth Street. In Process of Regeneration. Brick Pavement New and Sound But Dirty.

up with residences and a few apartment buildings, and must in the very nature of things bear a great amount of traffic.

The residents along this street have very evidently lived up to their paving brick as the photograph taken looking south from West Sixty-fourth street shows. Judging from the appearance of other streets in this section of town, May street for these four blocks is a regenerated street. In the seven years since the brick pavement was first put down it has been pervading the atmosphere of the neighborhood, and has produced a spirit of "uplift" and reform. Other north and south streets are differently paved and have different characteristics. Some are paved with macadam; some are paved with the old cedar blocks that were first used. There is almost no asphalt in this section of the city. These other streets do not look like May street. The worse the pavement is, the worse the rest of the street looks. The ragged, old cedar block street with its abysses and its lakelets looks probably a good bit the worst of the lot. The plank curbing is rotted out and run down and dilapidated, too. The grass plot between it and the sidewalk is bare in large patches and gouged out. The trees are ragged, dying or dead. Frequently the lawns behind are not well ordered and the very houses seem to wear a shame-faced look. The macadam paved streets boast a somewhat more decent appearance—where the pavement is kept in good repair—but it generally isn't in very good repair and an air of neglect and careless abandon is the almost invariable result.

West Sixty-fifth street from Lowe avenue to Halsted street is a residence street in the process of regeneration. To be exact, it is partially a residence street. The brick has been down almost a year, but it was laid in a street much in need of uplift and reform, and the evidence of its presence has scarcely begun to show. In difficult cases, like this, it takes time for "brick psychosis" to work out well. As the picture shows the street is not kept especially clean as yet. Inquiries in the neighborhood, however, elicited the information that the street is cleaned at irregular and apparently quite spasmodic periods. That is encouraging and it will probably take time for this street to work out its salvation.

There are a good many small grocery stores on it and these are not conducive to neatness in a neighborhood. Moreover, it has long born the reputation of "not being much of a street" residentially speaking, and it would keep even an immaculate brick pavement busy living that down.

One of the finest specimens of a brick street in a fashionable residence district that has stood the test of nearly a decade and a half is the stretch of Fifty-third street from Lake avenue west to Woodlawn avenue. It is still in excellent repair and has not been touched since it was laid. It has been laid so long that no one seems to know just who is responsible for it. Brickmen are proverbially scrupulous and honest, and each of the local paving brick gentlemen refuses to make any claims—so far as can be discovered—lest his veracity be challenged.

The most noteworthy stretch of brick paving that has been put down of recent years covers a distance of more than a mile of Chicago avenue (Evanston). The Purington paving blocks have been laid from a point opposite Calvary cem-



May Street—An Illustration of Paving Brick Psychology. Paved Seven Years Ago.

etery north to Davis street, another brick paved thoroughfare in the heart of Evanston. This street carries the street cars for a considerable stretch and then continues as one of Evanston's most charming avenues. The first impression one has of Evanston on stepping off the train at Davis street, even without waiting to see the beautiful carefully groomed avenues of the wonderful suburb, is of unusual cleanliness. This is due of course to rigid sanitary laws well enforced, but it is the character of the pavement in the heart of the suburb that makes efficient enforcement of these laws practicable. Center avenue from West Sixty-seventh street north to West Sixty-fourth street is another example of the semi-residence, semi-business street paved with the Purington blocks. This street is in a new section of the city.

Of course the supreme test of a pavement, however, is on a traffic street and not on a residence street. It is the pavement which can best serve both uses that is the best for a city to adopt. Most of Chicago's down-town thoroughfares and outlying streets which bear chiefly heavily laden vehicles, are paved with granite blocks. Granite blocks are durable. That is their sole qualification. They are a cruelty to horses, even in good weather. After being in use a few years they are a nuisance to the pedestrian who tries to cross a street paved with them without turning his ankle. The blocks are still there, but they are rounded and too often the bed has slipped and sunk, and the surface offered is about as sorry a proposition as man or beast need wish to encounter.

One of the best tests ever given paving brick is that which the pavement (of Purington paving blocks) has under-

gone in the block between Washington and Randolph streets in LaSalle street. This is one of the business thoroughfares in the city. Over this block from morning until night pass heavily loaded wagon and mercantile autocars, busses, patrol wagons and fire apparatus. And these brick have withstood it successfully for twelve years and still present a good surface, infinitely better than that of the granite work in Washington street. On the west side of the street the same bricks have been torn up for work on water and gas mains well over one hundred times since they were first laid, and then back again. The pavement on that side of the street is not so even or sightly as on the east of the street, but still it compares most favorably with any other paving in the downtown district. South of Washington street the pavement was relaid—three years ago—and shows down-town brick paving at its best. This piece of work never cost the city a cent. It was put down by the Purington company as an advertisement, and has been worth the investment. Other cities have taken up brick paving generally, if for some peculiar reason the city of Chicago has not seen fit to do much with it. There are those who have an idea that the new administration may make some difference, a considerable change being under way in the board of local improvements, which has charge of this work.

West Van Buren street from Halsted street west to Center avenue is another example of the value of brick pavers on traffic streets. This pavement has been down for seven years, and is smooth and even, while the granite blocks in the center of the tracks are in frightful condition, as the photograph shows. Another fine traffic job is along Commer-



West Sixty-third Street, Chicago, Looking East toward Halsted Street.

cial avenue in South Chicago, where half a million brick were used to meet the heavy teaming requirements of Chicago's busy southern adjunct.

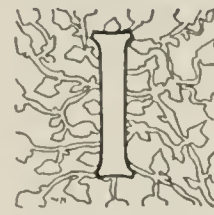
The automobile is beginning to be a new factor in the paving problem. The whirring tear of the mighty, rushing wheels is rapidly showing that asphalt and macadam will soon be shelved unless improvements can be found to aid them. Great grooves are worn in the asphalt pavement by the huge machines, and at the turns in the macadam boulevards and at crossings the roadway is soon torn up. There are many who think brick pavements would do much to solve the problem and have suggested them for park use for trial at least. The question, it is confidently asserted, would resolve itself to one of expense. The macadam would be cheaper at first cost, but the brick would last from five to ten times as long as the macadam without repair.

SCRIP.

Written for THE CLAY-WORKER.

THE ECONOMICAL GENERATION AND USE OF STEAM ON BRICK YARDS.

Heat Effects. (Concluded.)



IN PREVIOUS ARTICLES we have discussed the nature of heat, the methods by which it is communicated from one point to another—radiation, conduction and convection; and its effects of changing the volume and temperature of bodies. We are therefore prepared to take up now the effects of heat energy upon the molecular structure of matter. To these last mentioned effects the names fusion, or liquefaction, and vaporization have been given. Fusion is the name applied to that process by which a solid passes into a liquid condition; the reverse process, that is, the changing of a liquid into a solid, being termed solidification, while vaporization is the name applied to the process by which a liquid is converted into a gas. Gases of this nature are usually termed vapors, although this is simply a distinction without a difference, there being no known rule by which a vapor may be distinguished from a gas.

According to the science of physics, all crystalline solids and most amorphous bodies melt or fuse at certain definite temperatures. The physical laws evolved for the fusion of substances are as follows:

1. The temperature at which solids melt differs for different substances, but is always the same for the same substance, if the pressure bearing upon its external surface is constant.

2. After a solid begins to melt, no amount of heat will increase its temperature until the process of fusion is completed.

Consequently, in accordance with these laws, if energy in the form of heat is applied to a fusible substance, its temperature will rise until a certain definite temperature is



LaSalle Street near Madison, Paved with Purington Block in 1895.

attained, when the substance will begin to melt. This temperature is known as the fusion point of the substance, and no further addition of heat energy to the substance can increase its temperature until after it is all melted.

The energy applied to the substance during this period disappears so far as the thermometer is concerned, and for this reason it is termed "latent (hidden) heat," though "the heat of fusion" would be a more appropriate term. So far as can be discovered, this latent heat of fusion is consumed

in producing the rearrangement of the molecular system necessary to convert the solid into a liquid; and if the resultant liquid should again be allowed to solidify, the latent heat will again manifest itself, imparting heat to surrounding objects.

As an example of this process, if we mix a pound of water having a temperature of 174.65 degrees Fahrenheit with another pound of water at 32 degrees, the resulting two

pounds of water will have a temperature of $\frac{174.65}{2} + 32 = 103.3$

degrees, Fahr. But, if the pound of water at 174.65 degrees be mixed with a pound of snow or ice at 32 degrees, we shall again obtain two pounds of water, but the temperature of these two pounds will be only 32 degrees.

It is evident from a consideration of the latter mixture that $174.65 - 32 = 142.65$ British thermal units have disappeared in converting the pound of ice at 32 degrees into water at 32 degrees, consequently, each pound of this mixture now contains 142.65 thermal units of latent heat, since the original pound of water contained this amount of latent heat in addition to the 174.65 degrees shown by the thermometer. If we should now reverse this process by freezing the two pounds of water at 32 degrees into ice at 32 degrees, the 142.65 heat units of each pound would be yielded up and radiated to the surrounding air.

This is the reason why we may frequently avert disaster to our favorite flowers by placing a tub of water in our conservatories on the nights when frost threatens and heaters are still packed away in the gloom of the storage room.

A British thermal unit is, as has been stated before, the quantity of heat-energy required to increase the temperature of one pound of water one degree, Fahrenheit. Its equivalent in mechanical energy is 778 foot-pounds, a foot-pound being the amount of energy required to raise a weight of one pound a foot high against the force of gravity. So that the enormous sum of 110,981.7 foot-pounds of work is done in overcoming the molecular forces when a pound of ice at 32 degrees is converted into water at the same temperature. This amount of energy would, if expended in that way, project the pound of ice to a height of nearly twenty-one miles above the surface of the earth. It seems almost incredible that the molecular forces holding a pound of ice together would require such a considerable amount of energy in their overcoming, but despite the unbelievable aspect of the matter, many experiments have firmly established it as one of the incontrovertible facts of physics.

Nearly all substances require latent heat in fusing, and it is fortunate for brickmakers that it is so, since it would otherwise be scarcely possible to burn a kiln of brick to the vitrification degree as the brick would instantly melt upon reaching the fusion point. As it is, the latent heat of fusion gives the alert burner time to check his fires and reduce the temperature when he discovers that the bricks are beginning to melt. It is also of no little importance in the economy of nature, since, if ice did not require a large quantity of latent heat in melting, a single warm day in winter would convert all the ice and snow into water, thus producing most destructive floods.

In the first law given above for fusion it was stated that the fusion-point for any one solid was always the same, if the pressure remained constant. If the pressure changes the fusion-point will change also. Although the amount of pressure required to produce even the most minute change in the temperature of fusion is very great, and consequently, ordinary changes in atmospheric pressure produce results too small to be taken into consideration. For instance, the melting point of ice is changed only about one-eightieth of one degree, Fahr., by doubling the pressure upon it. When the pressures become very great, however, noticeable changes are produced in the temperatures at which the bodies fuse, and there is in consequence a connection between the change of volume of a body on fusion and the effect of increased pressure. If a solid expands on fusion, an increase of pressure would tend to raise the fusion point; while, on the other hand, if a solid contracts on fusion, the increase of pressure helps the process along, and the temperature to which it is necessary to raise the solid before it melts is lowered.

Ice, therefore, which, as is well known, contracts in volume when converted into water, has its melting point lowered by pressure. This property of ice is also of much importance in the economy of nature; since if water contracted in freezing, ice would sink as rapidly as formed and rivers and lakes in high latitudes would freeze in the winter time solid from top to bottom, destroying practically all aquatic animal life—a loss which would be a calamity indeed to those who knew the joy of angling for the gamey trout and the sportive black bass.

Closely akin to the fusion of a solid is its solution in a liquid; such as salt or sugar in water. The nature of this phenomenon is essentially a mechanical change of the molecular state from the solid to the liquid, caused by a physical, not a truly chemical, affinity of the particles of the liquid for the particles of the solid; though both affinities—physical and chemical—may be present in the solution at the same time and the distinction between them cannot be clearly drawn. In general, however, it may be said that the physical affinity of one substance for another requires that energy be absorbed from some outside source when the substances combine, while in the chemical union of two substances heat energy is given off to the surrounding medium.

The property by which the dissolving of a solid in a liquid abstracts energy from nearby substances is put to practical use by mankind in many ways. One of the most common is in the manufacture of "ice-cream." The cream is put into a can and surrounded by a mixture of broken ice, or snow and salt. The affinity of salt for water causes a liquefaction of the ice and the resulting liquid dissolves the salt. In each of these processes heat is required, and so the temperature of the cream is lowered sufficiently to convert it into "ice cream."

A solution of any kind also invariably requires a considerably lower temperature for its solidification than would be necessary for a pure state of the liquid. This principle is made use of in the process of refrigeration, or artificial ice-making, where a saturated solution of salt water called brine is kept circulating around a number of square open-topped cans containing distilled water. The brine being a solution is maintained without congealing at a temperature considerably below the freezing point of the water in the cans. The result is, that in a few hours, the latter are converted into ice cakes, which are then removed as speedily as possible, and the cans filled again with fresh water.

The laws of vaporization are very similar to those of fusion. They may be stated as follows:

1. The boiling temperature differs for different substances, but is invariably for the same substance if the pressure is constant. Vapors liquify at the same temperature as those at which they boil.

2. After boiling begins the temperature remains constant until the whole body of the liquid is vaporized.

3. Pressure raises the boiling point of all substances.

Unlike, however, the process of fusion, which does not begin until the temperature of the substance is increased to the fusion-point, the evaporation of a liquid is going on all of the time no matter what the temperature is. Even ice evaporates in this way. This form of vaporization takes place slowly and quietly at the surface and mixes freely with the air, diffusing readily through it.

Usually, however, for purposes of practical utility, it is desirable that the liquid should vaporize much more rapidly than it will do in the foregoing way, so heat is applied to the vessel containing the liquid. By this means the liquid next the fire is rapidly converted into vapor which rises in bubbles and breaks at or near the surface, producing a violent agitation termed ebullition, or boiling.

It is found on observation that for a definite pressure on the surface of the liquid, there is a definite temperature at which boiling begins, and which is maintained by the vapor during the continuation of the process. This temperature is called the "boiling point." If the pressure is increased so is the boiling point; if the pressure is decreased, the boiling point decreases also.

The foregoing principles of vaporization are applicable equally well to all liquids, but we will consider only the case of water, which will be taken up in our next article under the title of "Physics of Steam Generation."

THEO. RIZER.

HAIL THE CLEANERS.

Cleanliness is a great thing and everything that cleans, while it may not be a welcome sight at the time, is supposed to give wholesome results. There are, of course, cleaners and cleaners. Patent cleaners to take the spots off of silver table ware, pneumatic cleaners for taking the dust out of carpets while you wait and without your having to take the carpets off the floor, and there are cleaners for almost every purpose imaginable, but there comes across from California, word of some cleaners that may possibly be innovations in a way to some clayworkers at least, and that is, special cleaning machines for cleaning brick. The Industrial Magazine of San Francisco describes machines invented to facilitate the work of cleaning up and using the enormous quantities of bricks from the ruins of San Francisco. There was found in

ARTISTIC TOMBSTONES ERECTED IN CONNECTION WITH FACE BRICK AND TERRA COTTA.



THE SAME manner that it is possible to erect a nice brick building front, harmonious in color and architecture, so we can use the same effects in the erection of tombstones, which so far are usually made of sandstone, granite or marble. In connection with face brick only, or in terra cotta alone, or in combination with both, very artistic tombstones can be erected. Architect Paul Rublack in "Keramische Monatshefte," states that such a use is only very seldom adopted and little known in the building trade. The brick factories which are now operated are very up to date in the manufacturing of all kinds of shapes of face brick, and manufacture also a great variety of colors. In ornamental terra



Vault of the Liffe Family.—Brick and Terra Cotta Manufactured by Fried. Hoffman, A. G., of Siegersdorf.

the ruins and they are being used again, millions of brick that were not damaged at all by either earthquake or fire, and the only thing necessary to make these brick as good as ever and ready to use again was to clean off the mortar clinging to them. "In this work," says the Industrial Magazine, "many brick cleaning machines are employed successfully in San Francisco. There are various kinds of these machines. They are generally driven by electricity or steam. There are a series of rough, corrugated iron and steel wheels, against which the sides and ends of the brick are brought. The wheels, moving at a high rate of speed, strip off the hard mortar in a flash. The brick are fed into the machines by means of endless chain elevators; are partly manipulated by hand, and then carried away on broad metal belts. They are proving great labor saving appliances—working rapidly and tirelessly."

cotta the most complicated work is executed with great exactness and fine workmanship.

Nearly all great face brick factories in Germany have their own technical department, equipped with all facilities and a good staff of technical men, who are capable of executing a carefully designed job from the smallest sketch. This staff consists of draftsmen, chemists, modelers, etc.

Through the proper selection of ornamental brick and terra cotta it is possible to erect tombstones which will show great monumental possibilities. The selection of the colors play a very important part. Above all, a tombstone should have quiet, not loud, colors, and not more than two or three different colors at a time. Glazed terra cotta and brick should only be used for coping and cornice work, to protect the whole from the effect of the weather. The greatest care should be taken that the jointing is done properly, especially

when using the face brick. The joints should $\frac{3}{16}$ of an inch and should be cut deep. Through the depth of these joints the light effect is better, as the shadows are more pronounced and the whole presents a more artistic appearance than is found in buildings which are jointed closely.

Face brick and terra cotta which are not affected by the weather have proven that their use is unlimited. They always show a fresh color and in that respect they are just as good for tombstone material as if they were made from sandstone, granite or marble. The greatest argument in favor of face brick and terra cotta is the item of cost, which is much cheaper than any other material. The modern face brick and terra cotta technicist of today produces an excellent material as substitute for sandstone and granite, which resists the weather much better than these two materials.

In the pictures here produced, we find a few tombstones which are executed in face brick and terra cotta.

In Fig. 3 is shown a plain ornamental form with the use of face brick, with very few ornamental brick and terra cotta.

light and dark red, while the terra cotta has just a shade of difference in color.

The cost of such tombstones made of face brick and terra cotta, is cheaper in comparison to granite, sandstone or marble. The price of the tombstones as here reproduced is as follows, including the cost of erection and material: Figure 1, cast, 300 marks (\$75); Fig. 2, 1,200 marks (\$300); Fig. 3, 3,600 marks (\$900), and the cost of Fig. 4 is 1,500 marks (\$375). If these tombstones should be made of sandstone the price would be about twice or three times as high.

We hope that the little sketch of the use of face brick and terra cotta for tombstone erection will become more and more adopted by our German architects in designing such monuments.—Keramische Monatshefte No. 12, 1906.

DANGEROUS CONSTRUCTION.

The fatal collapse recently of the Bridgeman Building, in Philadelphia, while it was under construction, again concentrates popular attention upon the methods in vogue in rein-



Vault of the Hoffman Family.—Architect Prof. O. Hossfeld, Berlin. Brick and Terra Cotta Manufactured by Fried. Hoffman, A. G., of Siegersdorf.

The base is made of dark red pressed brick, while the pilaster and the cornice are made of light red colored brick. The two heads representing Christ are also made of light red terra cotta. The two panels in which the two black granite memorial tables are inserted, are made of sandstone colored gray brick, while the space between these panels and the pilasters is made of dark green glazed brick. The terra cotta vases and the cross are dark red in color. The whole represents a very quiet and impressing effect.

In Fig. 1 we find a more elaborate tombstone. The use of ornamental brick and terra cotta is much more pronounced. The colors are dark and light red, while all ornamentations are very sharp in modeling.

In Fig. 2 we find the use of glazed terra cotta in different colors, while the pressed bricks are also of different colors. The impression of this tombstone is very good, and the artistic taste is excellent. Prof. Hossfeld, of Berlin, is the designer of this piece of work.

Fig. 4 was designed by Architect Dalmer. The colors are

forced concrete building. That collapse was one of a too long list of similar and often fatal collapses of concrete structures in the past year. The Engineering News, the leading engineering journal of the country, editorially comments thus: "Carelessness, incompetence, and unscrupulous skinning, appear to have about reached the limit in reinforced concrete construction. Two failures of large buildings under construction, occurring within a fortnight of each other, both of which had their harvest of dead, is a serious blemish on the record of reinforced concrete. A radical reform is imperative. The gray of our concrete structures is already too much stained with blood. Shall we allow that stain to spread and grow still darker?"

The International Society of Building Inspectors, recognizing the popularity of that construction and its theoretical advantages, nevertheless warns people to only entrust that class of work to the most skillful hands, and it is making every possible endeavor to have our cities appoint special inspectors of concrete and to otherwise provide ample protec-

tion to the people from the effects of the too indiscriminate and unskilled use of the most hazardous and problematic mode of construction in vogue.

Written for THE CLAY-WORKER.

THE REQUIREMENTS OF GOOD FIRE BRICK.

By A. S. Atkinson.



AN ENGINEERING practice for boiler setting and construction of refractory furnaces of all kinds, the fire brick work depends to a large extent upon the nature of the bricks used.

In the past too little attention was paid to the relative value of fire bricks, and engineers accepted whatever materials were furnished them.

As a result, fire-resisting structures were often short-lived and inefficient. Ordinary bricklayers not accustomed to using fire bricks were also partly responsible for the failure of many structures to answer the purposes for which they were designed. More exact engineering practice today demands grades of fire clay brick which will yield certain definite results. This is particularly true of engineers engaged in the erection of high-class water tube boilers and stoker furnaces where the very best fire brick and masonry work is essential.

There are several grades of fire brick in use and most manufacturers supply at least two, if not three, of these grades. Engineers in the construction of boiler and furnace settings recognize the fact that the second and third grades



Tombstone Made of Brick and Terra Cotta Manufactured by Fried. Hoffman, A. G., of Siegersdorf.

of fire bricks have their proper use, but the confusion of one with the other is fatal to success. In the effort to secure the very best grade of fire brick, many kinds of clay deposits have been tried, and the finest form of fire clay called kaolin is composed entirely of silica, alumina and water.

Most of the fire brick used for boiler construction contains from 60 to 80 per cent. of silica and from 20 to 30 per cent. of alumina. The question of the relative amount of these two

materials found in the bricks and the absence of impurities, determines to a large extent the fire-resisting capacity of the bricks. Manufacturers of the higher grades of fire bricks, instead of trying to conceal the composition of their products from engineers, furnish today an analysis upon application. The leading engineers demand this before they recommend fire bricks for the highest work.

One of the best known fire brick on the market is guaranteed by the manufacturers to be composed of 33 per cent. of



Vault of Beug Family, of Stralsund. Architect E. Dalmer, Stralsund. Brick and Terra Cotta Manufactured by Fried. Hoffman, A. G., Siegersdorf.

calcined flint, 57 per cent. of raw flint and 10 per cent. of plastic clay. Recent analysis of the bricks made by a prominent firm of constructing engineers showed that the bricks were composed of 68.50 parts of silica, 29 of alumina, 1 of ferric oxide, 0.80 of lime, 0.25 of magnesia, and 0.70 of alkalis. When tested by heat the bricks glazed at 3150 degrees Fahrenheit and fused at 3300 degrees F. This high fire-resisting quality indicated the value of the bricks for furnace and boiler work. In boiler setting work the fire-resisting qualities of the bricks are the most important factor and must always be first considered.

A distinction must be made in bricks used in glass and steel furnaces and fire bricks for boiler settings. The former are silica bricks which will resist a very high temperature, but owing to their very brittle nature they are not suited for boiler work. Thus a sudden strong draft of cold air will cause them to splinter at the ends and corners. Where silica bricks have been used for designing arches and furnace walls, they have given poor satisfaction for this reason. In furnace work of this kind the expansion of the bricks must be considered. The iron and steel parts of the boiler expand and contract under variations in temperature, and if the bricks do not show a certain amount of elasticity they cause cracking in the structure. Nothing is so fatal to boiler work

as the chipping and breaking of the ends of the bricks and fire bricks differ from silica bricks in that they contract when heated.

The presence of certain impurities in fire bricks up to a certain percentage does not injure their value, but on the contrary improves their usefulness. Most of these impurities act as a flux when the bricks are heated. If the presence of the impurities is increased beyond a given point the bricks soften and even melt under high temperatures.

Engineers in using fire bricks detect the presence of carbonates of lime and magnesia by testing them with muriatic acid. A large percentage of either lime or magnesia reduces the fire-resisting qualities a good deal. Oxide of iron and salts of potash and soda may also be present in small quantities without causing trouble. The oxide of iron should not be in greater quantity than 2 per cent. and less than this is more satisfactory. In the best grades of fire bricks the impurities should not be greater than 2.5 per cent. Up to this point no great harm is done, but if these should be increased to 5 per cent. the fusing point of the bricks is reduced by 300 degrees F.

Some fire bricks become soft long before the fusing point is reached and naturally they prove inferior for boiler setting and furnace work. The reason for this is that flat arches made of such bricks would tend to settle and under high temperature a general collapse might follow. In addition to this there is the danger of pulling out the arches when soft in removing the clinkers and cleaning the fires. The purest fire clay found in coal mines under the coal, makes the finest fire bricks. It is found in dry pans and can readily be worked into the first grade bricks. Such bricks should be made with ground clay, mixed with quartz sand. In recent experiments with high grade fire bricks, manufacturers have secured exceptional fire-resisting qualities with ground fire clay mixed with quartz sand and a certain proportion of roasted quartz sand mixed therein. Bricks made according to this method have shown a power of resisting fire some two or three hundred degrees higher than the average first grade. The demand is for fire bricks of the very highest resistance, and anything which will add to their refractory nature without lessening the other virtues must count in the long run.

The cost of high grade fire bricks is not taken into consideration by engineers today in specifying for work in boiler setting. The initial cost of the bricks is a small item compared with their lasting and durable qualities. The first-grade bricks, costing \$35 per thousand, are cheap in the end if they develop all the refractory powers demanded of them. Second grade bricks, at \$30 per thousand, are sometimes suitable for constructing the combustion chambers, although the arches and skew-backs for stoker and smokeless furnaces should be built entirely of the first grade fire bricks. The lining of the fire box should also be composed of first grade bricks as far back as the bridge wall. The hardness of the bricks should also be considered for this work, although fire-resisting powers must command first attention. Fire bricks for the arches and skew-backs should not soften under 3000 degrees Fahrenheit.

Manufacturers of fire bricks must consider carefully the question of uniformity of size of bricks. A good many engineers prefer second grade fire bricks of a uniform size to first grade that are not uniform. Any such distortions as swells and bumps, which prevent smooth work, weaken the masonry. If the bricks are not uniform in size and shape, the high temperatures of the furnace tend to weaken the edges and cause chipping. Just as soon as the ends are chipped the heat penetrates beyond the line of the wall and causes more or less rapid disintegration. It is only with uniform bricks that proper masonry work for furnaces and boiler settings can be done. The surfaces should then present a smooth appearance, and the fire has little opportunity to get in between the bricks and destroy the bodying material.

Good fire brick being about 90 per cent. quartz sand, it is

impossible to duplicate it with any imitation. There are many patent compounds on the market intended to take the place of such bricks, but they are poor substitutes. A good deal of effort has been directed toward the manufacture of substitute fire bricks with the idea of having the solid wall fuse with the bonding material so that a flux will appear on the surface in the form of a glaze. It has been supposed that such a smooth, glazed surface will offer less opportunity for the fire to chip off the edges of the bricks. About the same effect can be obtained with fire bricks by adding a little salt to the bonding clay. Fire clay used as a bonding material practically has no cementing power, and its bonding strength is thus very low. Its fire-resisting qualities are not as high as the best grade of fire bricks, and its weakness is often the chief factor in the life of a piece of masonry work. Its chief function is that of a filler, and therefore, the smaller amount of space of space required for it, the better will the final results prove. If the fire bricks are very uniform in size, they can be put in arches with joints filled with fire clay no thicker than a sheet of blotting paper. Work performed in this way is bound to be very durable and satisfactory.

In building boiler settings and furnace backs, the mason frequently makes errors which are sometimes attributed to the failure of the fire bricks. The most common mistake is to use fire bricks which have been broken or chipped at the corners in transportation. In ordinary brick work a mason will cut and break his bricks to fit spaces and at the same time utilize half bricks and chipped bricks. In furnace and boiler work nothing is more fatal to success. No mason can break or chip off his bricks as accurately as the manufacturers can press them with machines. When the mason attempts to use all of the bricks purchased, he will make a poor job. Many rounded and broken corners will have to be filled in with fire clay, and as a result this part of the wall will disintegrate first. Sometimes after the first intense heat the brickwork shows signs of weakness, and the fire clay filling will quickly crumble.

Most manufacturers of fire bricks carry standard sizes suitable for almost any needs, and many engineers design their construction to suit the stock bricks. The shapes and sizes are approximately correct, but where special work is to be performed no stock bricks may answer the purpose. This is particularly true of the skew-backs, and it is not uncommon now for engineers to draw special sizes of skew-backs and have them made to order. This entails extra expense, but in a large, important boiler plant it proves the cheapest method in the end.

The second-grade fire bricks used in the rear of the boiler do not have to be set up with such great care, and the uniformity of the bricks may not be so exact. In nearly all furnaces, this rear work of second-class bricks outlasts the best work of the arches and skew-backs. The lining of the fire box usually gives out first, and replacing this with new bricks frequently imposes a cost upon the upkeep of the plant that is an important factor. The effort of engineers today is to secure a higher grade of material and work for the front of the furnace so that the brick lining will last as long as that in the rear. Then the repair of the whole furnace can be carried on at once, and the life of each fire brick masonry can be calculated upon in advance. With the cooperation of the designing engineer, bricklayer and manufacturer of fire bricks, this achievement has been well-nigh attained in some of the larger plants.

With uniformity of fire brick in size, contraction and fusing obtained, the question of the size of the red bricks for the backing should be carefully considered. They should be selected with as much care as the first-grade fire brick, for otherwise the welding of the two in a whole structure cannot be made exact and satisfactory. The appearance of these bricks is of less importance than their uniformity of size. Header courses must be put in about every fourth course

which gives close finished work. Unless the red bricks are of uniform size with the fire bricks it will be impossible to make the header courses perfect, and extra wide joints will have to be filled in. It is essential that all header courses should be laid up absolutely on a level.

In flat arch work with fire bricks for boiler settings, the skew-backs are the vital key to the whole situation. Upon their shape, size and durability, depend to a large extent the whole work. Usually, engineers select their skew-backs from the standard sizes carried by brickmakers, but in first class work, specially molded skew-backs to conform to the needs of the situation will give better results. The structural steel back of the skew-backs to carry the thrust of the arch, cannot support the load unless the skew-backs are designed to fit snugly in position and perform their work satisfactorily.

In building an arch of almost any degree, it is possible to perform the work well with stock or standard size fire bricks. In an arch of 60 degrees wedge bricks, tapering from two and a half to two inches, flat bricks can be used at about every fourth course. In fact, almost any circular work can be designed with the wedge bricks of standard size, and the joints between made very narrow. On the design of the skew-back, however, must the work depend chiefly for its final results. In the design shown, the employment of standard sizes of flats, wedge bricks, splits, and skew-backs, indicates how accurately the construction of a flat arch can be secured for furnace work. The working out of the design in advance is one of the most important features of the work, and this can be accomplished by a little study of the lists of sizes which most manufacturers of fire brick carry.

Engineers no longer accept the old idea that a fire brick is merely a fire brick, and all are about the same. The difference in hardness, durability, uniformity of size, and composition is well recognized today in the best engineering practice, and the manufacturers who cater to the best trade must conform their ideas to the needs of the the engineering profession. That many do this, is apparent in the grades of bricks which are coming from the best brick yards. Some of these fire bricks show as much improvement over those made a dozen years ago as the modern steam engine is superior to its prototype of half a century ago. In other words, the manufacture of high grade fire bricks has developed rapidly and attained a high degree of efficiency. As a result of this improvement the boiler and furnace settings of our large steam plants last nearly twice as long as they could under the old practice. Better materials and superior methods of manufacture are the key note of the improvement.

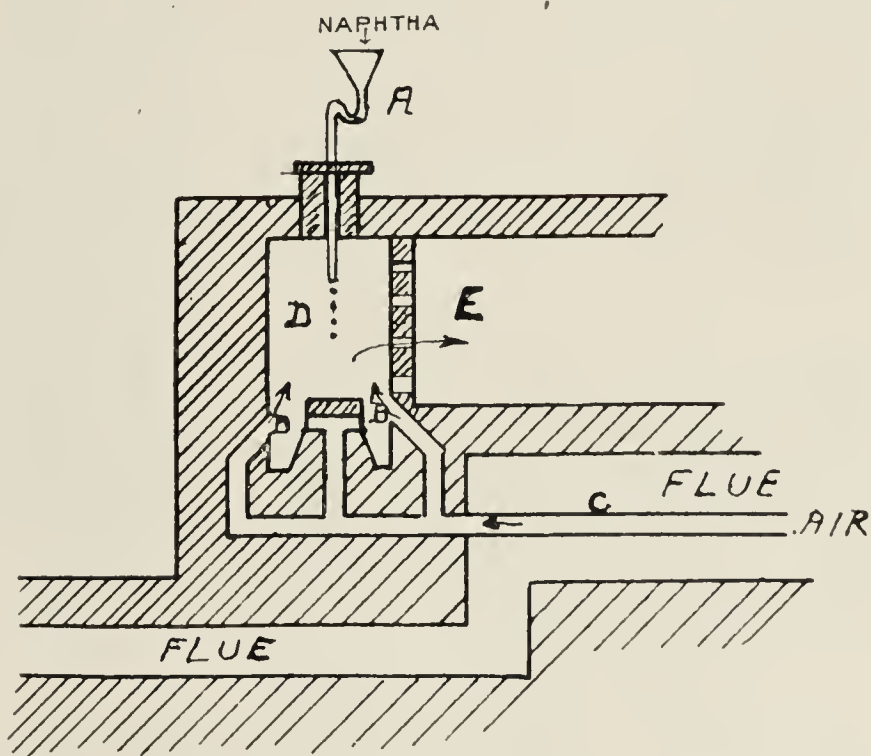
UNUSUAL BRICK WORK.

A delicate piece of work is being done at present by the Great Lakes Dredge and Dock Company in the removing of the first of three piers constructed to assist in the building of the mammoth brick waterworks tunnel placed in service in Cleveland a couple of years ago. This tunnel is eight feet in diameter and runs out under the lake bed for seven miles, where it receives water through an intake pier. Two other piers, which were built for the purpose of letting in light and ventilation at the time of construction, are to be pulled up by the roots and removed from the lake, as they are said to be dangerous to navigation. The crib work to pier No. 9 was destroyed by fire on the evening of July 22, by oil being poured over it and then being set on fire. The base of this crib, consisting of brick and stone, goes down thirty-five feet or more and joins the tunnel. The stipulation has been made that the lake must be dredged at that point to a depth of thirty feet. The biggest dredge ever constructed on the great lakes is at work on the job. If the long powerful arm goes a foot too far it may puncture the brick tunnel and cause endless trouble.



In Memoriam.—Dr. Herman Mackler, the noted German ceramist, died in Berlin on the 27th of April. Dr. Mackler was at one time connected with the testing station of the Royal Prussian Porcelain manufactory at Berlin, and later secretary of the Chemical Laboratory for Clayindustrie and Tonindustrie Zeitung.

Naphtha Fuel For Brick Kilns.—In the use of naphtha for firing kilns, we still find many crude appliances. Of late a device has been in use in a firebrick works in Eastern Russia, which is called the system "Gordejer." Compressed air is used for atomizing the oil. The oil itself is fed by gravity. The experiments with this burner have given the following results. For 1,000 brick burnt to a cone 18-19, 170 pounds of oil were used. The burnt firebrick were of a light yellow color, and hard in body. When burned with coal this kiln used on 1,000 brick burnt to cone 19, 75 pounds of coal. The following sketch will give an idea as to the arrangement for this burner.



Naphtha Burner and Fire Box.

The dripping process is here used. The syphon pipe (A) projects in the combustion chamber, and feeds the naphtha. In the combustion chamber this oil is mixed with the air, which comes through the openings by B from the pipe C, and gives preheated air. The pipe C is heated by the gases from the chimney, and in this way heats the air which is used for combustion. The gases from the oil after being mixed, come through E in the kiln proper. It is possible with this arrangement to obtain a heat of about 1,600 degrees centigrade. Wood is used to get the apparatus warm enough to make the proper gas from the oil.—Tonind, Z, No. 54, 1907.

The Porcelain Industry of Limoges.—According to the advices received here the manufacturers of Limoges are more satisfied now with the conditions of importations in the United States. The American custom house officers do not fancy the new rules as to the valuation of Limoges porcelain. The French Secretary of Foreign Affairs and the President of the Senate are now considering means to obviate the trouble of excessive valuation, and the French ambassador at Washington has already obtained satisfactory ad-

justment of the cause.—*Moniteur de la Ceramique*, No. 11, 1907.

French Ceramic School.—The annual examination for entering the French Ceramic School, which is conducted in connection with the National Manufactory at Sevres, will be held in August. The number to be admitted this year is only five, and the applicants should be between 16 and 18 years of age.—*Moniteur de la Ceramique*, No. 11, 1907.

Sagger Bodies.—The bodies used for making saggars usually contain 50 per cent. of grog. The balance is mostly a very plastic clay to bond the grog together. If the plastic clay is too fat, the use of a more sandy clay is preferred. The percentage of grog is mostly divided evenly between fine and coarse grog. Grog coarser than quarter-inch should not be used.—*Sprechsaal*, No. 23, 1907.

An Old Roman Pottery.—In the city of Trier, through excavation of some streets, there was found a large old Roman pottery. Several kilns, with all the fire boxes and canal arrangements, have already been uncovered. One kiln was still filled with burnt pottery. According to the pottery found, this factory did make all kinds of ware. The excavations are made under the direction of the Museum of Trier.—*Deut. Topf & Z. Z.*, No. 35, 1907.

Change of Editors of Sprechsaal.—Dr. W. H. Zimmer, member of the American Ceramic Society, who has been editor of the German Pottery Paper, "Sprechsaal," for the last six years, has resigned his position to take again active management in the Clayworking Industrie. Dr. J. Koerner, of Cadinen, has been appointed to fill the vacancy. Dr. Koerner is at present the technical director of the Pottery in Cadinell, which is owned and operated by the German emperor.

The Ceramic School at Hoeher.—The total attendance of the school was 92 students, of which 40 were regular day students, while 52 students were enrolled in the evening classes. The faculty consists of a director, four professors, two assistants and two practical foremen. The products of the school were exhibited at Dresden. The demand of the products of the school is very large, specially among the general public. The school held several meetings, at which papers were read on practical topics, which were largely attended by clay manufacturers.—*Sprechsaal*, No. 20, 1907.

Determination of Grog and Quartz in Clay Bodies.—In a paper read before the German Association of Clay, Cement and Lime Manufacturers by Prof. Heyn, about the determination of the grog contents in clay bodies, the application of the microscope for such determinations have proven very valuable. Quartz can be detected without much trouble, and the burnt grog particles can be readily distinguished from the clay particles. Another method also used by Prof. Heyn is to determine the percentage of loss on ignition in such mixtures, and from this loss calculate the amount of clay actually present in the clay body. The conclusions at which he arrives are as follows:—That for all material in clay bodies which pass through a 130-mesh sieve, we can derive at their composition, first, by a microscopic examination, it is first determined if quartz is present in the mixture. If this is the case, the percentage of quartz should be approximately determined.

Second:—By the determination of the loss on ignition can be determined how great was the percentage of unburnt clay material in the mixture. The difference between 100-t, in which t represents the amount of unburnt material, gives the percentage of grog present.

Third:—By the use of the rational analysis method with the use of sulphuric acid and caustic soda we can determine

nearly exactly the amount of quartz present analytically. The difference between the grog contents already determined and the amount of quartz found will give the actual percentage of burnt grog or clay material present. For such mixtures which contain materials which do not pass the 130-mesh sieve a regular elutriation analysis will be sufficient to determine the different materials present.—*Baukeramik*, No. 19, 1907.

Aventurin Glazes.—In a very interesting article about these glazes we find that the main points are not too heavy glaze layers, and further, continuous oxidizing fire in the burning process. Among the glazes which have given the best results under different conditions were the following receipts:

✓ Borax	286.7 parts
Soda ash	26.5 parts
Red oxide of iron.....	135.8 parts
Zettlitz kaolin	38.8 parts
Flint	434.9 parts
and	
Feldspar	83.8 parts
Potash	117.6 parts
Red iron oxide	135.8 parts
Boracic acid	186.1 parts
Flint	398.6 parts

These mixtures are first fritted in saggars in glost kilns and are then ground fine and ready without any addition for use. They mature between cone 01 and 1.

For lower temperatures, the following two receipts will give good results:

Borax	382.3 parts
Boracic acid	310.1 parts
Red iron oxide	135.8 parts
Zettlitz kaolin	38.8 parts
Flint	253.7 parts
and	
Feldspar	83.8 parts
Potash	117.6 parts
Red iron oxide	135.8 parts
Boracic acid	558.2 parts
Flint	217.4 parts

These last two mixtures are treated in the same way as the mixtures above, they mature, however, at a temperature of cones 010 to 09.—*Keram. Rundschau*, No. 13, 1907.

LESS WATER AND SAFER BUILDINGS.

F. W. Fitzpatrick, consulting architect of Washington, D. C., in a stirring appeal, urges the municipalities and individual owners to give at least as much attention to fire prevention as to fire fighting. He describes the efforts and expenditures made by cities for increased water supply and wonderful fire apparatus, while more and more fuel is constantly being added for possible conflagrations to consume. It is made quite evident that a much less effort in the right direction, the compelling of fireproof construction in all new buildings and the re-vamping of the old ones so as to make them less combustible, would soon effect a much lessened expenditure for fire-fighting appliances and insure greater safety to life and property. No country on earth tolerates such fire losses as we do; we have permitted to be destroyed over a billion dollars' worth of property in six years; our normal fire loss is a million dollars a day; the average city of three to five hundred thousand people is lucky when the year's fires do not net \$500,000 damage, while in Europe cities of similar size feel terribly stricken when more than \$50,000 represents the year's loss. Mr. Fitzpatrick's appeal through the press is but a reiteration of what he has so persistently preached to our city officers. Much good has resulted from this work, virtually hundreds of cities having revised and improved their building ordinances, but there is yet much to be done and it behooves all intelligent municipalities and thinking individuals to listen to and follow the advice of this keenest of observers and most public-spirited of experts.

ARTIFICIAL DRYING.

FOREMOST AMONG THE latest clayworking improvements and one which has had much to do with the success of the up-to-date brickmaking industry has been the introduction of "Martin" patent system of artificial steam brick drying. This system is one that is causing genuine surprise among the craft on account of its simplicity as compared with the results obtained.

Many brickmakers have hesitated to consider the installation of a brick dryer on account of the first cost, the extension equipment of rolling stock and the cost of operation and maintenance. The new "Martin" patent system referred to is presented as an economical method of drying either stiff mud or soft mud building bricks, as all cars are dispensed with; there are no tunnels, fans or other equipments of this kind to be kept in repair, and at the same time the brick are thoroughly dried over night. The brick made one day are ready to set in the kilns the morning following.

The heat used in this dryer is furnished by steam circulating through specially designed coils of pipe, those being supported by heavy cast iron columns. The buildings necessary to cover the dryer are inexpensive, as the dryers are



"Coming to the Quarter Turn," Conveying Brick from Dryer to Kiln.

so constructed that the roofs can be attached to the dryers themselves.

The "Martin" patent system is practically fire-proof, no wood work being used in its construction whatever. Another valuable feature noticeable in this new system is that of handling the brick into the dryers by the cable conveyor. This conveyor handles the green brick direct from the machine to the dryer with a great saving of labor and most satisfactory results. This conveyor also takes the brick after they are dried to the kilns, making the work a continuous one.

With this new "Martin" patent system the brickmaker is made independent of the weather or seasons. The sale and construction is under the supervision of the factory office at Lancaster, Pa., and the manufacturers and owners of their important patents have authorized no one to sell the "Martin" patent system rack pipe steam brick dryer, and it is to your interest to consult The Henry Martin Brick Machine Manufacturing Company, Inc., if interested in handling or drying brick in the most economical manner.

The accompanying illustration, together with those on pages 216 and 217, were taken at the Union Brick Company's plant, at Shamokin, Pa. This plant is a 30,000 daily capacity plant, one cut shows the interior of dryer building, cable conveyor, etc., and the one on this page shows the in-

terior of the kiln sheds with the dried brick coming to the quarter turn, which takes the pallets with the dried brick into the kiln. This cut also shows the gravity carriers for taking the empty pallets from the tossers to the under cable.

PRESSURE FROM OBJECT LESSONS.

Every once in a while some serious conflagration furnishes the world with an object lesson on the necessity of more fire-proof constructions, and it seems that we need the special pressure furnished by these object lessons to keep us duly thoughtful and keyed up to the highest pitch on this subject. The Geological Survey is now taking a little part in this good work, as it does in many things of interest and value to the building world, as may be observed from the following report prepared by Beatrice D. Wood, of the U. S. A. Geological Survey, in Press Bulletin 285:

"A great fire, resulting in the sacrifice of hundreds of human lives and the loss of many million dollars' worth of property, is possible in every city of the United States. The calamities of Chicago and Baltimore might be duplicated in New Orleans or St. Louis. An earthquake in New York equal in intensity to the one in San Francisco would cause an appalling loss of life and property. Investigations made by three of the most competent structural experts in the country have led them to the conclusion that there are no absolutely fireproof buildings. Not that fireproof buildings are impossible, for, according to these experts, structural materials may be so selected and used that adequate fire protection is practically assured; but in the effort to cheapen construction in order to obtain greater interest on investments, owners of buildings have neglected or ignored perils to lives and fortunes.

"Soon after the San Francisco earthquake, the Interior Department at Washington, through the United States Geological Survey, assigned to Richard L. Humphrey, secretary of the National Advisory Board on Fuels and Structural Materials, and Prof. Frank Soule, dean of the College of Civil Engineering of the University of California, the task of investigating the action of the fire and earthquake upon so-called fireproof buildings. At about the same time the War Department assigned a similar task to Capt. John Stephen Sewell, Engineer Corps, U. S. A., whose reputation as an expert on fireproof building construction is international. After a thorough investigation these officials have prepared a careful report, which has just been submitted to the Interior Department and will soon be published by the Geological Survey. The conclusions presented in this report are of great interest and value.

"Mr. Humphrey, emphasizing the fact that the lessons of the Chicago and Baltimore fires are still unlearned, declares that a remedy for existing conditions can be had only by the enactment of strict building laws which will compel fireproof construction. Professor Soule estimates that the earthquake caused directly less than 10 per cent. of the total loss at San Francisco, and that of the subsequent and indirect effects—the paralyzing of the water supply and its distributing system, the starting of a fire impossible to extinguish with the means at hand, the death of at least 500 persons, the destruction of \$500,000,000 worth of property, and the remoter damages to business, commerce, and labor—nearly all might have been prevented by wise foresight and provision. Captain Sewell points out the fact that fires and fire tests have proved con-

clusively the inadequacy of commercial methods of fireproofing as at present applied.

"The recommendations of the experts as to the essentials of fireproof construction are definite and positive. High, steel-frame office buildings, properly braced, are declared to be stable and reliable, and concrete and re-enforced concrete structures are placed high among materials well adapted to withstand earthquake and fire, while hollow tiles and hollow concrete, although not in the past universally successful, may be so employed as to yield most satisfactory results. Concrete floors with metallic mesh re-enforcements are strongly recommended for strength and fire resistance, and wire glass, metallic rolling shutters, and metal sash have proved such excellent fire protectors that wise economy demands their use in every important building. Other materials and measures equally important are enumerated, and it is believed that their adoption, while involving increased cost of construction, will insure permanence of structure and at the same time greatly reduce rates of insurance."

BRICKMAKING IN THE SUNNY SOUTH.

FOR MANY years, McIntire Bros., of Montgomery, Ala., have been a strong factor in the brick industry of that section. The brick plant is situated in easy reach of the city and has ample shipping facilities, so they are enabled to dispose of their product to every advantage.

Montgomery County, Alabama, has probably the finest



General View of McIntire Bros. Building Brick Plant.

clay beds in the South. It is a very strong plastic clay and runs from 15 to 20 feet in depth, and makes a strong building brick of light red color. Another advantage is, the clay beds are not subject to overflow from the river and only the surface water has to be pumped out.

This plant has been built with care and judgment, and is laid out so as to handle the brick with every possible labor saving arrangement. The power plants consist of two 100 h. p. boilers and one 125 h. p. engine. The machinery used is one Raymond hoist and pug mill and one Chambers No. 7 end cut machine, making 50,000 brick per day, and one 10-track Standard dryer and six up-draft kilns.

Aside from being an up-to-date plant and making a good building brick, this plant is owned by two of the best fellows you ever met and should you ever be near Montgomery, you will miss a treat if you fail to call at this plant and get acquainted with Messrs. Jas. and Jno. McIntire. Every brick-maker is welcome and it is always a pleasure to Mr. McIntire to show any one his plant and give them the benefit of his experience, and he has some very interesting stories to tell of his first steps in the business.

This plant is now turning out 1,000,000 brick per month and has prompt sale for the entire output.

Stuyvesant Fish hits the nail on the head when he says that the country is all right west and north of Wall street. Of course it is. There is no necessity for the whole country to have the colic every time Wall street eats an overload of green apples.—Ex.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF NORTHWESTERN OHIO.



THE CLAY INDUSTRIES of this city have not experienced the prosperity promised by the indications of the early season. As compared with last year, the number and magnitude of the improvements is far below what conditions should warrant. The records at the building inspector's office show not only no increase this year as would naturally follow the growth of an important city, but an actual and material falling off from those figures. While it is true that there are several expensive buildings under way, they mean simply the carrying out of the contracts entered into some time ago.

This condition is accounted for by many people as being the natural result following the criminal prosecution of nearly a hundred of the foremost citizens of Toledo, for alleged conspiracy in restraint of trade, in violation of the Valentine law. Not only were the lumber dealers and the plumbers indicted, but the brick dealers were likewise caught in the drag-net when cast by the grand jury last April. Whether



Emptying a Kiln of Building Brick.

technically guilty of some violation of law or not, the effect upon the business community has been anything but wholesome, and a depression in building business was almost immediately perceptible.

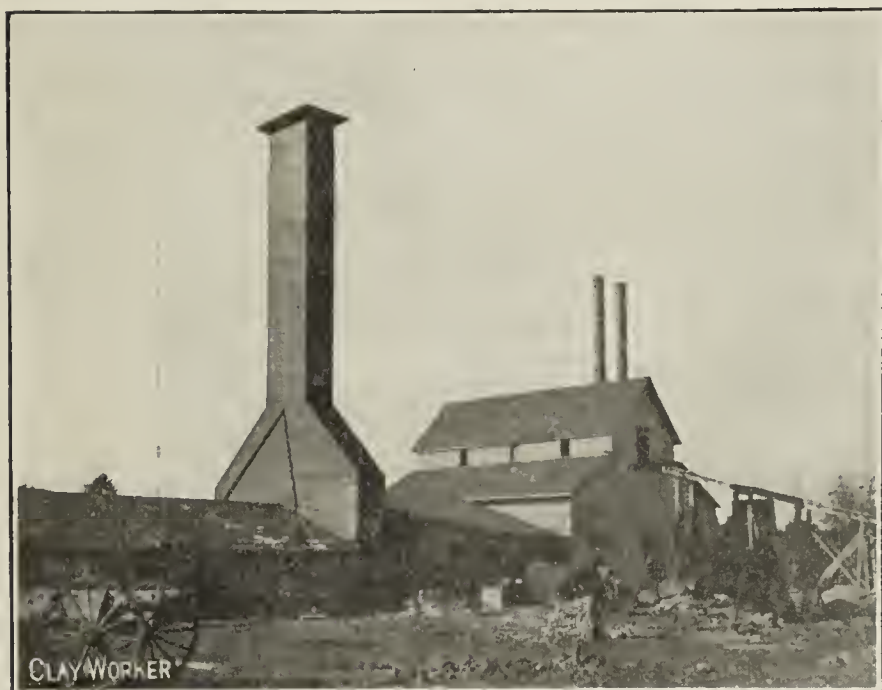
Building permits for local improvements began to fall off almost as soon as the indictments were returned into court. Those who contemplated contracts for work in the building line at once faltered, and after some hesitation declared further negotiations off for the present. Not that they were being held up in the matter of prices on building brick, for it was well known that they were paying no more than others outside the city and within a radius of a hundred miles, and in many cases not as much by considerable, but the uncertainty of matters locally acted as a deadener.

The came the crash of the East Side Lumber Company, and the announcement that others were being affected financially by the expensive litigation, and this, followed by the administering of the maximum penalty on the brick men by Judge Morris, in the face of the fact that the so-called illegal organization had been dissolved after many years of operation under the advice of competent counsel that it was legal, and the carrying of the cases to the higher court with the announced intention of fighting through to the United States Supreme Court, all of which have added to the uncertainty and consequent business depression.

Those who would otherwise have invested their capital

in buildings, hesitated to enter into contracts without knowing where the end would be. They were evidently not anxious to have their contractors or supply men thrown into jail or bankrupted while carrying out agreements with them. The immediate result of the whole business has been that the community instead of being bettered by the prosecutions has suffered a heavy loss in the building trade this season, and whether it will again assume the normal by next season depends much upon the attitude of the local officials and the extent of their trust busting methods.

The losses occasioned by these unfortunate circumstances have not fallen upon the local brick dealers as upon many others. There has been a good demand for the products of the local yards, from the surrounding territory, and the Toledo yards have found no difficulty in securing a good market for their entire output. Taken all together, the season has not been discouraging for Toledo brick men. Prices now remain just about where they were before the Toledo Brick Supply Company was dissolved. Indeed there is no reason why they should decrease, for they have at all times been quoted at the cost of production plus a reasonable profit, and local dealers have announced that rather than sell at a loss, if such be necessary to satisfy public sentiment, they will close their yards and go out of business. Such action does



The Standard Brick Dryer.

not seem necessary, however, so long as there is a ready demand from outside territory for all of their output at fair and living prices.

Among new brick structures for Toledo, are the storage building of The Moreton Truck and Storage Company, to be erected at a cost of \$18,900, and an \$8,000 brick barn for the same company. The Michigan Building Company will also erect a brick store building in the near future at a cost of about \$12,000.

Charles McKinney, a Toledo contractor, who was awarded a \$25,000 contract of street paving at Holland, Ohio, announces that he was compelled to abandon his bid because of inability to secure the kind of brick stipulated for. McKinney is emphatic in his denunciation of what he terms "ring" in the paving brick business of this section. Said he, "Before a contract is let those in the ring fix it up between them which brick shall be used. When it comes to a show down and the contract is to be let, the lowest bidder does not always get the job. It turns out that unless he has bid on the brick the makers have decided upon he will be told by the supply houses that they are all out. He must tell the city that he can not get the brick on which he submitted figures, and the municipality lets the contract to the man who can get the brick."

William Gruenke, of Toledo, was recently awarded the

contract for the building of a two-story school building in that city. It will be constructed of brick at a cost of \$30,000.

Three school building contracts were recently awarded in various parts of Ohio, which will require a large number of brick in their construction. The Wapakoneta high school building awarded to the Buckeye Churn Company, of Sydney, Ohio, at a cost of \$40,000; a school building at Bellefontaine, Ohio, costing \$55,000, awarded to Valentine Heil, of Lima, Ohio, and the Amherst building to Antone Schmitz and Duncan Gray.

Steubenville, Columbus and Lima will be in the market for hard burnt paving brick in the near future. Legislation is about completed calling for paving improvements in all of these cities.

The City Council at Lorain, Ohio, have ordered the removal of the Barber Asphalt Company plant in that city to a different location. The action was occasioned by the complaint of residents who found fault with the dust produced.

Thomas F. Downey, formerly of Newark, Ohio, was recently elected president of the Detroit Paving Brick Company, a new concern with an authorized capital of \$100,000. Mr. Downey has just been granted a patent on a new process for manufacturing brick.

A paving brick war is in progress at Dayton, Ohio, and the Board of Public Service has been requested to hold up the signing of contracts for the paving of Williams street until certain ugly charges have been investigated by the Good Government Club of that city. Residents and property own-



McIntire Bros. Brick Yard, Montgomery, Ala.

ers claim that Dayton is in the hands of a paving brick trust, and that it is useless for any but the manufacturers of a certain kind of brick to submit bids. The charge is freely made that the poorest quality of brick has been used at the highest prices in paving the streets as a result. In an effort to check the so-called brick trust they have petitioned that Williams street be paved with macadam instead. The Good Government Club will investigate the charges made before the work will be proceeded with.

Street paving is at a standstill at Lorain, Ohio, because of friction between the City Council and the Service Board. Council neglected to pass the necessary legislation to collect the funds into the treasury, the city auditor will not certify that the fund is there, the Service Board will not sign the contracts without the auditor's certificate, and the contractors will not proceed with the work unless the contracts are signed up. Several large street paving contracts are thus held up, with a fair prospect of going over to next summer. In the meantime the city solicitor and the ex-solicitor are engaged in a wordy conflict of opinion as to whether it is necessary to have the funds in the treasury when the contracts are signed up by the Service Board. T. O. D.

If the two-cent rate is responsible for the lengthening of passenger train schedules until railway horrors are reduced to a minimum, the traveling public will have additional cause to be thankful to the law-making powers of the eighteen states which have enacted new rate laws.—Ex.

Written for THE CLAY-WORKER.

A FINE SHALE BRICK PLANT.

THE Cleveland Brick and Clay Company owes its success during the past four years to its ownership of what has been pronounced by experts to be one of the finest shale banks in the country and to the economical arrangement of its plant. In the lay-out of the buildings there is provided plenty of space for working, but this space is limited, with the view of accomplishing a low cost in handling material. The plant covers 35 acres of ground.

The shale bank is 132 feet high and the company owns a surface area of it which is about 900 feet long and 500 feet wide. The shale is bluish in color, inclining to a yellow at the surface, due to the inherent iron. The analysis runs about as follows: 87 per cent. earthy matter; 1 per cent. water; 7 per cent. volatile matter; 5 per cent. fixed carbon.

The shale is picked out from the bank and taken in wheelbarrows by laborers, a distance of 50 feet, to three 9-foot dry pans. It is elevated to the screen by means of a bucket

shale brick, paving and hollow block, and conduits. It markets most of its product in Cleveland. This company furnished the brick for the Euclid avenue station of the Pennsylvania Company, one of the most attractive little buildings in Cleveland. The officers of the Cleveland Brick and Clay Company are as follows: J. L. Higley, president; E. A. Upstill, vice-president; F. M. Brady, secretary and treasurer, and W. M. Nichols, general manager.

Written for THE CLAY-WORKER.

POTTERY NEWS.



HEAVY ORDERS being received by mail and from road salesmen are making the present season one of the most remarkable in the history of the western pottery districts. If there are idle shops or parts of potteries it is because a sufficient number of workmen and help cannot be obtained to work plants to their capacity. Not only is every effort being made to get quantity through, but quality as well. It is an open secret that the American pottery manufacturer is to-



Shale Bank of the Cleveland (Ohio) Brick and Clay Company.

conveyor. The cutting is done automatically and a waste heat dryer is used.

There are sixteen kilns, turning out at present an average of 60,000 bricks per day. A railroad spur runs alongside the furnaces in a walled cut about ten feet wide. This cut is deep enough to bring the tops of the cars to be loaded on a level with the surrounding ground. This facilitates the loading of the bricks, which are taken directly from the kilns to the cars. The shipping convenience will soon be greatly increased by the Cleveland Short Line Railway (commonly called the Belt Line), whose main track crosses the company's property.

The power plant consists of a 300 h. p. Corliss engine, receiving steam from horizontal boilers, and a 30 h. p. direct current dynamo, which furnishes the necessary artificial light for the brick plant. The entire brickmaking equipment was furnished by the Bonnot Company, of Canton, Ohio.

The buildings, which are fire proof, are all constructed of brick and have brick floors. They are separated from one another by a minimum distance of four feet, to increase the fire protection. The grounds surrounding the buildings are all paved with brick.

The Cleveland Brick and Clay Company manufactures

day making a better class of goods than ever before known. The shortage of help is becoming a serious problem and it is one that cannot be easily settled. Some manufacturers are willing to give more money than the National Brotherhood of Operative Potters' wage scale calls for, in order to get a full quota of workmen, but it seems that the workmen are not "in the woods."

In the brick, tile and sewer pipe districts of the Ohio valley, there is not an idle plant. Business continues brisk and new orders are running far ahead of those of last year, and especially at this season. Prices are remaining firm and the demand strong. Especially is this true of the paving brick industry. Low water in the Ohio river just now has prohibited heavy shipments to southern markets, and while a fair car supply is available, manufacturers could make good use of many more.

The Charles Howell Cook Pottery Company, of Trenton, N. J., has purchased at court sale, the plant of the Ford City Pottery Company, at Ford City, Pa. The plant operates seventeen kilns when working to its capacity, but operations at this plant will be gradual because of the shortage of workmen, especially jiggermen, pressers and kilnmen. The

purchase of this property makes the Cook interests the second largest producers of white ware in the United States. The same firm also recently acquired the Wick Pottery, at Kittanning, Pa., and is now operating it successfully in connection with its Trenton potteries.

Announcement is made by A. E. Hull, of the A. E. Hull Pottery Co., of Crooksville, Ohio, that the Acme Pottery at that place, just acquired, is to be started immediately, and will be converted from a general ware to a stoneware and stoneware specialty plant. The latter proposition is a new one in the clay industry in this section. The new plant has a floor space of 60,000 square feet and operated seven kilns.

A new kiln is being erected by the Ohio China Company, at East Palestine, Ohio. Others may be erected later.

It is related that the Continental China Company, at East

F. Wilson, John F. Miller and Thomas P. Speer. The charter gives the company the right to manufacture brick and all other clay products.

Unless an appeal is taken, and while there has been some talk of this, it is not believed the appeal will be perfected, the plant of the Bell Pottery Company, at Columbus, Ohio, will soon be sold under foreclosure proceedings to satisfy the claims of the bond-holders. The plant is a modern one and built but a few years ago. It is related that overtures are being made to form a new company to take over the property and operate it.

The upper part of a new kiln at the Smith-McNicol pottery, Wellsville, Ohio, fell in, causing a suspension in operations for a fortnight.

The Crooksville China Company has removed into its new offices. New additions to this plant have caused the company to increase the capacity of the property about one-third.

In the death of John H. Croxall, at East Liverpool, the pottery industry loses one of the oldest manufacturers of yellow and Rockingham ware in the United States. Mr. Croxall was born here in 1858 and was identified with the industry with his brother, George H. Croxall, who will continue the management of the pottery.

A. Gould White, who has been associated with the American Sewer Pipe Company since the corporation was originally formed, has severed his connection with that company and



One of the 30-foot Down Draft Kilns.



The Cleveland Brick and Clay Company's Kilns and Power House.

Palestine, Ohio, will increase its capacity by the erection of two bisque and one glost kiln. The clay cellar of this plant has been increased also.

The Edwin M. O'Conner Sagger Works, of one kiln, at East Liverpool, has been purchased by the D. E. McNicol Pottery Company, and will be used for the manufacture of yellow and Rockingham ware. Additional kilns are to be erected. White ware only is to hereafter be manufactured at the large McNicol plants and yellow ware exclusively at the new shops.

A charter has been granted under Pennsylvania laws, to the Ambridge Brick Company, of Ambridge, Pa. The incorporators are Henry Cooper, Andrew A. Hersparger, William



The Plant of the Cleveland Brick and Clay Company, Shale Bank in Background.

associated himself with the National Fireproofing Company.

The American Sewer Pipe Company has successfully placed in operation its new works at East Liverpool. The clay mines are in active operation and within a fortnight all the kilns will be under fire. The plant is most modernly equipped, and is pronounced the most complete sewer pipe plant in the country. Electricity is used for the complete operation of the plant.

Announcement is made that the Devonshire Brick Company, which recently acquired a large plant at Roseville, will issue \$20,000 stock of the company.

Capitalists of Missouri and Kansas have taken out a charter in West Virginia for the Oklahoma Cement Company, with a capital stock of \$3,500,000.

With a capital stock of \$30,000, the Grueby Pottery Company, of Boston, Mass., has been incorporated.

Frederick H. Hazard has been appointed trustee in bankruptcy for the Utica Crockery Company, Utica, N. Y.

The rebuilding of the plant of the Memphis Stoneware Company, which was recently destroyed by fire, is contemplated at an early date.

Six new clay mines are to be developed immediately by

Dr. R. R. Winston and Attorney Will Bradshaw, of Paducah, Ky. The property is in Tennessee and the concern will make a bid for pottery business in the north. O. MEGA.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



THE SEASON OF 1907, while quite up to the scratch, may not be a record breaker in building activities, but it is at least notable for one movement of progress, and July in some ways was "a corker."

There has been a marked turn from the apartment house to the individual dwelling. Last year and for many preceeding summers, the investor and the speculative builder harkened to the demand for "flats," and built them of many and wondrous varieties—ultra large and ultra small and all the sizes between, in structures of single apartment width and tucked away in every conceivable nook and cranny of a building that reminded one of nothing so much as a bee hive or a rabbit warren. The reason for it was obvious. Apartment house living tends to be cheap and it tends to be easier for the housewife. There is no fuel to buy for heat and hot water, and no care or expense for looking after these necessities. There are no stairs to climb in going from part to part of the domicile, and one servant, or none at all, in most instances, suffices. The cost of furnishing an apartment is much less than that of the average house, and this was another consideration which gave this type of dwelling great vogue, for in the life of a great city economy and the greatest possible ease of living seem the chief ends of man, the shorter catechism and the small boy's definition of the spinal column to the contrary notwithstanding.

The return to the individual home is a distinct mark of prosperity, for with all the advantages of the "flat," there are disadvantages so numerous that nearly every fellow is tickled to death the minute he has the opportunity to move into a house, preferably, of course, one of his own. There is a lack of freedom and individuality about apartment house life that is irksome to most folks. If one has "rubberneck" neighbors—and there are many neighbors of that tribe in a great city—they furnish one pleasant sort of sensation—that of being constantly spied upon. If in addition to "gummyhals" propensities one's neighbor's (femininely speaking) tap one's gas meter in the laundry, usurp one's washday and try to steal one's laundress and one's cook, the situation is made still more delightful. But even if neighbors are ideal, there is still a confinement and repression about life in an apartment that is wearing to the average man and woman. In the winter they are least objectionable, but in the summer there is only the occasional building that offers any pleasant opportunity for sitting out-of-doors in the evening breeze with any degree of seclusion, and then in the average apartment it is only on the back porch. Except in buildings of single apartment widths, one flight of stairs and one long porch, undivided, is made to serve two or sometimes more apartments. This is for economy's sake and also—so experienced builders and landlords state—to discourage tenants from "sitting out," for when tenants become gregarious, landlords say, trouble is likely to follow. In some of the new and more elaborate apartment houses, good porches are put on front and rear, but these rent for enough to make a modest house seem cheap by comparison.

So now that times have been exceedingly good for a long period and most men are making good incomes, the tide has turned, and the individual house is again the thing. Individuals are putting up their own homes and the speculative builder is giving more attention this year to this class of building and less to the apartment house. In the outlying, less thickly settled districts of the city, where land is not so high, in Rogers Park, Evanston, Austin and Edgewater and

the other suburbs, cottages and small homes are going up by the hundreds. The buildings are of the type that sell for from \$5,000 to \$6,000. Speculative builders are putting them up in rows in the new subdivisions, with eight or ten feet between houses and the general style of architecture slightly varying for each house, to sell on the installment plan. Some are even trying to combine some of the conveniences of the apartment with the advantages of the house by building dwellings with one story, basement and garret. This makes practically only one floor to be taken care of at the outset and a room or two may be developed under the eaves as needed.

This move is, needless to say, a good one from the point of view of the pressed brickmaker and dealer, and likewise for the tile man, wherever gabled roofs are used. The market is boomed by the opportunity afforded for showing off the artistic effects which may be obtained with brick and tile, an opportunity which is generally lacking in the apartment dwelling, and moreover it increases the actual demand for front brick.

This demand would be quickened until there would be a call for from three to four times the number of front brick used in apartment houses in former years, but for the fact that many of the speculative builders are skimping the job on much of their work. In the other large cities some regard is displayed for the esthetic, but here in the hands of the speculative contractor, the art is left for the front or "show" side. That is finished in first class style, but the sides, even where ten feet with a sidewalk and a strip of lawn intervene, are allowed to go in common builders. In some instances this surface is relieved and made more sightly by the use of red mortar in the joints, but in most cases the plain common wall is left in its pristine unsightliness. Buildings of this class, be it said, are for the most part of the flat-roof type. However, with the continuance of good times there is hope of reform along this line.

Just at present, Chicago is in the midst of the usual mid-summer dullness. Still there is enough building going on to keep everybody busy, and enough structures of size in view to keep interest keenly alive. Lower Michigan avenue, south to Twenty-second street, is rapidly turning into a high class commercial street. The automobile men started it, and are still keeping it up, while others are following suit. A handsome structure, three stories high and 76x161 feet, is to be erected at the northeast corner of Michigan avenue and Twenty-first street, at a cost of about \$135,000. It will be of brick and fireproof construction on the interior. A seven-story warehouse of fireproof construction, to cost about \$300,000, is to be put up for the Furniture Exhibition Company, between the Michigan slip of the river and the Chicago & Northwestern railway tracks.

Records of the building department for last month show that from the builder's standpoint it was the most prosperous July in fifteen years. During the month permits were taken out for 923 buildings, covering a frontage of 24,681 feet, and representing a total estimated cost of \$5,376,500. These figures indicate an increase over the corresponding figures for July of last year in all except those for the number of buildings involved, which indicated a decrease of eleven.

The International Harvester Company has awarded the contract for the erection of a five-story warehouse, at West Twenty-sixth and Leavitt streets. It is to cost in the neighborhood of \$200,000. The Raymond Lead Company will build a large plant at the corner of Lexington street and Washtenaw avenue.

Another fine Michigan avenue structure is to be that erected for James A. Patten, the Board of Trade man. The construction will be under the supervision of Oliver & Company. The new building is to be ten stories high and of modern, fireproof construction. It will cover an area of 80x171 feet. The ground floor will be given over to stores and the upper floors to high grade finished lofts. It is to have an ex-

terlor finish of white glazed tile and white enamel brick, and the ground floor front will show as much plate glass as possible. The cost of the building alone will be in the neighborhood of \$450,000.

In spite of its being the season of mid-summer dullness, Chicago was the banner city of the country for July, heading a list of forty-five of the leading cities, including New York, in the contemplated cost of building operations under permits issued, and was second in number of permits issued. The record shows 923 permits issued for structures estimated to cost a total of \$5,376,500—a gain of 11 per cent. over July of last year.

Indiana may have the bulge on its sister states in poets and novelists and dome-like intellects, but once in a while she has to turn to Illinois for such things as front brick. The contract for the front brick on the Studebaker administration building at South Bend, Ind., has just been awarded by Wells Brothers, the contractors, to the Purington Paving Brick Company. The job will require 300,000 Purington repressed pavers.

There is a good deal of discontent among dealers and manufacturers here over the announced increase in tariffs on building material by the eastern roads, notably the B. & O. and Pennsylvania. The rate on roofing tile shipped in bulk has been increased on an average of 20 per cent. on carload lots, and the increase on pressed and paving bricks will run close to 33½ per cent. For a long time the rate on fire brick was higher, by considerable, than that on any other class of brick. The railroads figured that there were comparatively few sources of good fire brick and that as the consumer would have to come to these to get good material, the roads would have the traffic anyway, and they charged accordingly. The fire brick people in the East started an agitation for a reduction of tariffs on fire brick. Apparently, the only result has been—thus far—for the roads to bring up the tariff on front brick and pavers to the same rates as fire brick. The Western roads have not yet announced whether or not they would follow suit, but the natural inference is that they are bound to if the eastern rate appears to be working satisfactorily. However, the chief objection on the part of the brick men around here has not been so much to the increase in rate, as it has been to the fact that the change is made in the middle of the season, most of the new rates going into effect on August 15. Protests were made but apparently without results. It was pointed out that in the past when changes had been made in freight rates that they had come at the first of the calendar year, and it was further urged that this system was peculiarly appropriate in connection with the shipping of building materials, in that figures are made on material early in the season for delivery in latter August, September, October and early November, as well as for immediate delivery, and that prices quoted earlier in the year were, of course, made on a basis of then existing tariffs. To change in the middle of the summer with 50 per cent. of the year's output still to be delivered under a greatly increased tariff over the one on which quotations were made, would be manifestly unfair, the material people complained. What developments may follow remains to be seen. The situation is keenly felt here, even by the staunch conservatives.

The Chicago Hydraulic Press Brick Company has changed its name to the Hydraulic Press Brick Company. The officers remain as before. Mr. E. C. Kimbell, assistant secretary and treasurer and general manager, retains the management of the Chicago offices which now constitute the Chicago branch of the consolidated company.

SCRIP.

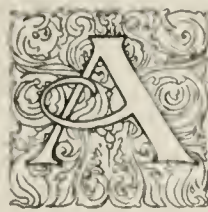
INDIA WANTS BRICKS.

Consul General William H. Michael reports from Calcutta that there is great need of a brickmaking establishment equipped with modern brickmaking machinery. There is abundance of material and a growing demand for the bricks.

The prices on even the commonest hand-made bricks have advanced within the last year 50 per cent., and an American company with a mill equipped with the best American brick-making machinery would make big money there if started in time.

Written for THE CLAY-WORKER.

PUGET SOUND CLAY NOTES.



AMONG THE TOWNS located on the Puget Sound, Seattle, Tacoma, Everett and Bellingham, the building outlook is much better this month than for some time past. The excessive land speculations have quieted down, and while money for building is rather scarce, the outlook is much

brighter. In the face brick line, the demand has been fairly good. The products offered have been of good quality; there is, however, still some prejudice towards Washington made brick. The brick used on the new Crane building were imported from Omaha, while the brick used on the New Washington hotel came from St. Louis. This building used some 400,000 brick, and the freight from St. Louis amounted to nearly \$22.00 per 1,000.

Face brick sells at present at \$25.00 per 1,000 for red brick, to \$45.00 per 1,000 for lighter colored brick. Common brick is worth \$8.50 f. o. b. cars, yards in Seattle, while in Tacoma the same brick sells for \$10.50.

The sewer pipe trade has been very good this year, and the two factories in this section, the Little Falls Fire Clay Company and the Denny-Renton Clay Company, have been very busy of late. The new discounts which went into effect early in the spring did not hurt the trade. First class pipe from 3 to 8 inch, is selling now with 45 per cent. off list; from 10 to 16 inch, with 40 per cent. off, while larger pipe sells with 35 per cent. off.

In the paving brick line the demand is far greater than the supply, and the new plant of the Denny-Renton Clay Company is working to full capacity to keep up the demand. They have large orders ahead, and, according to newspaper clippings, are way behind in their delivery. A Seattle daily paper printed lately an article in which they claim that the Denny people were boycotting the town, on account of the strict tests to which their brick were subjected. Whatever side may be right, the fact remains that the demand for paving and gutter brick is far greater than the supply, and an increased output by the old company, or an addition of a new paving brick concern would be welcomed by many contracting parties. Paving brick is selling now at \$19.00 f. o. b. Seattle.

The Builders' Brick Company, Seattle, of which Mr. D. J. Houlihan is manager, is contemplating the erection of a new stiff-mud plant.

The Harper Brick and Tile Company is also contemplating some improvements at their plant at Port Orchard.

The Denny-Renton Clay Company has just finished a sixty-foot addition to their main building at the sewer-pipe plant at Van Asselt. They are also contemplating the erection of several additional kilns for burning their sewer pipe.

There has been considerable talk of late of starting a pressed brick plant at Tacoma, using the clay found on the Tacoma & Eastern railroad, but so far the project has not been launched.

The Northern Clay Products Company, whose plant is located at Auburn, midway between Seattle and Tacoma, reports that they have a large demand for their firebrick and stoneware. They have secured large contracts for architectural terra cotta, and are contemplating the addition of some muffle kilns to increase their output.

A new clay bank has been found at Bellingham and local parties are interested in organizing a company to erect a plant for the manufacturing of sewer pipe and paving brick.

Seattle, July 29, 1907.

SIWASH.

THE CLAY MINES OF THE GEORGIA KAOLIN COMPANY.*

By Otto Veatch, Assistant State Geologist, Atlanta, Ga.



IN THE VICINITY of Macon, Georgia, there are deposits of sedimentary white clays, remarkable for their purity and extent. These deposits early attracted attention on account of their pure white color and were known, locally, as "Chalk beds," but it has been only recently that the quality of the clay and its possibilities for various clay products, have been recognized. The clays were at first mined nearly altogether for paper filler but are now used extensively for white ware pottery, sanitary ware, electrical porcelain, saggars and fire clay products. Much credit is due to the present mine operators for their faith in the clays and their persistence in compelling the attention of the manufacturers to the merits of the clays.

The principal clay mines are located near Dry Branch,

The clay as it appears in the bed and in a moist condition, is a drab and cream color, but becomes white or almost white, when dry. The clay is very plastic, burns white, is highly refractory, and has a higher air dried strength than residual kaolins. In composition, the clays approach kaolinite. The chemical impurities occurring in largest percentages are titanium dioxide and ferric oxide, lime, magnesia and the alkalis occur in almost inappreciable amounts. The sandy impurities are quartz, muscovite mica, and microscopic particles of black minerals which are most likely magnetite and ilmenite.

The clay is mined from open pits. The overburden consists of loose red and yellow sands and soft greenish and drab clays and local thin beds of a soft limestone and kaolin conglomerate. The clay bed outcrops at the bases of hills and has no appreciable dip, the strata being nearly horizontal, and the overburden thus increases as the bed is worked back into the hill. In the pit which is at present being worked, the overburden amounts to 30 feet. This is removed by a scrape from the top of the bed and 15 or 20 feet back from the clay face or breast. The clay being soft, can be removed with picks and shovels. The jointing is taken



General View of the Property of the Georgia Kaolin Company.

nine miles southeast of Macon, on the Macon, Dublin & Savannah Railroad. The Georgia Kaolin Company was the first of the present companies to engage in the mining of the white clays. This company operates a clay mine two miles southeast of Dry Branch. A description of the clay at this place may be taken as typical of the clays of the Dry Branch region.

The clay occurs in one massive bed and is not laminated. In the pit, which is being worked at present, the bed has a thickness of twenty feet. At another place on the property the bed is known, by auger boring, to attain a thickness of more than 27 feet. The entire thicknesses, where exposed, are probably as much as 85 to 90 per cent. pure clay, and in places the clay occurs in minable quantities, as high as 98 per cent. pure, without washing. The bed is likely to be sandy at the top and may be iron stained from the overlying ferri-ferrous sands. The base of the bed is usually micaceous and graduates into sand.

advantage of and long wooden or steel stakes are driven into the edge of the clay breast and large chunks thus pried off. Blasting with dynamite is sometimes resorted to. The clay is taken from the pit in chunks six inches to two feet in length. One of the chief obstacles in mining is the caving of the overburden and clay bed during rainy weather.

From the pit, the clay is hauled in cars by a wire cable to air drying sheds. The drying sheds are long covered sheds with open sides, having a series of superimposed racks. The floors of these racks are loose poles or 2x4 scantlings. The vertical interval between the racks is four or five feet. The green clay is dumped on the top racks, and as it dries is let fall to racks below and finally to the floor of the shed. Under ordinary conditions of weather, about three weeks are required for drying.

The Georgia Kaolin Company mines and sells paper, pottery and sagger clays. In preparing the clay for paper manufacturers, after drying it is conveyed to a double set of smooth roll crushers, where it is crushed into lumps about the size of a walnut. From the crusher it is conveyed to a bin, from which it is packed into jute sacks containing about

* By permission of the State Geologist of Georgia.

150 pounds. The pottery clay is shipped in bulk in lumps without crushing. The sagger clay and fire clay, which are taken from the top of the clay bed are shipped in bulk without drying.

None of the clay receives mechanical treatment other than crushing, but the company is now making preparations to install a clay washing plant, the object being to secure uniformity of product, avoid waste in mining and to increase the purity of the clay. The amount of sand to be removed, however, will be quite small.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.

JUST AS EVERYTHING began to indicate that the balance of this year was going to be a record breaker in the way of building in this city, the labor troubles have again cropped out, and it seems that the master builders may as well fight the matter out at this time as to always have the dread of a fight on hand.

As a result of the troubles between the union stone cutters and their employers about six hundred bricklayers, stone-

by a great many people. Dimension lumber was reduced in price about \$2 per thousand, and the finer grades stood even a greater reduction. No one seems to know what was the cause of the reduction unless the lumber men felt that they had boosted the price so high that the consumption was falling off on account of it. The cement reduction was about 35 cents per barrel, and it is stated on pretty good authority that it was caused by the cement plants now in operation wanting to discourage the promotion of other plants.

The building permits for the month of July indicate that the total value of building for the month amounted to \$173,000 more than for the corresponding month of last year, the total being \$1,053,680. Of this amount, \$610,200 was for brick buildings.

Kansas City on the Missouri side of the line at present has 240.89 miles of paved streets and boulevards according to a report for the last fiscal year by E. A. Harper, city engineer. It is divided as follows: Asphalt, 165.32 miles; bitulithic pavement, 1.36 miles; vitrified brick, 40.92 miles; macadam street, 18.86 miles; macadam boulevards, 11.78 miles; stone blocks, 2.71 miles, and creosote block, .24 mile. The 17.13 miles of paved alleys are chiefly of brick.

In the year the paving done under the direction of the



Kaolin Beds of the Georgia Kaolin Company, near Macon.

cutters and stonemasons are now either on strike or are locked out, and every important piece of building work in Kansas City is badly crippled, if not tied up, excepting only the Bank of Commerce building. The Master Builders' Exchange has endorsed the position taken by the master stonecutters who locked out the union employes rather than to accede to the union demand to no longer supply stone to non-union jobs. Both sides to the controversy now state that no negotiations are pending for a settlement of the trouble, and each side is claiming that no advances will ever be made for a settlement on their part. The unions are threatening that they will call out other trades to enforce the demands of the stonecutters.

Brick men are reporting a very heavy demand for brick, especially the Kansas gas burned brick, and prices are holding very firm. All kinds of building material are in good demand, and the fact that both lumber and cement have dropped in price within the month is taken by building contractors to mean that there will be a busy season, for the high price of material has been given as an excuse for not building now.

department amounted to 20.06 miles. This does not include park roadways. The total cost of all work done by the department was \$1,958,478.82.

Builders and building supply dealers down in Texas have been quite exercised over the prospect of enforcement of the anti-trust law which was recently passed in that state, and which made it a penitentiary offense to represent a trust in the state, even by selling the goods made by them.

The new brick yard of the Lytle Brick Company is now in active operation, and has furnished some much needed relief to that company, which was flooded with business in the old yard. There is plenty of business now in sight, however, to keep both yards operating at full capacity for the balance of this year, and they could easily dispose of the product of much larger plants, if they had them, and turned out brick of as good quality as those made now.

Common brick are now selling in Kansas City at \$7.50 and \$8.00 per thousand, delivered on the job, and gas belt common are selling at \$6.50 on track here. Fancy brick are in good demand, and at good figures, in fact there seems to

have been quite a little stiffening up in the prices, although not much in the way of advances.

This city is doing nothing in the way of paving with brick except an occasional alley, but other cities, in every direction, are putting down good brick pavements, and lots of them, taking advantage of the general good times to get the pavements of the best quality on the streets, so they can be paid for now, and later, when there is a possibility of harder times, there will be no maintenance charges to worry the life out of the property owners.

Paola, a little city forty miles south of this city, is a good example of a small town doing the right thing. They have never paved a street in the city until this year, waiting until they could put down the best, and they are now beginning two and one-half miles of paving in the business part of the city, and of the very best quality. They let the contract to the contracting firm of Abbott & Cosgrove, in Olathe, Kas., and the specifications call for a base of five inches of concrete, on which is laid Pittsburg noiseless paving blocks, and they are put on half an inch of sand with an asphalt filler. The result is a pavement which is as noiseless as any asphalt pavement can be, and has the wearing qualities which will keep it in perfect condition for years to come.

The Eadie Building Supply Company reports being crowded with business, both in the city and surrounding country. They have just delivered 500,000 strictly high-grade common brick to the Rock Island railroad, to be used in the construction of their round house and shops in this city, and the job will take a great many more before completed.

The Pittsburg Brick Company reports having placed an order for a couple of cars of dryer cars, one for each plant.

The Western Terra Cotta Company, of Kansas City, Kas., is having all the work it can take care of, in fact is turning down orders every day on account of lack of capacity, and the company is preparing to increase its capacity at once. Their product is said to be of a very fine quality, those forming the company being practical men.

The Pittsburg Brick Company reports having landed some good orders during the past few days in Wichita, Kas., where Eugene Sevain is the contractor, and where their blocks are already well known, other streets having been paved with them there from time to time.

K. A. W.

SEWER PIPE BUSINESS GOOD.

The American Sewer Pipe Company, Pittsburg, Pa., reports that it now has more plants in operation than at any other time during the past five years, and that there are more orders on hand now than there have been for the same length of time. The prices of all products are also higher than they were at the beginning of this year. The new plant which the company erected at East Liverpool, Ohio, was started the latter part of May, and is now in full operation and running very smoothly, in spite of the newness of the machinery. This plant is one of the largest in this part of the country, and is equipped with every modern appliance and labor saving apparatus for the manufacture of vitrified clay sewer pipe.

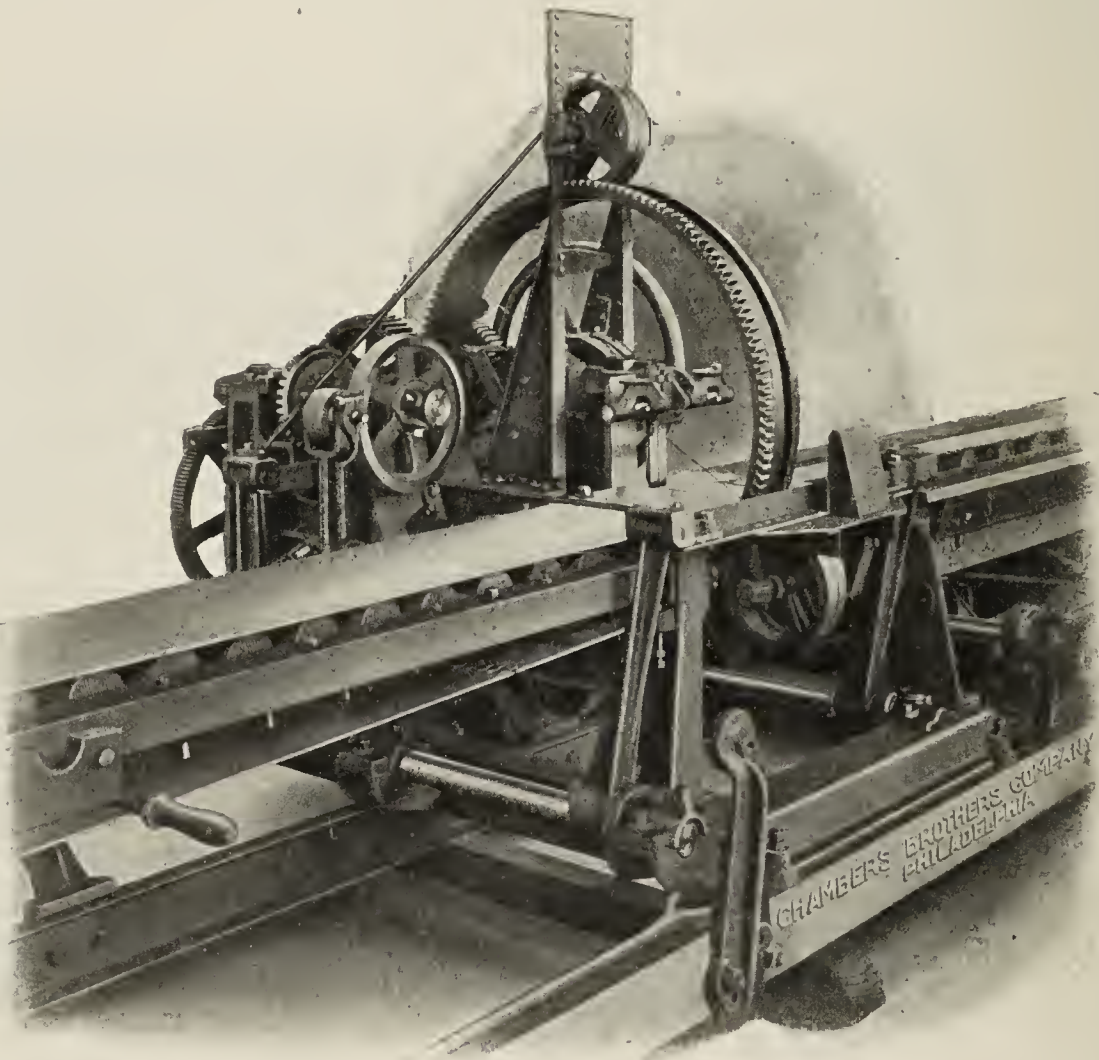
NEW CHAMBERS AUTOMATIC CUTTER.

THE CHAMBERS BROTHERS COMPANY, of Philadelphia, Pa., is advertising this month a new automatic side cutter which possesses points of novelty and considerable interest.

We illustrate both front and back views of this cutter, and also call attention to their advertisement on page 181.

This company has persistently adhered to its idea that a continuous rotary cutter was the successful means of automatically cutting brick, and they have placed on the market several forms of cutters based on this principle.

The new automatic cutter, which they designate as No. 6, is a rotary cutter employing a single wire stretched from side to side of a revolving ring. They cut but one brick at a time, the wire passing through the bar of clay with a downward shear movement, which insures smooth edges to the brick. The bar of clay is carried from the die to the cutter by means of a carrying belt running over rollers, and the dead surface



Front View of Chambers' New Cutter.

over which the clay has to slide at the cutter is reduced to a minimum, being only the thickness of about two bricks.

The wire passes through a steel slit plate, the width of the opening being only about one-sixteenth of an inch.

Provision is made for the discharge of stones, should any occur in the path of the wire, the brick being cut perfectly square and of uniform thickness.

The revolving ring, together with the slit plates, has a slight oscillating motion and moves forward during the passage of the wire through the clay, returning to its original position before the next cut is commenced. The extent of oscillating movement required is surprisingly slight, and the mechanism by which this is secured has been worked out so nicely that the motion is smooth, quiet and without injury to the machinery.

The speed of the cutter is under the control of a male and female friction, governed by the clay bar itself.

The Chambers Brothers Company feel very confident that the cutter will meet with favor in connection with machines

having capacity of from 20,000 to 40,000 brick daily, they having already tested it up to 110 brick per minute with entire satisfaction.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.

ENCOURAGING REPORTS continue to be the order of the day in Cleveland and vicinity, building records for last year being eclipsed despite the backward weather of the early season. The building inspector's report for the past month shows that 753 permits for buildings aggregating in value \$1,365,513 were issued, as against 613 permits a year ago having a value of \$1,120,338. Of the total, \$740,000 was spent on brick and stone buildings.

The new ten-story Pope building, which will be constructed of white enamel brick, has been started, the contract for the foundations having been awarded to the Tidewater Con-

Company, at Carrollton, Ohio, has been recently overhauled and some new machinery installed, which will increase its capacity about 30 per cent. A new combination brick machine and pug mill has been installed among other things and a number of minor improvements made.

Messrs. Duty and Deckman report the paving brick business as being very brisk, although like most of the other manufacturers they are loaded up with contracts for delivery. New contracts for next season, however, are already being signed up.

"With the volume of work under way and that planned, I do not know where the brick is coming from," declares Spencer M. Duty. At the same time he explains it is considerable of a venture to be in the brick business just now in view of the unsettled conditions of materials and freight rates.

The Masons' Supply Company, of Cleveland, is having a busy season in its brick department. Last month it closed a contract for 300,000 pressed brick for the new White Automobile Company's new office building, while this month it took an order for and started delivery on an order for 300,000 Kittaning pressed brick for the new Hippodrome building, a mammoth structure nearing completion on Euclid avenue. The same company secured the job of supplying about \$15,000 worth of architectural terra cotta for the same structure. The terra cotta is coming from the plant of the Atlantic Terra Cotta Company, New York City.

A fact that should be encouraging to the paving brick manufacturers of America is the reception of a letter from E. Howell, of Temple Chambers, London, England, by several paving brick men here asking for specimens and prices on paving brick to be used in the world's metropolis. Deckman & Duty, of this city, purpose sending Howell specimens of their product. If satisfactory shipping arrangements could be procured it is believed that a profitable business might be worked up from this source.

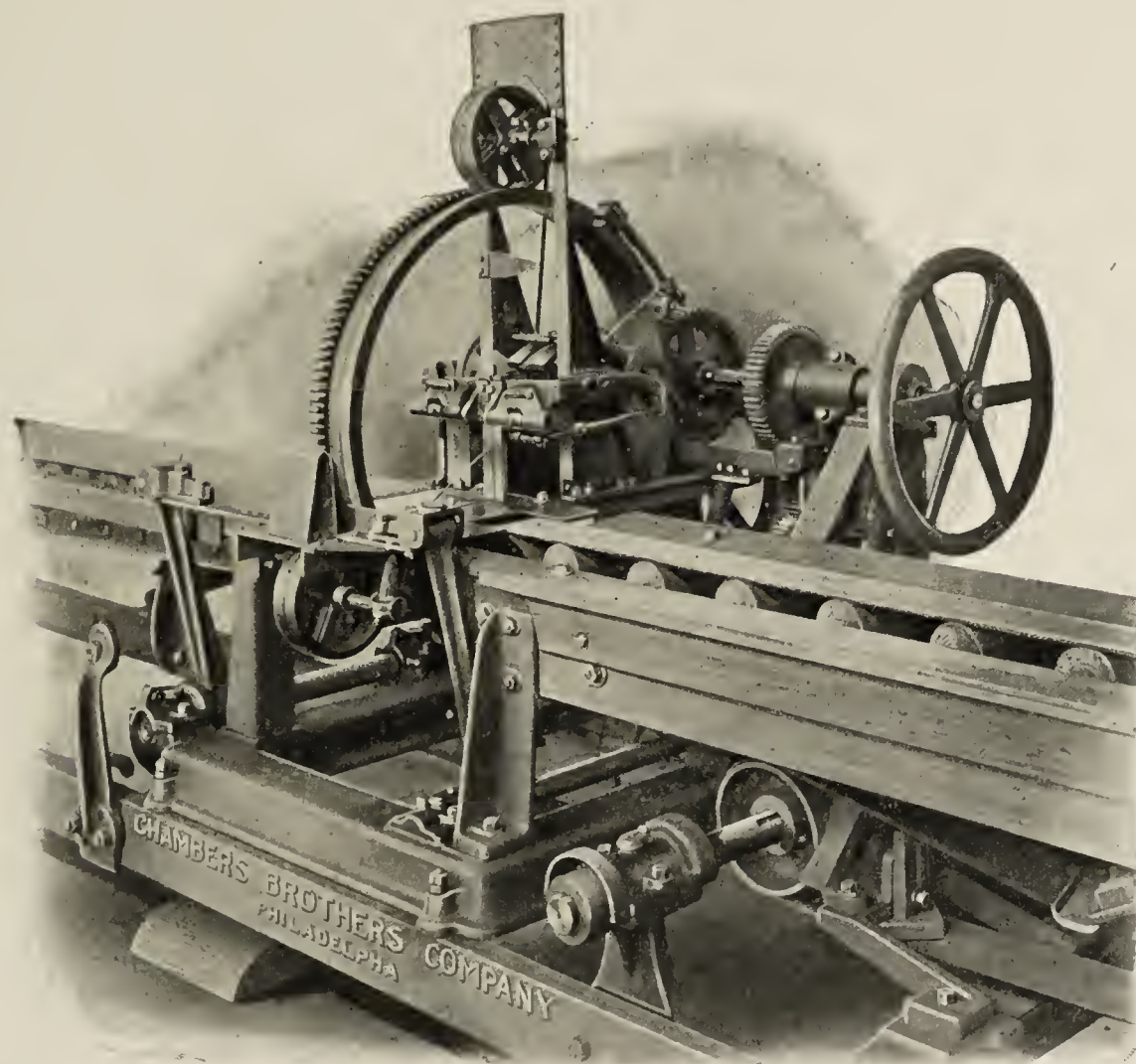
A beautiful specimen of the way the city is defrauded in the laying of certain kinds of asphalt pavement came to light during the past month in connection with a short piece of street given to the Cleveland Trinidad Paving Company. The street in question has recently been widened to about eighty feet, and as it is lined with big automobile shops it was decided to pave it with asphalt for some reason or other. The bed of concrete was almost entirely laid for a distance of 1,200 feet, when an investigation

started by city officials revealed the fact that the cement used was old and useless, and that the concrete base crumbled under a pressure of the foot. The board of public service ordered the whole batch torn up, and after many protests this was done. Then it was relaid as it should have been in the first place.

There has been a keen contest between brick and steel on the one hand and concrete and cement on the other as materials to be used in the construction of the new technical high school in Cleveland, a building to cost upward of \$300,000. On August 6 the question was finally settled when brick and steel were chosen instead of concrete. The brick contract, in which 700,000 Bessemer pressed brick will be used, went to the Cleveland Builders' Supply Company.

Bids on over thirty sections of streets to be paved this summer and fall, were awarded on July 12 by the Cleveland Board of Public Service. The prices paid are slightly higher than those of a year ago.

"We will try to have all paving jobs finished this fall,"



Rear View of Chambers' New Brick Cutter.

struction Company of New York City. The foundations will be in this fall, the steel work will be erected during the winter and the structure finished off next spring.

A new \$40,000 "flatiron" brick building will be erected on the piece of land at the intersection of Huron road and Euclid avenue, buildings having been razed for the new structure. The new block is being financed by Max Meisel and others. A light colored pressed brick will be used. There will be seven stores on the ground floor and offices above.

On August 1 the railroads put into effect their new shipping rate. By this the minimum weight of carloads has been raised from 30,000 to 36,000 pounds. It is believed that this will overcome the fall car shortage. This directly effects the shipping of brick and similar commodities. The rate is raised on brick, lumber, cement, lime and papers, as well as 2,966 other things. The change is even more drastic than that made by the railroads seven years ago. The railroads say they have been forced to make the raise by conditions.

The paving brick plant of the Collinwood-Deckman-Duty

declared President Springborn, of the Board of Public Service, in awarding the contracts for the paving. "We have distributed the work so no one contractor will be overloaded. This would be a good time for a new paving contractor to enter the field, for there is more work than can be cared for."

The price paid a year ago was between 16 and 17 cents per square foot for brick pavements. This year it is nearer 18 cents.

The Standard Paving Company got the contracts for three streets, aggregating \$30,000. Its highest bid was 18¾ cents.

John Brennan got two streets, his bid being 16 cents. There will be \$27,000 expended on the two jobs.

M. E. Kavanaugh got three streets for \$12,000, his bid being 16¼ cents.

Baldwin Bros. & Graham got five streets for \$42,000, the highest bid on the three being 18¾ cents.

Roehle Bros. got the biggest bunch, being awarded eight streets at an aggregate cost of about \$80,000. Eighteen cents was their highest bid.

The Northern Ohio Paving and Construction Company was also awarded eighteen streets, but the aggregate only reached \$58,000.

Bids are to be opened on August 28 for the construction of the West Side market house. The contractors on the job have recommended the use of terra cotta, but all contractors have been asked to submit bids on brick, terra cotta and stone. A controversy as to building materials seems imminent. The new market house is to cost in the neighborhood of \$300,000. Work will be started on the foundations this fall and the superstructure finished next spring. Terra cotta was recommended on account of its sanitary advantages.

BUCKEYE.

A NEW SIMPSON BRICK PRESS.

ON PAGE 126 of this issue will be seen a full page advertisement by the National Brick Machinery Company, of Chicago, Ill., of their new and improved dry press brick machine. This press is the invention of Mr. P. L. Simpson, manager of the above named company, whose many years experience in designing and building dry presses has enabled him to give to the trade a machine having many improvements thereon of immense value to the brickmaker. It exercises enormous pressure; all the working parts are above the bed plate; its simplicity is unique and enables the operator to adjust the movements at will; its charger movement does away with all vibration while the feed box is pushing the brick onto the front table and at the same time feeding the molds; the mold is arranged for larger wearing surface so that the liners need renewing less often; the lift-out mechanism works without a hitch and it has other meritorious features too numerous to mention here. The whole machine is built in a most substantial way and to withstand many years of hard service, at the same time permitting of an excellent product, and as a dry press brick machine is a credit to its inventor. The Rochester Composite Brick Company, Rochester, N. Y., have the machine in daily operation and their testimonial on page 126 denotes their appreciation of its merits.

We know the many friends of Mr. Simpson will be glad to see this press on the market as the reputation of the older styles of Simpson presses has always been of the very highest and were noted for giving the best of satisfaction to their users. The new machine is built in three sizes, four, five and six-mold. For further details, address the National Brick Machinery Company, Chamber of Commerce Building, Chicago, Ill., who also manufacture complete brickyard equipments for dry press, clay and sand-lime brick plants. When you write, mention the CLAY-WORKER.

Merit always has its reward. A trade paper writer of the West who has been very busy telling about the great prosperity of that section, is now getting his. The landlord has raised the rent on him.



BETTER DRAINAGE NEEDED.

WHERE WATER stands for a long time in the depressions of the surface of the land after rains, and on land where tracks made by the hoofs of animals as they sink into the soft wet soil, often hold water for days, the need of some kind of drainage is too apparent to admit of any doubt. To better the soil conditions to some extent, surface drainage is often resorted to at first. Such drainage is useful in some cases, but not in the way of a paramount improvement of soil conditions; besides the surface drains are liable to cause the impoverishment of the soil itself by carrying off fertilizing matter into the gullies and streams. Where the water of rainfalls can be drained through the soil into underground drains in the same clear state in which it descended from the clouds, or clearer, the soil receives no injury from it, and in fact is benefitted by the amount of fertility contained in the rain water which is taken up and held in the soil, which often surpasses our expectations. Formerly, and even at this time, in some bad stretches of farm lands it is the practice to throw wet lands into high and wide ridges in the fall and leave it so until spring, and in the spring at the beginning of cultivation these ridges are widened and flattened, having shallow ditches between them, often holding stagnant water for days after a heavy rainfall. In the cultivation of land these surface ditches are objectionable in many respects.

The only practical method of improving soil conditions permanently for the better is by the use of underdrains, for which drain tile is the best material, the most efficient and durable. Tile drains should be placed at a depth of from three to four feet in the ground, the depth depending upon the compactness of the soil to be drained. The drains should have a regular fall to the outlet. By this method of soil improvement, whatever fertility the surface water may contain will be drained out and taken up by the soil in the passage of the water through it to the under drains. Furthermore, the line or level of the ground water will sink down to a level of the under drains, and the soil above will be favorably changed and better fitted for cultivation and the growth of crops.

Overflow Water.

In the draining of land it frequently becomes necessary to take overflow water into under drains, but how to do it best is not always easily determined. To do this, we make the following suggestions, which are based on the writer's experience. If it is desirable to have the water enter the tile drain at the upper end, it is good practice to shovel out the earth several feet in width, beginning at the upper end of the drain, and extend the excavation several feet in width to the sides of the line of the drain, and beyond the head of the drain, sloping the sides and bottom so as to converge to the head of the drain. The excavation should be carried down or deepened as it nears the mouth of the tile, so that the bottom will be slightly below the underline of the drain, where it is intended to enter the water into the end of the tile. If the bottom of the excavation at the end of the tile where the water is to enter into the drain is three or four inches deeper than the upper end of the tile, it will be better. Then fill the bottom of the excavation with small boulder

stone to a depth of eight or ten inches, being careful to place the bowlders at the end of the tile so as to give a free passage of the water into the end of drain tile. Fill above the bowlders with coarse gravel to the surface of the ground, leaving slight depression to receive the water. The water in its flow will be received and passed down very rapidly, if the excavation is sufficiently wide and of needed length. The surface of the trench will likely fill with fine washing and trash, and will need cleaning out occasionally. If a considerable wash of dirt and trash accumulates on the surface it will be well to spade off the surface and cart away and fill the surface of the inlet again with coarse gravel and sand. With care and timely attention, it will work well and not be in the way.

If the overflow water comes down to the side of the under drain then fill the ditch above the tile with coarse gravel a sufficient distance to take in the water, leaving a slight depression over the under drain to receive the water. But it will be occasionally necessary to spade up the surface of the gravel and once in a year or two to remove a few inches of that portion which has filled with fine particles of earth, and replace with coarse gravel.

Another method of receiving overflow water, is to put in a silt well, as large as twenty inches or two feet in diameter, and as much as two or three feet deeper than the drain. The well should be walled and extend above the surface, with openings to allow the water to flow into the well. Large sizes of drain tile may be used for this purpose with openings large enough to receive the water freely, and should have screens to keep out the trash, and the top of the well should be covered securely. The silt well being deeper than the drain, will receive the earth washings or silt carried in by the water, which may be cleaned out when necessary. The wall of the well above ground will be slightly in the way in the cultivation of the land, but otherwise not objectionable.

Information Wanted.

A gentleman of our acquaintance who is the owner of a large tract of land in an adjoining county, which at one time was considered too wet for profitable cultivation, met the writer a few days since on the street. Our greetings were cordial, for we have a high regard for him, and he has always manifested a warm friendship for the writer. Taking our hand, he led the way into a store and invited us to a comfortable seat. He said, "I am glad to meet you at this time, for the reason that I want your advice about some land drainage. We have finished the dredge ditch through my low land, and now I want to tile drain the land. I want to know where I can get the tile and what sizes of tile to buy."

We replied: "We could not possibly give you the desired information without knowing definitely about the lay of your land. Your outlets will be into the open ditch. How deep is your ditch?"

"About eight feet," he replied.

"But you have not had any levels taken?"

"No."

"Well, you can see that it is hardly possible to give you a correct estimate as to the number and size of the tile unless we know the depth and grade of the drains, the character of the soil and subsoil, whether close or open, the width apart of the drains, the area to be drained and the watershed."

"Oh, I see. All those things have to be taken into account to determine the number and size of the tile," he replied, and then added, "How can I get at it? I don't want to make a mistake. It would be costly."

We advised him to employ an experienced land drainage engineer, as the only way to solve the problem satisfactorily, and gave him the address of two or three experienced en-

gineers, and further said: "An engineer will likely advise you to lay out a system that will include all the area of land you wish to drain. Either of the engineers that I have named will not mislead you. It will cost more to get started in the work, but cheaper in the end, and you will get better results and avoid very costly experience."

There are many who undertake the work of land drainage who need to know "Why" and "How" to do the work, and make the mistake of getting a "Know-it-all" professional tramp ditcher, and "Pay dear for the whistle." To be accurate and certain of satisfactory results one must know how the work should be done and how to do it, or get some one that does know how.

Gardner's Mule Story.

"There are some men that will not learn by other men's experience. If I refer them to some book or paper that has published the experience of some of our best men they turn up their nose and say, 'Oh, well; it all looks well enough on paper. Some of those men never saw a tile machine or a tile ditch. They write for the money.'"

"I tell you that such men, though ignorant, are puffed up in their own conceit. They know all about burning tile, all about clays, all about everything and are always in trouble."

"I often think of a little story of a doctor down south who was riding out on one of his professional calls one day. When he came to an old colored man with a mule that had balked in the middle of the road. As the doctor came up the old darky said: 'See heah, boss, I will give a dollah to any man that will start that mule.' 'All right,' said the doctor; 'we will try.' So the doctor jumped out of his buggy, took his hypodermic syringe, went up to the mule and injected some ehloral under the skin. The mule stood a minute, then reared up on his hind feet, then started on a full jump down the road. The old darkey looked on in great surprise a moment, then started after the mule, crying 'Whoa, whoa!' until he gave up the chase for want of breath. When the doctor came up to him he said, 'See heah, boss, how much do you charge for that?' The doctor smiled and said, 'Oh, about a dime.'

"The darkey fumbled in his pockets and pulled out twenty cents and said: 'See, heah am twenty cents; just put some of dat in me, so I can catch dat mule.' Application of the story: Some people need an injection of some kind to catch up with their business."

GARDNER.

A HANDY PRESS FOR SHAPE AND ORNAMENTAL BRICK

Mr. Will P. Grath, president of the Illinois Supply and Construction Company, St. Louis, Mo., writes that they are having an exceptionally good trade for the midsummer season. The Grath special hand power presses are proving exceptionally popular. The accompanying letter is one of many similar communications they have received.

THE DILLONVALE BRICK AND TILE COMPANY.

Manufacturers of Fine Pressed Brick.

Dillonvale, O., Aug. 6, 1907.

Illinois Supply and Construction Company,

St. Louis, Mo.

Gentlemen:—Replying to your favor of the 21st inst., we are very much pleased with our new hand power press purchased from you. It is giving perfect satisfaction and we are making a very fine grade of ornamental brick.

It is a very handy press to have for shape and ornamental brick. The men have learned to handle same with a satisfactory speed and are producing a very fine brick for a small plant where orders for shape brick are limited. This is the press.

Yours truly,

THE DILLONVALE BRICK AND TILE COMPANY,

Per H. C. Connelly, Gen. Mgr.

The Grath family of presses are illustrated on page 121 of this issue.

Written for THE CLAY-WORKER.

**A NOTABLE VICTORY AGAINST THE RAILROADS ON
BRICK FREIGHT RATES BY THE NATIONAL
PAVING BRICK MANUFACTURERS'
ASSOCIATION.**

AS A RESULT of the decision recently rendered by Inter-State Commerce Commissioner Lane, that the railroads must make no distinction in rates on various kinds of brick, and the subsequent decision of the various railroad companies operating in this part of the country that all brick must be shipped at the highest rate in consequence of this decision, a determined battle for the rights of the manufacturer was started early this month by the members of the Beaver Valley Brick Manufacturers' Association, which is composed of the twenty-nine manufacturers throughout the valley.

It will be remembered that the Stowe-Fuller Company, of Cleveland, had appealed to the Inter-State Commerce Commission to restrain the Pennsylvania and Baltimore & Ohio railroad companies from raising the rates on brick, or from charging different rates on the three kinds of brick turned out of one kiln and shipped from points in Eastern Ohio to New York. The Commission decided, and issued a ruling that the railroads must not make any distinction between these three kinds of brick which are so nearly alike that it needs an expert to distinguish them. This applies to fire, paving and building brick. The highest rate was charged on fire brick, the next on building brick, and the lowest on paving brick.

The railroad companies thereupon advanced the building and paving brick rates to the rate charged for fire brick, this advance in rates being scheduled to take place on September 1, 1907.

Upon the receipt of this notice of the advance in rates, the members of the Beaver Valley Brick Manufacturers' Association held a meeting at the Tamaqua Club, at Beaver Falls, to take action in their proposed protest against the advance in rates of the building and paving brick.

This meeting was attended by representatives of all of the twenty-nine members of the association, of which Archibald Stewart, of the Pennsylvania Clay Company, is president, and Paul S. McMichaels, of the Douglas-Whistler Brick Company, is secretary. At this meeting, F. N. Beegle, of the Darlington Brick Company, was elected a delegate to the meeting, which was called to be held at Cleveland on August 5, where the National Paving Brick Manufacturers' Association was to meet.

At the Beaver Falls meeting, it was decided to enter a formal protest against the raise in rates until the contracts at present on their books at least were completed and shipped. The paving brick manufacturers claimed that if the rates were advanced as proposed, it would mean a serious loss to all of them, and that a number of them would be forced to discontinue business. It was also contended that business at any distance from the home plants would be prohibited by these rates, and that there was not sufficient demand in the immediate vicinity, or within hauling distance of any of the local plants, to consume the output, which would necessitate either the closing down of the plants or adapting them to the manufacture of one or the other of the kinds of brick.

The building and fire brick manufacturers were seriously interested on account of their claims that if the paving brick manufacturers are curtailed in their market, many of them will simply utilize their plants for the manufacture of either fire or building brick, and that this will make competition even more fierce than it is at present, and will in a comparatively short time, completely demoralize the market.

There is an immense amount of capital invested in the brick business in the Beaver Valley, and a number of the

most important cities depend almost wholly on these plants for the wages of the people. It was also claimed that to close down these plants meant the ruination of more than one prosperous city or town.

At the conclusion of the meeting, it was decided that unless the manufacturers could obtain redress, the association would take the matter into court and ask for an injunction restraining the railroads from putting the new rates into effect. This closed the meeting, and another was to be held after the meetings in Cleveland and Pittsburg.

The Cleveland Meeting, Held August 5.

The following manufacturers from Indiana, Illinois, Ohio, West Virginia and Pennsylvania were in attendance at this meeting, which was held at the offices of the Deckman-Duty Company on Monday afternoon, August 5. The following members of the National Association were present:

C. P. Mayer, Pittsburg, Pa.
F. M. Brady, Cleveland, O.
F. L. Manning, Portsmouth, O.
R. L. Lewis, Gloucester, O.
C. M. Crook, Youngstown, O.
Spencer M. Duty, Cleveland, O.
Charles J. Deckman, Malvern, O.
William G. Hipp, Massillon, O.
John Starkey, North Industry, O.
A. P. Maurer, Canton, O.
J. G. Barbour, Canton, O.
Clarence S. Vanderbark, Zanesville, O.
N. O. Townsend, Zanesville, O.
F. N. Beegle, Beaver Falls, Pa.
William P. Blair, Terre Haute, Ind.
John Copeland, Birmingham, Ala.
S. P. Baird, Charleston, W. Va.

The entire matter was gone over at length at this meeting, and it was decided to make an appeal to the Inter-State Commerce Commission, and in the event of this appeal failing, it was decided to go into court at once and ask for a restraining injunction. The paving brick men, according to the new freight tariff, are the hardest hit, they having had the advantage of the lowest rate, which, according to the tariff, is to be advanced to the fire brick rate on September 1, when all brick will be carried at the same rate—the highest. Further action was deferred until the following Tuesday, when the members of the association were notified there would be another meeting at the Hotel Henry, Pittsburg.

The Pittsburg Meeting.

The Pittsburg meeting was well attended, the members present representing about 75 per cent. of the total membership. At this meeting it was decided to have Attorney James M. Campbell, of Pittsburg, file a Bill in Equity asking for an injunction and restraining order in the United States Circuit Court at Pittsburg. This bill was prepared, and in detail, is as follows:

IN THE
UNITED STATES CIRCUIT COURT,
Western District of Pennsylvania,
Pittsburg, Pa.

IN EQUITY.

No. ——. NOVEMBER TERM, 1907.

THE METROPOLITAN PAVING BRICK COMPANY, ET AL.,
Complainants,

vs.

THE PENNSYLVANIA COMPANY, ET AL., Respondents.

BILL OF COMPLAINT.

To the Honorable the Judges of the Circuit Court of the United States for the Western District of Pennsylvania:

Your orators, The Metropolitan Paving Brick Company, a corporation of the State of Ohio, and a citizen thereof; the Malvern Clay Company, a corporation of the State of Ohio, and a citizen thereof; the Big Four Clay Company, a corporation of the State of Ohio, and a citizen thereof; the T. B. Townsend Brick and Contracting Company, a corporation of the State of Ohio, and a citizen thereof; the C. P. Mayer Brick Company, a corporation of the State

of New Jersey, and a citizen thereof, and the National Paving Brick Manufacturers' Association, a voluntary association of paving brick manufacturers of which the above named are members, bring this their bill of complaint, for themselves as individuals, also for said Association and for all its members whether above mentioned or not, and for all others similarly situated whether members of said association or not, against The Pennsylvania Company, a corporation and citizen of the State of Pennsylvania; The Pennsylvania Railroad Company, a corporation and citizen of the State of Pennsylvania; the Baltimore & Ohio Railroad Company, a corporation of the State of Maryland and West Virginia, having complied with the laws of Pennsylvania and doing business in said State; the Pittsburgh and Lake Erie Railroad Company, a corporation of the State of Pennsylvania and a citizen thereof; the Pittsburg, Cincinnati, Chicago and St. Louis Railway Company, a corporation of the State of Pennsylvania and a citizen thereof; the Lake Shore Railroad Company, a corporation of the State of Pennsylvania and a citizen thereof; the Wabash Railroad Company, a corporation of the State of Ohio and a citizen thereof, having complied with the laws of Pennsylvania and doing business in said State, and the Central Freight Association, a voluntary association composed of all the railroads doing business in Central Freight Association territory, hereinafter described, defendants, and thereupon your orators complain and say:

1. Your orator, The Metropolitan Paving Brick Company, is a corporation of the State of Ohio, a citizen thereof, having its principal office at Canton, Ohio, and is an inhabitant thereof; the Malvern Clay Company is a corporation of the State of Ohio, a citizen thereof, having its principal office at Malvern, Ohio, and is an inhabitant thereof; the Big Four Clay Company, is a corporation of the State of Ohio, a citizen thereof, having its principal office at Malvern, Ohio, and is an inhabitant thereof; the T. B. Townsend Brick and Contracting Company is a corporation of the State of Ohio, a citizen thereof and having its principal office at Zanesville, Ohio, and is an inhabitant thereof; the C. P. Mayer Brick Company is a corporation of the State of New Jersey, a citizen thereof, with its principal office at Pittsburgh, Pennsylvania; The National Paving Brick Manufacturers' Association is a voluntary association of paving brick manufacturers scattered throughout the United States, organized solely for the purpose of promoting the welfare of the paving brick business in all lawful ways, comprising in its membership sixty-two manufacturers of paving brick.

2. Defendant, The Pennsylvania Company, is a railroad corporation, organized and existing under the laws of the State of Pennsylvania, and a citizen thereof; the Pennsylvania Railroad Company, is a corporation and citizen of the State of Pennsylvania; the Baltimore & Ohio Railroad Company, is a corporation of the State of Maryland and West Virginia, having complied with the laws of Pennsylvania and doing business in said State; the Pittsburgh and Lake Erie Railroad Company, is a corporation of the State of Pennsylvania and a citizen thereof; the Pittsburgh, Cincinnati, Chicago and St. Louis Railway Company, is a corporation of the State of Pennsylvania and a citizen thereof; the Lake Shore Railroad Company, is a corporation of the State of Pennsylvania and a citizen thereof; the Wabash Railroad Company is a corporation of the State of Ohio and a citizen thereof, having complied with the laws of Pennsylvania and doing business in said State, and the Central Freight Association is a voluntary association composed of all the railroads doing business in Central Freight Association territory, hereinafter described.

3. Your orators herein bring this, their petition, in behalf of themselves as individuals and also in behalf of all other members of the National Paving Brick Manufacturers Association, who are too numerous to mention in this Bill, the members of said Association being sixty-two in number, and comprising corporations and companies engaged in the manufacture of paving brick located throughout the United States, the output of the members of said Association being about seventy-five per cent. of the total output of paving brick in the United States.

4. The rate on paving brick eastbound from Chicago to New York since September, 1904, has been 20 cents per hundred pounds; the rate on fire brick during said period having been 25 cents per hundred pounds from Chicago to New York, eastbound.

5. The Central Freight Association territory comprises that territory located north of the Ohio River, east of the Mississippi River, and west of Pittsburgh, and from this territory all freight rates on paving brick and on all brick eastbound are and have been based on the Chicago and New York rate above mentioned.

6. On June 24th, 1907, the Interstate Commerce Commission decided in the case of the *Stowe-Fuller Company vs. Pennsylvania Railroad Company, the Pennsylvania Company and the Baltimore & Ohio Railroad Company*, that on or before August 15, 1907, the defendant companies therein named should cease from their practice of charging different rates on fire, building and paving brick from points on their lines in the State of Ohio to points in the States of New York and Pennsylvania; and ordered the publication on or before the 15th of August, 1907, of same rates from said points to said points of destination on shipments of fire brick, building brick and paving brick, authorizing said dependants to

make said rates effective upon three days' notice to the public and to the Commission, said notice to be given in the manner required by law.

7. The defendant companies, upon the making of this decision in the above mentioned case, met with the members of the Central Freight Association, an association of all railroads operating in the Central Freight Association territory above described, in New York about the 18th day of July, 1907, and decided to increase the rate on paving brick to 25 cents per hundred pounds from Chicago to New York eastbound, and to consequently increase the rates from all points in the Central Freight Association territory eastbound proportionately, thus fixing the rate on all brick, fire, building and paving, at 25 cents per hundred pounds from Chicago to New York.

8. On account of the objections of certain members of said Central Freight Association to such a ruinous increase in the rate on paving brick, and on account of the protest against such unreasonable increase with which said railroads of said Central Freight Association were flooded, another meeting of the members of said Central Freight Association was called and held in Chicago on August 1st, 1907, at which the action above described was reconsidered and it was decided to make the rates on all brick from Chicago to New York eastbound 22½ cents per hundred pounds, and consequently to increase the rate on paving brick from Chicago to New York 2½ cents per 100 pounds, and from all points in Central Freight Association territory eastbound proportionately.

9. Your petitioners have been notified by the railroads and are reliably informed that tariffs are about to be published by the defendant companies, stating the increase in the rates on paving brick as decided at the Chicago meeting above mentioned, namely, from 20 to 22½ cents per hundred pounds from Chicago to New York, eastbound, under which tariff said rate will be put into effect from all points in Ohio on the line of Pennsylvania Company and Baltimore & Ohio Railroad Company, eastbound, on August 15th, 1907, and from all other points in Central Freight Association territory, eastbound, on September 15th, 1907.

10. If this rate is put into effect on such short notice to your petitioners, they will be caused irreparable injury, and in all probability many of the concerns now engaged in the paving brick business will be compelled to close their doors and will be absolutely ruined, this on account of old contracts which your petitioners and others engaged in said business have on hand which must be filled by them by shipments eastbound from points in said Central Freight Association's territory, which shipments cannot possibly be made before said rate goes into effect on account of the unreasonably short notice of the advance which has been given by said defendant company.

The season for shipping paving brick is in the summer; contracts are made based on this fact. Consequently the present time is in the midst of the shipping season, a fact well known to all of said defendants.

11. The margin of profit in the paving brick business has become so small that unless the business is conducted most conservatively and carefully, the life of the company engaged therein is imperiled; contracts are made and let for paving brick on very narrow margins, and such an increase in the rate on paving brick will throw a tremendous loss upon the manufacturers of it, who have contracts unfilled and which cannot be performed prior to the enforcement of said rate.

12. By reason of the fact that the laws of many states and municipalities require the engineers to make estimates for future work several months in advance and provide that no bids over 10 per cent. in excess of such estimates shall be accepted, hundreds of these estimates have already been made and bid for by paving brick men, on the basis of the old freight rates, which bids have to be accompanied in most instances by a deposit in money to secure the performance of the contract if accepted by said municipality, and can not be withdrawn from by said bidders under the terms of the bids, as your petitioners are informed and believe. The enforcement of this increase in rates at this time on such short notice will work great hardship in causing a heavy loss on all such work not only to your petitioners, but to all those engaged in the business.

13. The increase of rates on such short notice will cause many plants, as your petitioners verily believe, to shut down, not only on account of the immediate loss entailed on old contracts unfilled and on work already bid for, but also on account of inability to get new work at such an advance in price as would be required by said increase, in view of the short notice.

14. Your petitioners are informed and believe that certain of the members of the Central Freight Association are willing to postpone the enforcement of this increase in rate on paving brick until the 1st of January, 1908. If this were done, petitioners would be able to perform their old contracts under the old rate without loss, but on account of the decision reached by said Central Freight Association at its meeting in Chicago, above mentioned, the tariffs are about to be published and said increase is about to be made.

15. Your petitioners are preparing a complaint to be presented to the Interstate Commerce Commission in regard to this matter,

which complaint will protest against said increase as unreasonable, unjust, illegal and in contravention of the Act to regulate commerce, approved February 4, 1887, and the Acts amendatory thereof and supplemental thereto; but this complaint cannot be heard at this time as the Commission does not sit until September 1, 1907, and in all probability no hearing can be had until the latter part of September and no decision until probably in October.

16. Your orators further aver that this increase in rate is unreasonable, unjust, illegal, and in contravention of the Act to regulate commerce, approved February 4, 1887, and the Acts supplemental thereof and amendatory thereto, and that the notice given of said increase as above mentioned is unreasonable, unjust and illegal.

17. Your orators further aver that the defendants are acting in concert with each other and with other members of the Central Freight Association in pursuance of unlawful agreements between said railway companies in restraint of competition and of interstate trade, and that said association is illegal.

18. Wherefore your orators need equitable relief and pray your Honorable Court as follows:

First. To grant your orators a writ of subpoena to be directed to the said Pennsylvania Railroad Company of Pennsylvania, the Pennsylvania Company of Pennsylvania, and the Baltimore & Ohio Railroad Company, of Maryland, the Pittsburgh and Lake Erie Railroad Company, of Pennsylvania; the Pittsburgh, Cincinnati, Chicago and St. Louis Railway Company, of Pennsylvania; the Lake Shore Railway Company, of Pennsylvania; the Wabash Railroad Company, of Ohio; the Lake Shore Railroad Company, of Pennsylvania, and the Central Freight Association, thereby commanding them and each of them under the rules of your Honorable Court to appear before your Honorable Court and then and there to make full, true, direct and perfect answers to

sinful hearing can be had as to the granting of the injunction prayed for.

Fifth. That the Central Freight Association be declared an illegal combination in restraint of interstate commerce and that the defendant railway companies be enjoined from prosecuting the purposes of such illegal combination through the medium of said Central Freight Association in so far as concerns the transportation of brick to and from points directly affecting the rights and interests of your orators.

Sixth. And for such other and further relief as to equity and justice may appertain and as to your Honorable Court may seem meet.

And your orators will ever pray, etc.

JAMES S. CAMPBELL,
Solicitor for Complainants.

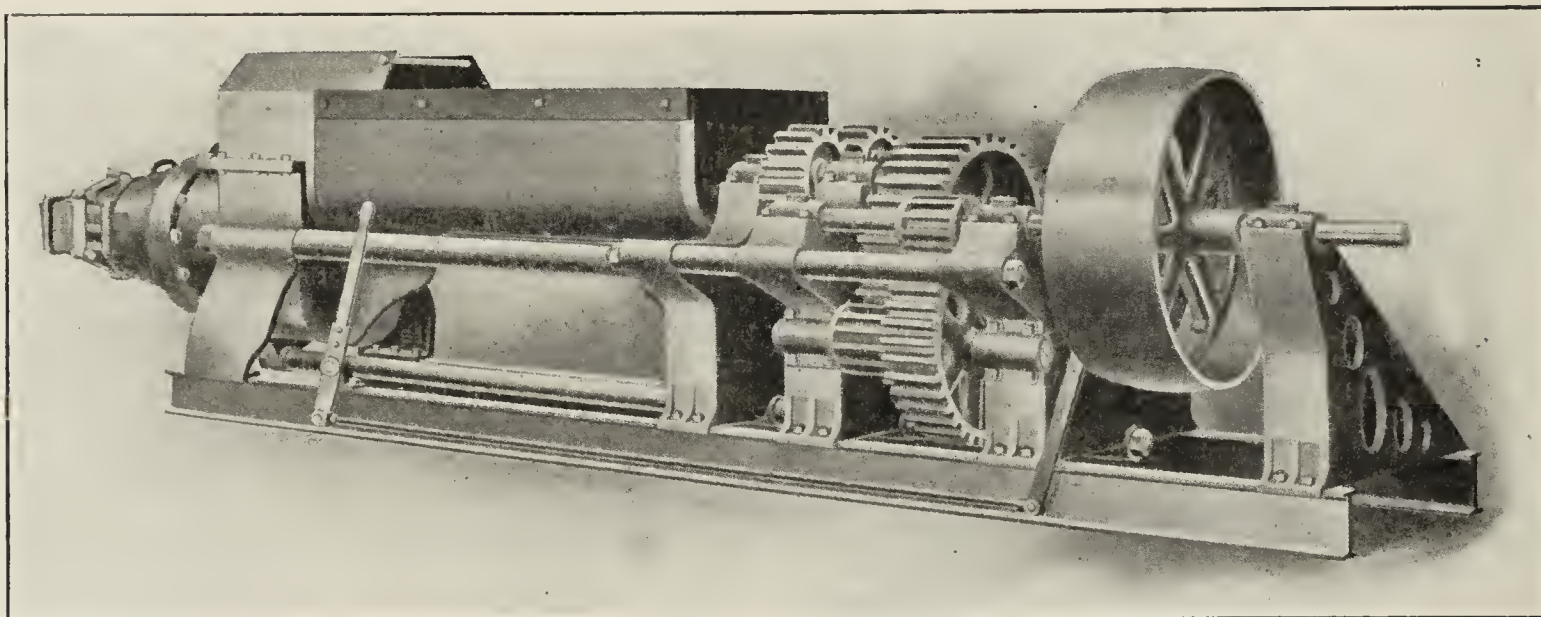
Duly sworn and subscribed to before a notary public August 7th, 1907.

Judge Ewing being unable to hear the case on account of the press of business, the case was assigned to Judge Archibald, of Scranton, Pa.

The association also petitioned the Inter-State Commerce Commission to compel the railroads mentioned in the Bill in Equity to postpone the advance until January 1, 1908, in order that the manufacturers might fill the contracts on hand which were taken at a price based on the old rates, and also to work off the old brick that was manufactured for shipment at the old rates.

The Commerce Commission on August 14 granted this petition, and the new interstate rates on all brick will remain the same until January 1, 1908, on shipments from the Central States to eastern points.

In the meantime the brick manufacturers and the railroad



Mammoth Combined Brick Machine, the "Fate Special."

this Bill, and to perform and abide by such further order, judgment or decree as to your Honorable Court shall seem meet.

Second. That your Honorable Court grant unto your orators your writ of injunction, commanding said Pennsylvania Company, Pennsylvania Railroad Company, the Baltimore & Ohio Railroad Company, the Pittsburgh and Lake Erie Railroad Company, of Pennsylvania; the Pittsburgh, Cincinnati, Chicago & St. Louis Railway Company, of Pennsylvania; the Lake Shore Railway Company, of Pennsylvania; the Lake Shore Railroad Company, of Pennsylvania; the Wabash Railroad Company, of Ohio; and the Central Freight Association, and all persons claiming to act under their authority, direction or control, to refrain from publishing tariffs announcing an increase in the freight rate on paving brick from 20 cents to 22½ cents per hundred pounds from Chicago to New York, eastbound, and from other points in the Central Freight Association territory eastbound as going into effect August 15th, 1907, from points on the dependants' lines in Ohio and from other points on September 15th, 1907.

Third. That your Honorable Court grant unto your orators your writ of injunction commanding said defendants and all persons claiming to act under their authority, direction or control, to refrain from charging and collecting such increase upon the said dates above mentioned, and until such time as your petitioners can obtain from the Interstate Commerce Commission a decision as to the reasonableness and legality of said increase.

Fourth. That your Honorable Court grant unto your orator a restraining order, restraining said defendants from publishing said tariffs announcing said increase to take effect on said dates above mentioned, and restraining said defendants from charging and collecting said increase on said dates above mentioned until

authorities will hold a number of conferences in an effort to adjust the rates to the satisfaction of all concerned. It is thought locally that this will readily be accomplished, for it is already granted that the manufacturers have won a signal victory, and will not be slow to hold their advantage, so lately won.

G. D. S.

A LARGE CAPACITY BRICK MACHINE.

THE ACCOMPANYING illustration shows clearly the massive construction of the "Fate Special" combined brick machine made by the J. D. Fate Company, of Plymouth, Ohio, in whose ad on page 183 of this issue is shown another view of this immense machine which has a daily capacity of 100,000 to 200,000 brick, and weighs 30,000 pounds.

It is impossible to get a full conception from the illustration of the real size of this mammoth machine, and even the following dimensions may fail to give the readers a true idea of its magnitude. Length over all, 25 feet; height, 6 feet, 6 inches; width, 6 feet, 4 inches; width of pug shell, 42 inches; length, 10 feet; main auger shaft, 6 inches in diameter; intermediate and pug shafts, 4½ inches in diameter; driving shaft, 3½ inches in diameter; main gear wheel, 12 inch face; intermediate and pug gears, 8½ inch face.

Written for THE CLAY-WORKER.

PHILADELPHIA BRICK YARDS.

New Plant of H. C. Carroll's Sons.



THE FIRM OF H. C. Carroll's Sons, brick manufacturers, has house-cleaned absolutely, and moved into the new location, 67th and Gibson, Southwest Philadelphia. The plant occupies the old Buist nursery land—one hundred and five acres of ground.

Carroll Brothers have started here, spick and span, having discarded all the old material at their yard on Girard avenue, and built a plant here that is permanent. The buildings, sheds, etc., need never be moved, as there is absolutely no clay under the improvements. There is material for fifty years to come, and the clay is of superfine quality and almost inexhaustible.

They have installed two latest Martin soft mud machines, a one hundred and fifty horse-power engine and four one hundred horse-power boilers. There are eight ten-arch kilns set in a straight line, each with a capacity of one hundred and seventy-five thousand (175,000) bricks. Their patent dryer has a drying capacity of one hundred and eighty-five thousand bricks per day. This plant will turn out twenty-three million (23,000,000) bricks yearly, and could be increased one-third more. The plant is laid out so that it can be increased one-third.

Carroll Brothers have not considered themselves alone in the building of the new brick plant. They have largely considered the comfort and convenience of their workmen. To understand this, one has but to observe the systematic arrangement of the dryers, the short distance the bricks are to be carried to be placed in the racks, and the absolute freedom of the men in traveling to and fro; no dodging of passing workmen, and no distance to walk. The dryers are lofty and finely ventilated; a fine air stirring through the open doors and windows.

The bricks that are drying over night are thoroughly dried, and the doors and windows opened so that the place is comfortable for the men to enter the next morning. Does it pay to consider the comfort of one's men? And do they appreciate it? Yes. Decidedly yes to both questions. We must admit that this new plant is not at present the most conveniently situated, yet never have the Carroll Brothers had less trouble with their men. A cool, comfortable place to work is conducive to labor. The tremendous shed keeps the hot sun from pouring on them in summer and protects the men from the bitter cold of the winter. They employ one hundred and fifty men steady—half Italian and half negroes—and steady is a good word for them too. We were informed that the men are so careful in handling the brick that there are often not a half dozen bricks marked by the fingers.

The clay bank is a rich one, containing plenty of moulding sand as well as clay. The waste heat from the boilers is utilized for drying the sand by means of flues running from the boiler house. We watched the men packing the moist sand on these iron plates and turned from these again to observe the finely sifted sand, ready for use.

Of course, the plant is not yet in absolute trim; the buildings have not received their coats of paint, but when all is finished this plant will be one of the finest in this old Quaker City.

All of the water for the brick plant is obtained from the creek in adjoining meadows.

I cannot leave this plant without a parting greeting to the offices. These are airy in the extreme, looking out on the expanse of woods and green fields, out over toward the limit of that section—98th street, otherwise known as Elmwood.

We certainly compliment the Messrs. Carroll on their outlook and present surroundings, for of all genial, hearty and kindly spoken men, these are two of the greatest. For the worthy, their tongues are loud in praise. May we meet more of such men and get more on our way through life. They are tonics of encouragement and god-speed.

By the way, this is the fiftieth anniversary of their brick

manufacturing business. They started in 1857 at 49th and Lancaster avenue. In 1872 they moved their plant to Girard avenue. From the present condition of things, it is to be judged that the brick manufacture will be continued in its present location for another half century.

One of the pleasant features of my visit to the Carroll plant was the drive back to the trolley along a shady road.

Joseph L. Siner's Sons, Nicetown Lane, are working up to the top notch with the output all sold up to the first of the year. The outlook for the fall is fine, with a probable rise in prices, owing to the scarcity of bricks. Of course,

G. J. Rose Brick Manufacturing Company, Erie avenue and G streets, has all it can do for the summer. The brick business is all right for two or three months yet. They are supplying bricks for sixty or seventy two-story houses at Ninth and Erie avenues, for Schneider, the builder, seventy-five houses for McRibbon and fifty for another builder—all up town.

George Carnell, North Fifth street, is shipping machinery south and west, also in Philadelphia. He is sending some to California. There is something radically wrong; some screw loose when western machinery can be shipped and placed east cheaper than the eastern machinery companies can place it. What is it? Why is it? Reasons come to light with a little patience. So probably this matter will adjust itself.

Thomas Gesner & Son,

Sixty-fifth and Woodland avenue, are always busy on quiet, clean jobs, such as single houses or twin houses, moving along, slowly, surely, and having a good season. Their one million (1,000,000) Stretcher brick were sold out late in the spring. They get rid of all the bricks they can make right in their own locality, and have their work pretty well cleaned up at present. Forty thousand will finish all the operations they have on hand just now.

Hard brick were scarce in the spring and could not be gotten for love or money.

Gesner & Son get as good prices as anyone for their bricks. They do not make many, as the word goes, but keep easily and prosperously at work throughout the year.

The Equitable Brick Manufacturing Company.

Mr. Kimball, the manager of the above firm, informed us that business is comparatively slack just at present.

They have a contract to supply bricks in September for over one hundred houses, two and three story, in West Philadelphia. Another contract for ten two-story houses, and a third for eight two-story houses.

They are supplying bricks at present for sewers, and again for stores at Forty-second and Chestnut streets. They have also two lots of houses, ten and fifteen respectively, and another lot of houses, ten in number, at 40th and Baltimore avenue. Also bricks for a church at 52nd and Arch streets. They were busy at this yard all spring, since March 1, starting in on two big jobs left over from last year. The word is cheerful, the outlook good and the feeling one of satisfaction in finishing up the summer's work.

J. Byrne & Brother,

at 27th and Somerset streets, also have a hearty tone in the voice. Business good and everything looking prosperous. They have a voluntary and commendable word of praise for their Martin soft mud machine, turning out 36,000 bricks per day. Mr. Byrne says there's none better in his estimation.

They have two large operations just now. One, two hundred and five two-story houses at 22nd and Lehigh avenue, and another, two hundred and five two-story houses at 58th and Master streets. Several smaller jobs keep them busy, too, which is not so bad, is it, at the end of the season?

Peter Byrne & Son,

at 220th and Cambria streets, are looking straight ahead, too, finishing up at present about ninety houses in course of operation, one job of seven houses at Cambria and Somerset, and start in on thirty houses next week.

John M. Kennedy, Jr.,

Ontario and C streets, had his machine and engine house destroyed by fire on the morning of July 4. The damage amounted to \$2,000, partially covered by insurance. The cause is unknown, although the suspected cause is that of a fire balloon.

M. E. LOCKINGTON.



THE JAMESTOWN EXPOSITION.

Some of the Features of the Great Display That Will Attract the Visiting Clayworkers.

Midyear Meeting of the N. B. M. A. to Begin at Hotel Warwick, Newport News, Va., Tuesday, September 17, 1907.



PREVIOUSLY ANNOUNCED, there will be an informal gathering of clayworkers under the auspices of the National Brick Manufacturers' Association, at the Jamestown Exposition, beginning Tuesday, September 17, and continuing through the week. There will be no set program, but those who partici-

rooms with bath, \$2.50. Guests of the Warwick are furnished free transportation on the steamer to and from the Exposition.

The Exposition itself is very different from the great World's Fairs of recent times, and presents many charming features. Located on the smooth sandy beach of Hampton Roads, where stately ships of all nations ride at ease, it presents a beautiful picture, a composite picture of commercial life and holiday pleasures, that once seen will live in memory always.

The visiting clayworkers will be surprised and pleased to find the principal buildings are of brick, and all so well designed and constructed as to challenge the admiration of all who have an eye for architectural beauty. Evidently these immense buildings are not to be torn down at the close of the Exposition, for they are not temporary structures, but permanent improvements, and will be preserved for either public or private uses in the years to come.

The War Path is the amusement center of the Exposition, and here those who delight in such things will find a varied assortment of museums, world wonders, electric illusions and displays, educational and otherwise, all redolent of the tom-tom with which the irrepressible "spieler" draws his audience. Of course, the oriental beauties and the camels with their fezzed drivers are there, with the donkeys for the children. We are all guileless children on the "Warpath."

The Parade Ground, the largest in the world, will appeal



One of the Main Thoroughfares at the Jamestown Exposition.

pate will divide their time between the Exposition attractions and the various points of interest in that vicinity, as it best suits their individual convenience and fancy.

The Exposition, Norfolk, Old Point Comfort, Fortress Monroe, Buckroe Beach, Hampton, Phoebus, Portsmouth, Suffolk and other points of interest, may be reached easily either by trolley or boat, and congenial parties can be made up from day to day for sight-seeing trips that will occupy every waking moment, and when bedtime comes the tired body will find ease and rest in the comfortable beds at the Warwick. The latter is a most excellent hostelry and caters to the comfort of its guests in every possible way. It overlooks the bay and is situated conveniently near the steamer landing and railway station, and the trolley cars pass its doors.

The following rates will prevail, on the European plan: Two persons in one room, \$1.00 each; single rooms, \$1.50; rooms with bath, \$2.00 each, two persons in a room; single

to many. Here the fife and drum marshal the military hordes to daily drills. The pomp and splendor of war paraphernalia that appeals irresistibly to so many of us may be seen at its best. Then there are the water carnivals and the naval displays, the great battle ships in gala attire, the flags of all nations floating gracefully over the monster guns in which the dove of peace may nest for the time being, the music of brass bands and the glory of uniformed officers, than which nothing human is more gorgeous (excepting the Governor's staff), all in all, makes a rare combination that the average mortal may hope to see but once in a life time.

The great navy yard and ship building plants may be visited, ocean vessels and war ships may be seen in course of construction. The dry dock, where the floating arsenals are repaired, alone represents an investment of \$15,000,000.

Those who prefer to mix a little clay with all this "spice" will have an opportunity, for there are interesting brick plants

at near by points. The local members of the N. B. M. A., Mr. J. W. Davis, of Newport News, H. L. Jacobs and A. V. Sturgeon, of Suffolk, and others will be on hand to lead the way to their brick plants or to the various other points of interest.

When wearied of all these wonders, one may hie to the seashore and enjoy a plunge in the surf or sit and listen to the music of old ocean. Those imbued with the spirit of Isaac Walton can arrange for a day's fishing and it will be well to bring in addition to that dress suit, some fishing togs, for the big fish they catch in salt water splash considerable.

As has been remarked, these are to be strictly social sessions, affording real recreation, but there will be no penalty imposed upon those who by preference choose to talk shop. Button-hole talks are in order on all N. B. M. A. occasions, and those who have trade troubles will be at liberty to unbosom themselves and find such relief and consideration as only fellow clayworkers who have "been there" themselves can give.

The present very low railroad rates to the Jamestown Exposition make this trip an inexpensive one. Stop over privileges are permitted at Washington, Baltimore and Philadelphia, so those who wish may extend their trip to the metropolis. For full information as to depositing tickets, etc., consult the railroad agent, from whom can be obtained booklets showing views of Hampton Roads, about the shores of which are grouped Newport News, Old Point Comfort and the Jamestown Exposition.

From the Exposition, the visitors will go to Atlantic City



Warwick Park and Casino, opposite Hotel Warwick, Newport News, Va.

via Philadelphia, stopping while in the latter city at the Continental Hotel. At Atlantic City, Hotel Rudolph will be headquarters. Thus, those who have visited the Exposition previously and so prefer to join the party at either of the latter points may do so, and be sure of good company a plenty. When writing for hotel reservations state date of intended arrival, character of room desired and number in party, etc.

T. F. S.

HAYES RUN FIRE BRICK COMPANY TO ENLARGE PLANT

At a special meeting held last month at the general offices of the company at Orvis, Clinton County, Pa., the stockholders of the Hayes Run Fire Brick Company decided to increase the capital stock from \$225,000 to \$300,000. The money will be used at once for the increasing of the capacity of the plant, which is badly crowded, and is unable to take proper care of the orders on hand. W. I. Harvey, the general manager of the company submitted a report which shows that the company is in a most prosperous condition and has enough business on hand at the present time to keep the

plant running steadily for the remainder of this year, while there are a large number of inquiries being received for brick to be shipped during the winter and spring of 1908.

Written for THE CLAY-WORKER.

THE ST. LOUIS BRICK AND BUILDING SITUATION.



BUSINESS IN THE clayworking industries has been excellent during the past few weeks. The brick and terra cotta manufacturers have been quite busy.

The building record for July, 1907, ran a very close race with that for July, 1906, as shown by the record of permits issued for the month. The showing was better than was generally forecasted, in view of the fact that a period of remarkable building activity was at its height last year, and the climax is generally supposed to have been reached a year ago. The official figures show that 1907 is holding its own, and that the cessation of building to any marked extent is not yet in sight.

The reason assigned for the falling off is that contractors are too busy rushing work during the good weather to go to the building commissioners' office for permits for future work. A few rainy days would give the issuance of permits a boost which would bring the average up.

During July there were permits issued for 190 brick buildings to cost \$2,823,725, as against 232 permits at a cost of \$3,076,968 in the same month last year. Brick alterations to the number of 136, costing \$164,333 were authorized, while last year there were 132 permits issued with a cost of \$140,528. Permits were asked for 377 frame buildings to cost \$111,151, and last year 421 were issued costing \$123,478. Frame alterations totaled \$14,008, as against \$17,805 for July, 1906. Additions, brick and frame, during last month, reached \$78,641, as against \$158,333 last year. The total decrease is \$245,264.

For the second time the block of ground bounded by Elizabeth, January, Columbia avenues and Woods street, St. Louis, has been transferred. The first transfer was to James Green, president of the Laclede-Christie Clay Products Company, who paid \$41,000 for the property. It was bought by him for the benefit of the company for the fire-clay deposit it contained. The second transfer was made recently from Mr. Green to the Laclede-Christie Company. The consideration was \$5. The Laclede-Christie Clay Products Company is a consolidation of the Laclede Fire Brick Manufacturing Company, and the Christie Fire Clay Company.

Deeds transferring five tracts of land aggregating about 150 acres to the Evens & Howard Fire Brick Company from their agent were recently filed at Clayton, the county seat of St. Louis county. The company had erected a large plant on a part of the tract just south of Clayton, and it is in operation. About 200 acres were bought up for the company at a cost of from \$350 to \$1,000 per acre.

Miss Agnes A. Schiereck, until August 1 confidential stenographer for the Ross-Keller Triple Pressure Brick Manufacturing Company, which position she held for six years, is now the only woman deputy collector of internal revenue in St. Louis, and the youngest as well. She is 21 years old and pretty. She had the highest average of any of the civil service applicants, 87 per cent., at the examination held June 19.

A SAINT.

POTTERS' BASEBALL TEAM.

The Findlay Clay Pot Company has the distinction of having one of the fastest amateur baseball teams in Ohio. They have played and defeated many crack organizations throughout the state, and within a very short time they will play games in a neighboring state.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Pocket Kit Fills a "Long Felt Want."

Editor THE CLAY-WORKER:

I hereby acknowledge the receipt of your pocket kit. I find it is a very useful article—one I have long needed. Receive my hearty thanks for same.

Very truly,
HERMAN KOESTER.

A New Canadian Brick Plant.

Editor THE CLAY-WORKER:

Kindly address my CLAY-WORKER hereafter to me care of the Perfect Brick and Tile Company, Washburn, Ont., Can. This is a new company just starting up, of which I am the superintendent. We have ordered our machinery from the J. D. Fate Company, Plymouth, Ohio, including a Premier brick machine, disintegrator, heavy duty pug mill and side cut automatic cutting table. We are also putting in an exhaust steam dryer and will turn out 50,000 brick right from the start.

ALBERT NEAL.

Treasurer Sibley Fears Trouble on the "Warpath."

My Dear Randall:

In reading over your circular letter of August 1 and the enclosed clipping from the last issue of THE CLAY-WORKER, I thought it desirable on behalf of many unwary brethren to call your attention to the strange proposition announced in the last clause of the article in THE CLAY-WORKER.

You urge upon everyone attending the meeting at Jamestown to bring their wives and sweethearts. My acquaintance with you for many years confirms me in the belief that you are of peaceable turn of mind and have no desire for the governor of Virginia to call out the militia to quell any disturbance that might occur on the "Warpath" at Jamestown. For if these self same wives and sweethearts should meet on that occasion, woe betide the unhappy brickmaker! Really I thought you were a better friend to us than that! And I think it is up to you now to diplomatically suggest some scheme whereby this dreadful calamity can be averted.

Yours sorrowfully,

Birmingham, August 6, '07. JNO. W. SIBLEY, Treas.

No Trouble at All if You Take Your Own Wife and Sweetheart to Jamestown, Says the Secretary.

Dear Sibley:

Your favor of the 6th I find on my desk on returning from a trip to the mine. I suspected that somebody would take exception to the item referred to, but hardly thought it would be you. Of course I had no intention to make trouble, but just to bring pleasure and happiness to all who participated.

I have been taking my wife and sweetheart to the convention for years (Mrs Randall has attended every convention but one, and Edna has not missed a meeting since she began attending them fourteen years ago), and so has President Eisenhart, and there are others. Will Purington and A. R. Root had their wives and sweethearts with them at St. Louis,

and I suppose of course they will be at Jamestown. Evidently you had better bring Mrs. Sibley and Hettie with you.

I am confident there will be plenty of paint on the "War Path," but it will not necessarily be war paint. A good many have written that they fear they will be too busy at that time to get there, but that we will have a good crowd and a good time is assured, especially for those who take their wives and sweethearts with them.

Yours joyfully,

THEO. A. RANDALL,

Indianapolis, August 14, 1907.

Secretary N. B. M. A.

"A Brickmakers' Dream."

Editor THE CLAY-WORKER:

A brickyard free from smoke, ashes, coal and noise; a beautiful red shale brick free from cracks, of uniform size and thickness, without repressing, without a brick in stock and a season's output sold in advance. All this I found at Greensburg, Pa., on the plant of the Keystone Clay Products Company, managed by our mutual friend, E. P. Lippencott.

The plant is equipped with the American Clay Machinery Company's 9-ft. pan, No. 51 pug mill, No. 1 Giant auger machine, No. 25 automatic cutter, Eagle repress, elevator and piano wire screen, all driven by individual electrical motors. There is no belting or line shafting, and the machinery runs so quiet that sitting in the office at one end of the building, only the quiet hum of the motors and the raw brick pinions rolling on the gears, is heard, the latter being driven by "juice" (electric) furnished by the traction line. There are no engine or boilers, except a small boiler to furnish steam for the lubricating brick dies. The brick are burned in six round down draft kilns and with natural gas as fuel. The brick are dried in tunnel dryers, the waste heat being taken from kilns by blowers furnished by the American Clay Machinery Company, who also furnished the car equipment and complete plans for the plant.

The plant lies on a strip of ground forty feet wide, between the Pennsylvania Railroad and a trolley line, and it cost \$5,000 to excavate to get this much room. As soon as the shale can be worked off some, the trolley line can be moved over, the plant will be enlarged by the addition of six kilns, more drying tunnels, and the installation of another American Clay Machinery Company dry pan, increasing the output to 60,000 per day. If the gas "plays out" they have a six foot vein of coal on a level with the floor of the machinery building.

This is one plant where a man can go on in his "store clothes" and come out without being covered with soot and dust, and not have to wade in mud and litter to see the machinery run. The buildings are temporary frame structures, but it is the intention to build permanent brick buildings as soon as they have more room.

C. R. W.

Detroit Brick and Building News.

Editor THE CLAY-WORKER:

Brick men, contractors and builders of Detroit are rushed with work and the number of building permits that have been issued during the past month indicates that the busy season will continue into the winter months because much of the work now announced will not be completed this year. In the last seven months new buildings and additions have been going up at the rate of 455 per month, and this seems likely to continue until well into November.

In the month of July just ended permits were issued from the fire marshal's office for new buildings and additions to cost \$1,576,700, as compared to \$1,062,000 for the same month in 1906. The year 1906 was the greatest ever in the building business in Detroit, but last year's record now begins to look slim in comparison with 1907. Total figures for this year for new buildings and additions amount to \$8,889,800, as compared to \$7,376,400 a year ago. From the weather standpoint, this year was decidedly unfavorable to building in the early part of the year, and the months of January and February gave no promise whatever of the great volume of business to come. Present indications are that about \$2,000,000 more

building will be done here this year than last. Considering the fact that many cities have had a falling off in building operations this year, Detroit brick men and builders here generally have every reason to be satisfied with conditions.

As a matter of fact (local brick men have all and more business than they can handle. Manufacturers of clay products here all report active business, and in many cases deliveries in large quantities are not guaranteed. Prices are maintained, although no advance has been made over last month.

The Builders' Association of Detroit enjoyed its annual outing August 13. The members took a trip around Bois Blanc island, leaving at 5 p. m., and returning about 10 p. m. The outing was a decided success and was well attended.

Announcement has been made by the Buhl heirs of a 16-story bank and office building to be erected at Griswold and Congress streets. It is said the old Telegraph building will be torn down to make way for the new building.

Much interest is also manifested in Detroit in the new Ford building, 18 stories high. Practically all the terra cotta work on this building has been completed and it promises to be the handsomest building of its kind in Detroit. White enamel terra cotta has been used for exterior finish.

Commissioner Haarer has held up a great many asphalt paving jobs this season, claiming that asphalt contractors have combined to hold up prices. Estimated value of repaving held up is \$94,865, and new paving \$80,000; a total of \$174,865. So far nothing definite has been located, although the public works department refuses to go on with the work while present prices prevail.

Three well known Detroit contractors died during the

the center longitudinally. Then the rate before and after rattling were compared and the per cent. of loss figured.

Dimensions of brick, $3\frac{1}{4} \times 4 \times 9$. Weight 9 lbs.

11 equals 99 lbs. before rattling.

11 equals 84 lbs. after rattling.

Loss 15 lbs., which equals 15 per cent. approx.

$3 \times 4 \times 9$.

Weight $8\frac{1}{2}$ lbs.

11 equals $93\frac{1}{2}$ lbs. before rattling.

11 equals 75 lbs. after rattling.

Loss $18\frac{1}{2}$ lbs. which is 19.78 per cent. of $93\frac{1}{2}$ lbs.

But applying our logic the result is as follows:

3 lbs. : 3.25 :: 8.5 : 9.21 lbs.

Then 11 equals 101.31 lbs. recorded, as the actual weight which went into the rattler. The eleven rattled 3-inch brick were examined and the edges found to be rounded to a radius of 1-inch. Figure B.

Our $\frac{1}{4}$ -inch strip which we have imagined added to the brick, has only lost the small difference between Figures A and B. This we obtain by finding the cubic contents of a $\frac{1}{4} \times 4 \times 9$, end corners rounded to a $\frac{3}{8}$ -inch radius, equals 8.97 cubic inches, and the cubic contents of Figure B, $\frac{1}{4} \times 4 \times 9$, with end corners rounded to 1-inch radius, equals 8.95 cubic inches. We find the cubic inches in a block $3 \times 4 \times 9$, edges rounded to $\frac{3}{8}$ -inch, equals 103.95 cubic inches, weighs $8\frac{1}{2}$ lbs., or .0817 lbs. per cubic inch. We then multiply the ascertained weight per cubic inch by the number of cubic inches in our imaginary section after rattling. This, multiplied by the number of brick in the test, will be the amount to be

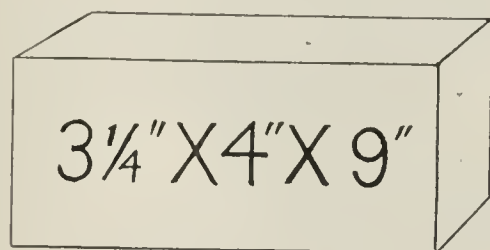


Fig A

Fig B

past month: William H. Kunnell, paving contractor; Philo L. Furgason, retired mason contractor, and John Kies, a general contractor.

The Detroit Roofing and Tile Company has recently filed articles of association, incorporating for \$20,000. This concern has been organized for some time, but did not incorporate until this last month.

WOLVERINE.

Some Observations in the Testing of Paving Brick in a Standard Rattler.

Editor THE CLAY-WORKER:

Some months ago we installed at our works at West Charleston, W. Va., a standard rattler for the purpose of giving information which would assist in making a more perfect paving brick.

We have tested a large number of bricks and blocks of various makes and various sizes. We could not find any information that would serve as a guide in comparing the values of the different brick and block as a paving material, taking into account the different sizes tested. In the absence of any precedent of record:

We adopted one block as a standard and increased or decreased the record weight of all the other brick as much as the other brick were smaller or larger than our adopted standard. For instance, we used an Ohio brick as standard, which measured $3\frac{1}{4} \times 4 \times 9$, and if we compared a $3 \times 4 \times 9$ with it, we added to the recorded weight of the charge which went into the rattler, so that the actual weight was to the recorded weight as 3 is to $3\frac{1}{4}$. These $3 \times 4 \times 9$ blocks were then rattled for an hour and the result noted. The different blocks were examined and enough added to the result to amount to a $\frac{1}{4}$ inch strip which we had estimated to have been added in

added to the brick when taken from the rattler, which we find in this case to be 8.43 lbs., which added to the 75 lbs., the weight after rattling, equals 83.43 lbs.

Then, 101.31 lbs. — 83.43 lbs., = 17.88 lbs., which is 17.64 per cent. of 101.31 lbs. So that in reality the two materials as a paving material are as 15 is to 17.88, not as 15 is to 19.88, as would have been usually taken. The difference between the two results is not altogether a difference in material, but the difference in size has somewhat to do with the difference in results, as shown by the rattler.

To corroborate our logic, we have had made from the same clay, and from the same column, and burned side by side in the kiln, blocks of various thicknesses, and we find in rattling these various samples and applying the above reasoning, that the results agree.

In other words, we can predict in advance what a change in the size of our brick would cause in the per cent lost in the rattler.

We do not think that the rattler test, as now conducted, is just the test that will give the various brick and block their just dues. We have found some block lose by general wear all over every surface and others lose by spalling at the corners and edges, and some block which lose heavily in the rattler will wear better in a street than others which do not lose so much. It is our idea that a rattler should be constructed cylindrical in form and the inside lined with block, using wooden keys between each row of block, or better still, set the block and use a cement filler, using a charge of cast iron cubes as at present. This would be a test similar to the street wear and would test the filler as well.

Respectfully,

S. P. BAIRD,

Mem. Am. Soc. C. E., Pres. Standard Brick Co.,

Charleston, W. Va.

Written for THE CLAY-WORKER.

SOMETHING ABOUT NEW JERSEY BRICKMAKERS.

A LONG THE Hackensack River manufacturing is booming. Makers have had over fifty days, during which not a drop of rain has fallen to hurt the fresh brick. And, as a matter of fact, through that entire fifty days not enough has fallen to more than wet the ground, with a single exception. The season was late in starting, but it has been good ever since. Burning after burning has been made up and sold and there is still demand for more. It is a good season for the makers and they are improving it to the utmost. Perhaps, if the truth were really spoken, some of them would be glad of a respite in the rush which has followed them throughout the season.

It sometimes tiresome to have to follow too closely the operations of the makers. Still, when opportunity offers and everyone who knows anything about the business knows that the business has suffered too much in the past to be comfortable for the makers, the manufacturers are eager to make all they can out of the business. This year promises to be quite as favorable as last, though perhaps it will not come up to the standard set by two years ago. There is a good sale for everything made and full prices are obtained in most instances. The lack of rains and other injurious features has had the effect of keeping the quality of the brick up to the highest standard and the best prices have been paid in all instances.

While New Jersey has some extensive building operations in progress which are consuming immense quantities of brick, it is to New York that the Hackensack makers look for the bulk of their market. And their demand is insatiable. Still, bankers are beginning to complain about tight money and the break in stocks predicted by Thomas Lawson has come. It is impossible to say what may be the result, but excepting temporarily, there is likely to be little permanent difficulty. Newark is taking great quantities this season and the huge manufacturing improvements on the outskirts of Newark and in Jersey City, are also great consumers. The promised crash has not appeared yet, nor is it even in sight.

The use of concrete is increasing. That much cannot be denied, but everything points to the fact that it will probably be no more than a temporary condition. That is to say, there will be a certain class of cheap buildings made from concrete, but the numerous collapses and the unsightly appearance of the structures when completed do not commend them to fastidious persons who care for the looks. The situation is no different from what it has been for a year or more, excepting that there are more of the cheaper class of buildings being constructed in some localities.

In the Perth Amboy section a good business is being done in brick this season and both the New York and Philadelphia markets are being supplied from these yards. It has been impossible to get reports of individual firms, but there is a general statement to the effect that all are prosperous and that demand is sufficient to absorb practically everything made without difficulty. Full prices are paid in all instances and the sale of the burning as fast as they are made, encourage makers to continue in development. With next year as good as this, considerable development of the industry is probable, though little definite information is obtainable concerning this as yet. The quality of the product of the Amboy yards is of sufficient high grade to make it popular wherever it is offered and makers always obtain good prices for their stock.

The Trenton potteries are said to be driven with business. The market is good and there has been scarcely a reduction in development or in manufacturing for months. The outlook is said to be unusually promising, orders in hand showing that no reduction in output will be required for a long time to come.

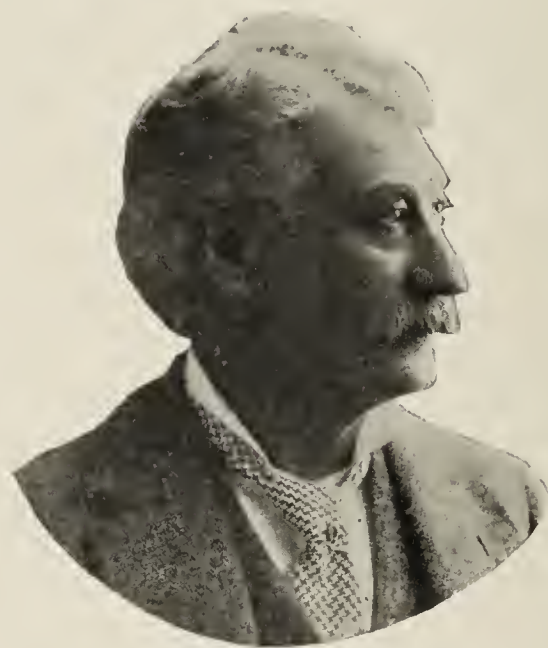
The decision of the war department to require the draw

bridge on the Hackensack to remain open for passing boats at all times, affects something like 60,000 commuters adversely, but is of benefit to the brick men who must ship down that river and up the Passaic. It is hard for commuters whose business requires them at a certain hour to wait an indefinite time for a slow moving brick schooner to pass through the draw, but the department held that the precedent would be dangerous and those interested in shipping declared that it would give the railroads practical control of the freight situation along these rivers. The application signed by thousands of the commuters was denied. The trains wait sometimes thirty minutes for schooners to pass and many employes of large houses, where the discipline is rigorous, are fined half a day for the loss of time. But it is impossible to make a regulation that will not injure someone, and perhaps it is as little troublesome now as it would be under other circumstances.

A. L. B.

OBITUARY.

Chas. M. Fitzhugh, for many years identified with the Hydraulic Press Brick Company in this city, died Thursday morning, August 15 at his home in this city. He was 63 years of age. He came to St. Louis fifteen years ago and had been identified with the Hydraulic Press Brick Company ever



The Late Chas. M. Fitzhugh.

since. Mr. Fitzhugh was a past master of the Masonic Order, a member of the G. A. R., and during the civil war served under Farragut with Admiral Dewey and others who have become famous in military and naval affairs since.

Death of a Pioneer Fire Brick Maker.

James Hammond, who was one of the first men to develop the manufacture of fire brick in Western Pennsylvania, died at his home at Bolivar, Westmoreland county, Pa., on July 26. Mr. Hammond was born in Ireland 77 years ago, and came to the United States in 1851, settling at Bolivar the following year, when he organized the Reese-Hammond Fire Brick Company, of which concern he was the president until he retired from active business a little over four years ago. Under his direction, the fine plant of the company was built at Bolivar, which is one of the best equipped plants for the manufacture of refractory material in Westmoreland county, and he took active charge of the business until failing health forced him to give it up to a large degree some years ago. He still retained the presidency, however, and did much toward setting the concern on its feet when it was in financial difficulties several years ago, and passed into the hands of a receiver. He is survived by one daughter and two sons, both of the latter being actively engaged in the operation of

the plant at the plant at the present time, and having offices in Pittsburg.

The Pittsburg district lost another of its well known brick manufacturers last month, when Thomas J. Robinson died at his home at Garfield, Pa., a brick manufacturing town opposite Bolivar, Westmoreland county. Mr. Robinson was a member of the firm of Robinson Bros., which was composed of John, William and Thomas J. Robinson, the three brothers having formed the partnership in 1889, building the plant at present operated by them during the same year. The concern manufactured fire brick exclusively from the start and has built up a large business, having been successful from the opening of the plant. Mr. Robinson had charge of the sales of the product of the company, and was on the road most of the time until a year ago, when he was taken ill, and forced to spend most of his time in a sanitarium at Chicago. He left the sanitarium some months ago, feeling much better, but recently uremia set in, and his condition became critical, and for several days prior to his death on July 34, he was unconscious. He is survived by his widow and his two brothers and three sisters. Interment was made at Bolivar.

John Mills, Jr., a well known Pittsburg brick contractor, died at his home at 6321 Shakespeare street, this city, the early part of this month, aged 66 years. He is survived by his three children.

Written for THE CLAY-WORKER.

WESTERN PENNSYLVANIA BRICK AND BUILDING NOTES.



CLAY INDUSTRY has been at its height during the past month, and business has been better than during any other July for a number of years. While there are not a great number of large projects in the building line going forward, there are so many smaller ones, principally residences, that there has been a steadily in-

creasing demand for both common and red pressed building brick. This summer there has also been a steady increase in the demand for both Pompeian and buff pressed building brick. Although the city is renowned as being dirty, the buff brick seems to stand up remarkably well, and does not discolor nearly so rapidly as it might be supposed. Throughout the suburbs there are a large number of houses being built of this brick, while in the exclusive residence districts the Pompeian 12-inch brick is a strong favorite.

The fire brick manufacturers report as a general rule that they have more orders on their books for vitrified paving brick than ever before in the history of the business. This is undoubtedly due to the good times that are prevailing throughout this entire district, and which, from the present indications, promise to continue for some time to come. All of the smaller towns that possibly can are paving the main streets at least, and in many cases there are towns that have started to pave all of the streets, brick being used in almost every instance.

Manufacturers of sewer pipe also report that their business this summer is holding up remarkably well, and that already it has shown a large increase over the same period of last year. In fact throughout this entire district there are so many sewer contracts being awarded that it is often a difficult matter to get the material to its destination on time. Prices received are accordingly very good, and all plants are running to the greatest capacity.

The demand this summer in the local territory for fire-proofing materials is not as great as it has been in previous years, although there has been a large increase in the demand in this city and immediate vicinity during the past month. The out-of-town business, however, has been more than holding its own, and a large increase is noted over any of the previous months of this year. There are a large number of heavy shipments being made to New York and other

eastern cities, as well as to the west, many carloads even being shipped to the Pacific coast.

One of the features of the local market, however, is the demand for the refractory grades of fire brick, for which there is a very heavy demand, owing to the large amount of new blast furnace and stove work that is going on throughout the entire iron and steel belt, as well as the usual amount of summer repairs and relinings.

The Hayes Run Fire Brick Company, operating large works at Orvis, Clinton County, Pa., is building fifty modern brick houses there for the use of the higher employes. All of these houses are of solid brick construction, and are not veneered as is usually the case in houses for similar use. When completed, quite a fine looking little town will have been constructed. The company is furnishing all brick.

At Wilmerding, Pa., the works of the Van Ormer Brick Company are being operated about to capacity, and if business continues as it has in the past two months it will be necessary to increase the capacity by building an addition, which the officers are now contemplating. In June the company made and shipped about 1,250,000 brick, while during July this output was increased to over 1,500,000, which is about the capacity. The firm has a large amount of business on the books, and the plant will be kept running to its limit all summer and fall at least.

The Pittsburg-Buffalo Company, which is one of the largest of the local manufacturers of fire brick, paving brick and sewer pipe, is making a large number of improvements at practically all of their plants, which are all located in Western Pennsylvania. John H. Jones, president of the company, has just returned from Europe, where he spent several months studying and inspecting foreign brick and clay working plants, mines, etc., and gained a number of valuable ideas, which he will have put into practice at his own operations. The company is at present building an immense brick plant at a new town named Mariana, a short distance from Pittsburg, and this plant will be one of the largest and most important in Western Pennsylvania. At this new plant, all of the brick will be manufactured that will be used in the building of the various buildings and residences that the company will erect there.

The Layton Brick Company, Layton Pa., has received the award of the contract for furnishing 300,000 wire cut fire brick for paving in the city of Uniontown, Pa., at \$11.25 per thousand. The same company has also been awarded the contract for furnishing a large number of the same kind of brick for street paving at Connellsville, Pa.

The Ambridge Brick Company, of Ambridge Pa., a short distance below Pittsburg on the Fort Wayne railroad, has been incorporated to operate the brick works located there. The incorporators are Henry Cooper, Andrew A. Hersparger, William F. Wilson, John F. Miller and Thomas P. Speer, all of Pittsburg and Ambridge. F. A. C.

A BOYD PRESS SEVENTEEN YEARS OLD STILL DOING EXCELLENT WORK.

Speaking of testimonial letters; that of the Texas Fire Brick Company, on page 119 of this issue, is both interesting and convincing, but the following one, under date of July 9, 1907, is even more so. A record of seventeen years of continuous service is truly remarkable. Can it be beat?

KNOXVILLE BRICK COMPANY.

Dry Pressed Square and Shapes and Common Building Brick.

Knoxville, Tenn., July 9, 1907.

Messrs. Chisholm, Boyd & White Co.,

Cor. Fifty-seventh and Wallace Sts., Chicago, Ill.

Gentlemen: The 4-mold Boyd "Special" bought of you in December, 1906, has been in operation about five months and is giving entire satisfaction. It is set up by the side of the old press bought of you seventeen years ago, and at a glance the improvement is apparent in the stronger, heavier construction, to say nothing of the improved mechanical features.

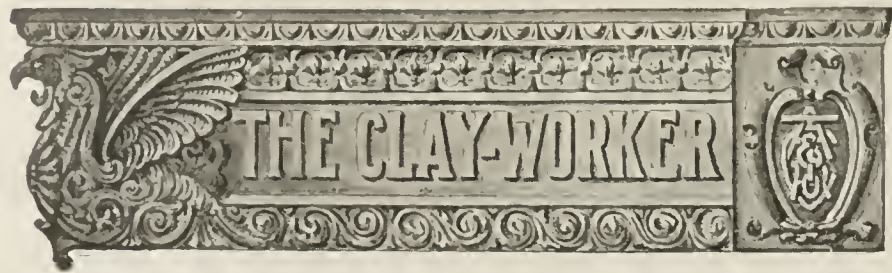
The "Special" presses about a half-pound more clay than the old press into the same size brick, thus resulting in a much harder brick.

We wish to say that the 17-year-old Boyd press is still doing excellent work and we are highly pleased with our experience with the Boyd presses.

Yours truly,

KNOXVILLE BRICK COMPANY.

E. L. Williams, Mgr.



Entered at the Indianapolis postoffice as second class matter.

A Praetieal Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	\$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " " " " " "	10.00
Ten copies, " " " " " "	15.00

Foreign subscriptions 65 cents additional.

Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to 224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVIII. AUGUST, 1907. No 2.

CURRENT COMMENT.

The calamity howler, too, had to take a vacation. The crops simply would not be ruined.

* * *

Summer madness takes strange forms sometimes. What's called a cottage at Newport would be a mansion in Posey County.

* * *

Maybe Tom Lawson, of "Frenzied Finance" fame was a bit severe in his arraignment of the "system," but recent events go to prove that he did not shoot very wide of the mark.

* * *

Those who are planning to attend the N. B. M. A. meet at the Jamestown Exposition, will do well to put in an old suit for fishing purposes, as well as a dress suit for the evening promenade.

* * *

Earthen, stone and china ware exports for the year ending June 30, 1907, amounted to \$1,097,000, as against \$177,832 ten years ago. Not so bad, but there is room to make it grow a lot more than that in the next ten years.

* * *

If commerce follows the flag, there ought soon to be a lot doing in the Orient now that the bulk of Uncle Sam's naval flags are headed for the Pacific. Who knows but that our flour trade with China will soon resume old time proportions.

* * *

When the vacation season comes to an end, let us return with renewed vigor to the trade school idea, and, if we can, hasten the time when no young man need start forth in this country without a thorough training of the right sort to fit him for a life of usefulness.

* * *

Dr. David T. Day, who for twenty years has had charge of the department of mineral resources of the U. S. Geological Survey, has resigned, in order to have more time to devote to the preparation of an elaborate report on the petroleum re-

sources. Edward Wheeler Parker has been appointed to succeed Dr. Day as chief of the division of mining and mineral resources.

* * *

The greed that keeps a man from knowing when he's got enough of a good thing is not confined to trusts—labor unions have some of it now and then.

* * *

President Roosevelt has no occasion to regret his remarks about certain undesirable citizens, for the verdict at Boise City in fact, should read "not guilty, but you must not do it any more."

* * *

Many a man gives up more real comfort in going away during the summer than he finds, but the vacation trip is profitable, if for no other reason than that it makes one appreciate anew the comforts of home that surround us most of the year.

* * *

Treasurer Sibley questions the closing paragraph of the editorial item in the July CLAY-WORKER relative to the Jamestown meet, which reads: "Those who can, are of course, expected to bring their wives and sweethearts with them." Are we to understand that "Master John" recommends or suggests the taking of some other fellow's sweetheart?

CONCRETE NOT A FIRE PROOF BUILDING MATERIAL.

In engineering, as in medicine, experts not only disagree, but entirely and radically change their own ideas and theories. A writer in one of the technical journals calls attention to this in connection with the final report made by the investigating committee of the American Society of Civil Engineers in its work completed recently at San Francisco. A while ago most engineers were telling us that reinforced concrete construction of buildings rendered the latter absolutely fireproof. This committee, after its long investigation concludes "that all structural parts of a building, of whatever material constructed, must be protected by another material which will be a more or less complete loss in a fire. The floors and frame constitute the structural parts, failure of which means the destruction of the building. All such should be fire-proofed. This applies with equal force to buildings with reinforced concrete columns, girders, beams and floors, which should be fire-proofed, as well as similar members of a steel frame structure, for concrete is destroyed by fire nearly as quickly as steel."

OUR CITIZENSHIP EXPENSIVE.

The average American believes himself blessed by the accident of birth that made him such. The advantages are many but the cost is also great. He is expected to voluntarily contribute to many funds, but is compelled to pay a high quota to very many others. For instance, the mere running expenses of a city like New York amount to \$31.00 a head. Chicago comes next with \$13.00 a head, while Washington, Schenectady and such cities spend \$11.00, and from that on down to \$6.00. Then crime costs us enormously, the care of state and other prisons, the detection of crime and all that sort of thing eats up a total of over \$700,000,000 a year. But the most useless and inane of all our expenditures is that of fire, which is equivalent to a tax of nearly \$8 per head. Part of that goes to a gamble we made with the insurance companies to reimburse us for part of what we lose, but the greater amount is utterly wasted in smoke. Besides the loss of property entailed by fire there are yearly sacrificed nearly or over 6,000 lives. Fully \$100,000,000 of the fire loss is of incendiary origin, or the grossest criminal negligence. And these conditions are bound to obtain until our people have grown to be sensible enough to build better, more fire-proof structures. No country on earth submits to

the fire-tax that we do. An European city that burns up \$50,000 worth of property a year feels grievously afflicted; the same sized city here is lucky indeed if it escapes with \$500,000 loss.

VALUE OF BRICK VS. CONCRETE.

It is an ill wind that blows nobody good, and now the brick men, among others, are getting some benefit from the San Francisco disaster. Reports from out there state that common brick has advanced to \$12.50 a thousand and some \$1 more, whereas a year ago they sold as low as \$6, though it is admitted that the expense of manufacture was less at that time. It is stated that machine cleaned brick from the ruins and burned districts are now selling at from \$9 to \$10 per thousand and are in great demand. This suggests a question and points a moral. The question is, how much is the concrete from the ruins worth, and the moral is, build with brick.

ARCHITECTS LARGELY TO BLAME.

The chief officer of the International Society of Building Inspectors arraigns the architects of the country in an able article in a recent issue of "Building Management."

"Particularly is there apathy," says this high authority, "in the profession regarding fireproof construction. When first confronted with this apathy one is dumbfounded, for it seems inexplicable, but we are face to face with the fact that if the city officers do not require it and the owner does not specifically call for it, there is scarce one architect out of ten who would think of even advising, let alone insisting upon anything beyond the old-fashioned, combustible and expensive mode of construction—wooden joists, framing, etc., etc. This is a most peculiar state of affairs, but a fact nevertheless. For years our people have mistakenly bent their energies water-wards. We have devised wonderful alarm systems, splendid fire departments and other expensive inventions with which to fight fire, and we have paid our billions in insurance and other alleged cures, but have failed to grasp the cardinal principle that prevention is infinitely better and saner than any attempt to cure epidemical or other diseases, including fire. Building properly and offering little or no fuel for fire to burn is the one logical solution of this grievous problem."

THE ORIGIN OF THE SKYSCRAPER.

The recent death of W. L. Jenney, one of Chicago's leading architects, seems to have precipitated the engineering and architectural professions into a more or less acrimonious discussion as to the origination of the steel frame skyscraper construction. There is no question but that Mr. Jenney actually built the first tall building in Chicago, the Home Insurance building, but others claim that Architects Burnham and Root had planned though not erected that mode of construction prior to that time, and still other candidates for the honor have presented their claims. Of them all Architect Buffington, of Minneapolis, seems to have the best foundation for his contention, as he is the only possessor of a United States patent on that construction, and has actually filed suits against owners of some tall buildings for having infringed his idea. Latest developments, however, bring out that his claims are combatted by Architect Fitzpatrick, of Washington, D. C., who asserts that the Buffington patent is invalid because it was not that gentleman's own conception, he having "absorbed" it from Fitzpatrick, who was then, in 1883, his chief assistant and who had elaborated the scheme of tall construction with an engineer named Strom.

The skyscraper certainly has solved many of our modern economic problems, and whether the scheme of construction was the invention of any one individual, or, as contended by

some, a natural evolution, a logical solution of the problems before them, a conclusion arrived at by many architects and engineers simultaneously, it seems that the architectural profession deserves the greater praise, though the matter is so essentially an engineering one, for its introduction and perfection.

FIRE PREVENTION NEEDED.

The disastrous fire at Coney Island, the fatal fire in the Christy street tenement house, where twenty or more perished, and the Long Beach Hotel fire, where eight hundred lives were imperiled, all occurring within a few hours and almost inside the limits of New York City, have impelled the International Society of Building Inspectors to renewed efforts in behalf of the better construction of buildings. All of these buildings, says Architect Fitzpatrick, the society's executive officer, were of flimsy, highly combustible construction, buildings that it is positively criminal for the municipalities to permit to be erected or to stand and shelter their thousands of human beings. Since the Iroquois theater disaster, cities have gotten busy amending ordinances and compelling really fine construction in theaters. Apartment houses, tenements and hotels are just as important, yet they seem to receive the minimum of attention, though more lives are more constantly exposed in them than in any other form of building.

Cities vie with one another in improving their fire departments and acquiring new apparatus, things looking to the cure of a long-established evil. Past experience with smallpox, yellow fever, etc., ought to teach us that the mere caring for, or attempted cure of the afflicted patients never amounted to much, in spite of the superhuman efforts spent in that direction; real benefits only began to accrue when we became sensible enough to take steps to prevent the disease. So it is with fire. We have to learn and our authorities have to insist and compel that all buildings be well-built, of non-combustible materials and put together in an intelligent, fireproof manner, so as to prevent fire, a mode of construction painfully little used these days.

A SANE AND REAL FIRE ESCAPE.

To go down the ordinary external fire-escape ladder, one has to be more or less of an acrobat and possess unusually strong nerves and sinews; nearly all such fire escapes are placed where, in a severe fire, they are liable to become red hot and useless, and in nine cases out of ten are located so as to be more or less inaccessible. The International Society of Building Inspectors, through its executive officer, Architect Fitzpatrick, of Washington, is making an effort to have cities incorporate in their building requirements, a rule that will give every structure a safe and positive fire-escape. The main stairs, it is argued, the ordinary means of access to a building that people use regularly day by day, is the most natural means of egress to which they will turn in a moment of need, therefore, it is contended, the main stairs of every building should be made absolutely incombustible, should be enclosed in fireproof enclosures, either walls of brick or tile, or screens of steel or wire glass, and having self-closing doors at every landing, and the said stairs to either abut directly upon the street or into a fireproof corridor leading to the street and from which corridor there shall be none but absolutely fireproof communications, doors, etc., to any other portion of the building. It may be a very slight inconvenience to open and close a door every time one goes up or down a stairway, but this is counterbalanced by the absolute security and safety afforded by such a stairway. It is the sanest and safest fire and ordinary exit from any building and there should be no time lost in making this suggested change in our ordinances operative, compelling new buildings to be so built and the old ones changed as speedily as possible.

"ALWAYS TELL THE TRUTH WHEN ADVERTISING."

By John S. Grey.

When you're rushing into print, I would give you just a hint—
Be careful of the statements you are making.
Only write what you believe, never trying to deceive,
Or confidence you'll certainly be shaking.
You must never be afraid, always call a spade a spade—
Your meaning you must never be disguising;
Let no greed of gain impel you a "fairy tale" to tell,
But always tell the truth when advertising!

If you make a stylish shoe, that of faults may have a few,
Say imitation leather soles of paper;
If the uppers are the same, you, of course, may make the claim
That the shoe of Fashion's style is "just the shaper."
You may say the shoe's "all kld"—for the double meaning's hid—
No matter what the public is surmising,
Don't prevaricate at all, into fiction do not fall,
But always tell the truth when advertising!

If a grocery you run, you can have a lot of fun,
When copy for your ads. you are dictating.
Say your sugar is the brand that is noted for its sand,
And your flour will "take the cake" in public rating.
Tell the great and greedy throng that your butter's very strong;
Your eggs old-fashioned, therefore appetizing;
That your coffee's worth abounds, for its merit there's good grounds;
And so you'll tell the truth when advertising!

If a clothing store you own, its attractions must be shown;
Tell the people you will "give them fits" for certain;
That you'll suit them, one and all, who upon you like to call,
With clothes that look superb—behind the curtain!
Say the cloth is sure to last, that its colorings are "fast."
You mean, of course, they'll "run" with speed surprising;
And be sure to take this tip—never let a falsehood slip,
But always tell the truth when advertising!

If you have a business great in the line of real estate,
For the land's sake, know your ground before you're seeking
Public market for the same—quite conservative your claim,
When of its great attractions you are speaking.
"Unapproachable" you'll call lots you cannot reach at all;
Your meaning readers won't be recognizing;
Say your mildewed country "cot" is "an old, historic spot";
But always tell the truth when advertising!

And if public praise you'd win for a patent medicine,
Enumerate the troubles it is curing,
'Tis a cure for—this you'll swear to—"all the ills that flesh is
heir to,"
When folks take it, robust health they are assuring.
Every possible disease which with mankind disagrees,
From headaches down to chilblains terrorizing,
Say your panacea cures—that its healing power endures—
But be sure to tell the truth when advertising!
—Profitable Advertising.

IT'S GOOD TO BE ALIVE.

I have herded with the smothered
In the sweating subway cars;
But I've breathed the mountain breezes
Underneath the Alpine stars.
I have fought the flaming fever
Where the tropic fungi thrive;
But I've swum in cooling rivers,
And it's good to be alive!

I have suffered great misfortunes,
Such as Fate to all men sends,
But I've found that each one showed me
Just whom I could call my friends.
So let kings and raging rebels
For their petty powers strive—
For a little child just kissed me,
And it's good to be alive!
—Horace Barnes.

CHANSON DE NUIT.

Now, in these chilly autumn nights
When you'd reach down to yank it
Up o'er your form
To make you warm—
Oh, where's that other blanket.
—[Ex.

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ESTABLISHED COMPANIES, as well
as beginners, find our services profitable.
We correct faults of manufacture and keep
plants up-to-date. Engagements for special
service, or by the year.

THE RICHARDSON-LOVEJOY
ENGINEERING CO.

[See page 206.]

WANTED, FOR SALE, ETC.

FOR SALE CHEAP.

Two American Clay Machinery Com-
pany's No. 23 combined brick machines,
with repair parts sufficient to make ma-
chines first-class. Capacity 7,500 to 10,000
brick per hour. Greatest bargain. Write
for particulars.

GREAT EASTERN CLAY CO.,
5 3 cm 39 Cortlandt St., New York City.

FOR SALE.

Controlling interest in a good and profit-
able clayworking plant with clay enough to
run it for one hundred years. Works easi-
ly, dries quickly, burns hard and holds its
shape. Will make all kinds of building
materials in all shapes, sizes and kinds.
Plant can be seen in operation. Poor
health compels me to change climate and I
will therefore make a very low price on it.
Address, S. H. RECORD,
8 1 2p Charleston, Ill.

For Sale, Wanted, Etc., Ads Continued on
Pages 186, 187 and 193.

200%

MORE

Radiating Service than any "Hot Air" Dryer made.

Simple of operation and construction.

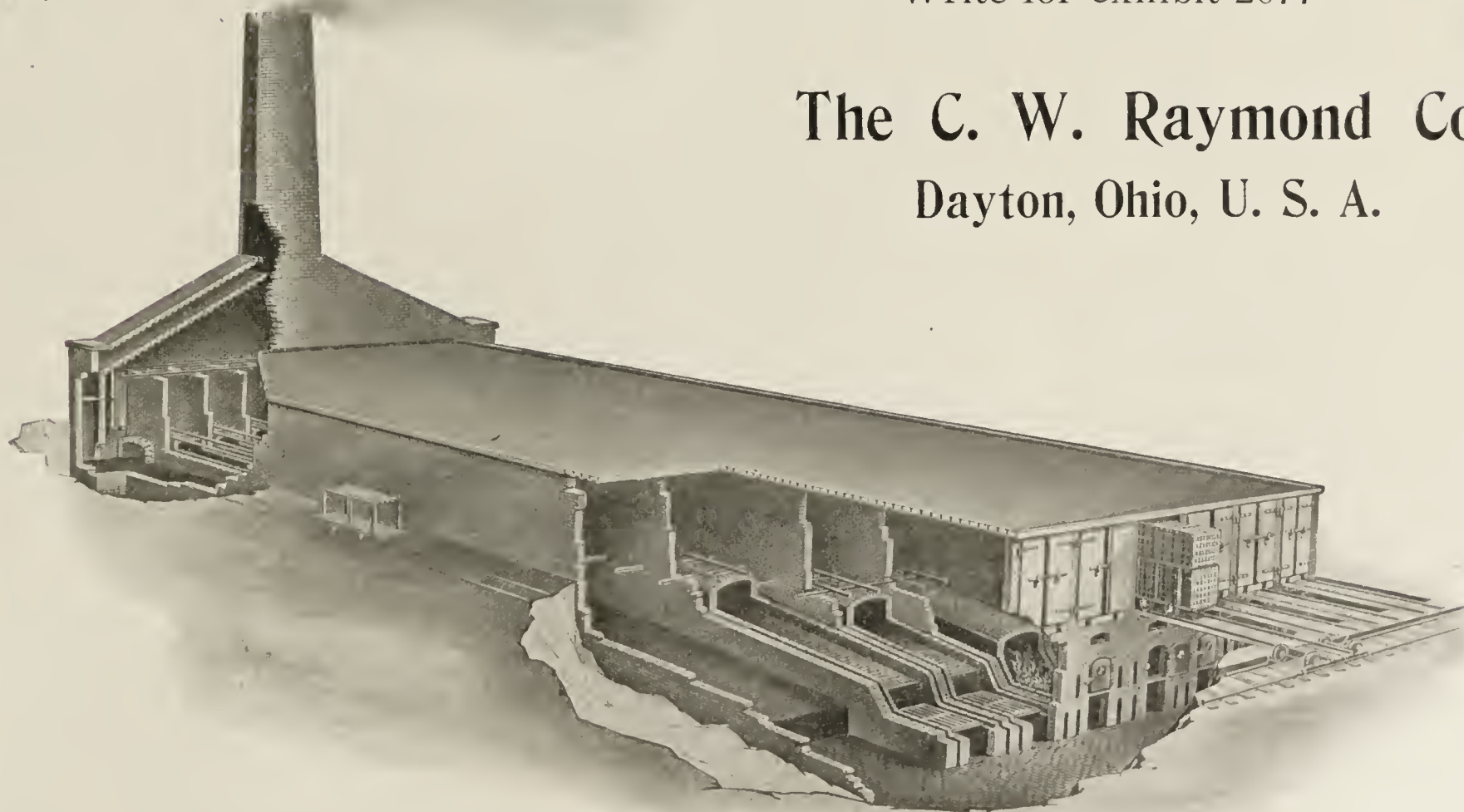
Burns any kind of fuel.

Constantly under perfect control.

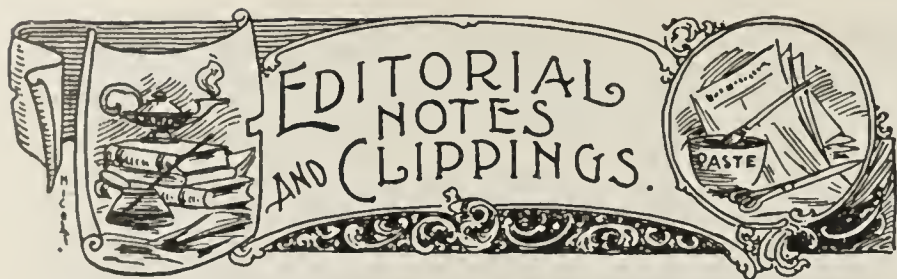
A new system of ties and a positive rail clamp absolutely prevents spreading of the track.

Write for exhibit 2077

The C. W. Raymond Co.,
Dayton, Ohio, U. S. A.



THE RAYMOND RADIATED HEAT DRYER



Harland & Keyster will erect a brickmaking plant at Ft. Pierre, S. D.

The Van Horner Brick Company's plant, at Pitcairn, Pa., sustained an \$8,000 loss by fire July 29.

Lee Childers, of Medford, Ore., is making preparations to start a brick plant at Jacksonville, Ore. The plant will be operated by electric power.

Harvey E. Weyant, a brick manufacturer of Taneytown, Md., died at his home in that city July 29, of heart disease. A widow and one child survive.

Green & Smith will establish a brick yard at Musselshell, Mont. They will start on a small scale, expecting to increase as the demand for their product grows.

L. L. Stephenson is having an unusual busy season and his shale brick plant at Lovick, Ala., is running to full capacity, to enable him to keep up with his orders.

The Green & Hunter Brick Company, of Fort Worth, Texas, has filed an amendment to its charter changing its place of business to Erath county, and changing its name to the Thurber Brick Company.

The Slater Brick Company, of Billings, Mont., is running both its plants to the full capacity, turning out 70,000 brick per day, in order to keep up with the demand for brick. Most of the output is used in Billings.

A number of local capitalists have organized a company at Edmonton, Alberta, Canada, to manufacture pressed brick. Cornelius Gallagher is at the head of the concern. The plant will be equipped with Berg dry presses.

Gay E. Sperry, a brick manufacturer and pioneer resident of Ludington, Mich., was found dead in bed the morning of July 5. He was sixty-six years old, and had been engaged in the brick business for many years. A widow survives.

Work has been commenced on the plant of the San Antonio Brick Company, San Antonio, Texas. They expect to have the plant in operation by the middle of September, with an output of 40,000 brick. G. M. Craft is president and D. B. Sanders secretary of the company.

James H. Hirst writes that he has taken the management of the plant of the Silica Brick and Lime Company, Ltd., at Victoria, B. C. Mr. Hirst says he expects to continue a subscriber to the CLAY-WORKER as long as it keeps the good reputation it now has as a first class trade journal.

Lugert, Okla., wants a brick manufacturing plant. They have an abundance of splendid clay, with good water and fuel supply. There is no brickyard within fifty miles of Lugert and Mr. D. R. Davis, who is interested in the matter, will offer inducements to any firm or party looking for a good location.

The Pelican Point Mining and Development Company, at Provo, Utah, will build a plant for the manufacture of clay wares, including porcelain electric fittings of all kinds. They have what is considered an unusually fine kaolin deposit and would like to get in communication with an expert in the manufacture of electrical fittings.

At the meeting of the board of directors of the Zanesville Tile Company last week, Harry L. Mooar, son of E. M. Mooar, of Columbus, Ohio, was elected general manager of the company, Vice President J. B. Owens resigned. Mr. Owens was the original owner of the property and has grown wealthy. He will spend a number of months in travel. Mr. Mooar went to Zanesville two years ago as secretary and treasurer of the concern.

On August 1, the name of the firm of J. P. Bradley & Co., New Cumberland, W. Va., was changed to the George E. Snowden & Co. Mr. Snowden is the principal owner of the patents, and is a thoroughly practical man, having been actively engaged in kiln building and general brickyard construction for seventeen years, and expects to give personal attention to all inquiries. They have just issued a neat booklet illustrating and describing their kilns and improved flue system, which they will be pleased to mail to any one interested. When writing for booklet, give number and size of

kilns operated. The new ad will be found on page 197 of this issue.

Riburn Daggett is building a brick making plant at Douglasville, Ga., with a plant of 20,000 capital stock.

S. Donatello's brickmaking plant at Cumberland, Wis., was burned to the ground August 1. Loss \$5,000, with no insurance.

The brick manufacturing firm of Meserve & Fields, at Richmond, Texas, has dissolved partnership, Mr. Fields retiring from the company.

E. L. Sherrick and George Hatfield, of Connellsville, Pa., have secured a good tract of clay land near that place on which they will establish a brick plant.

The Oktibbeha Brick Company, of Meridian, Miss., has been organized with \$15,000 capital stock. The incorporators are P. V. Carson, Wm. Richardson and others.

R. A. Gibson, of Nacogdoches, is interested in the establishment of a brick plant at Victoria, Texas. The latter point, he says, is ideally located for a brick plant, with plenty of good clay.

Cobb Brothers Brick Company will start its new brick plant at Fort Worth, Texas. The plant has a capacity of 30,000 brick a day, and there is a fair demand for all the brick they can turn out.

Joseph H. J. Croxall, aged 57, one of the best known pottery manufacturers in the country, died August 3, at his home in East Liverpool, Ohio. He was vice president and general manager of the Croxall Pottery Company.

The Great Western Brick Company has begun operations at its new plant at Point Richmond, Cal., and expects to have a good market for all the brick turned out. The principal market at present, of course, will be San Francisco.

J. E. Pfeffer, manager of the Drury Brick plant, at York, Pa., met with a serious accident recently. While at work at the plant he was caught in the belting, and one of his legs broken in two places before he was released.

A. J. Stewart is making preparations to operate the brick plant at Aberdeen, Wash., which has been shut down since the death of his father some time ago. He has opened new banks and will develop the business so as to make a market for his product on the Pacific Coast.

Application for a charter has been made by the Baldwin County Brick and Pottery Company, of Milledgeville, Ga. They will make common, pressed and ornamental brick and sewer pipe. Those interested are A. A. Vaughn, E. L. Barnes, T. M. Hall, G. H. Tunnell, L. C. Hall and J. E. Pottle.

Articles of incorporation have been filed by the Plymouth Brick Company, Allentown, Pa. The office of the company will be in Allentown, while the plant will be at Sellersville, Pa. The incorporators are C. G. Finch, Allentown, C. D. Finch, Schnecksville and Howard W. Willet, of Sellersville.

The Van Brigg Pottery Company, Colorado Springs, Colo., has let a contract for a new pottery building, which, together with the new machinery to be installed, will cost in the neighborhood of \$30,000. The structure will be of brick, with tile and terra cotta trims, the latter manufactured by the company.

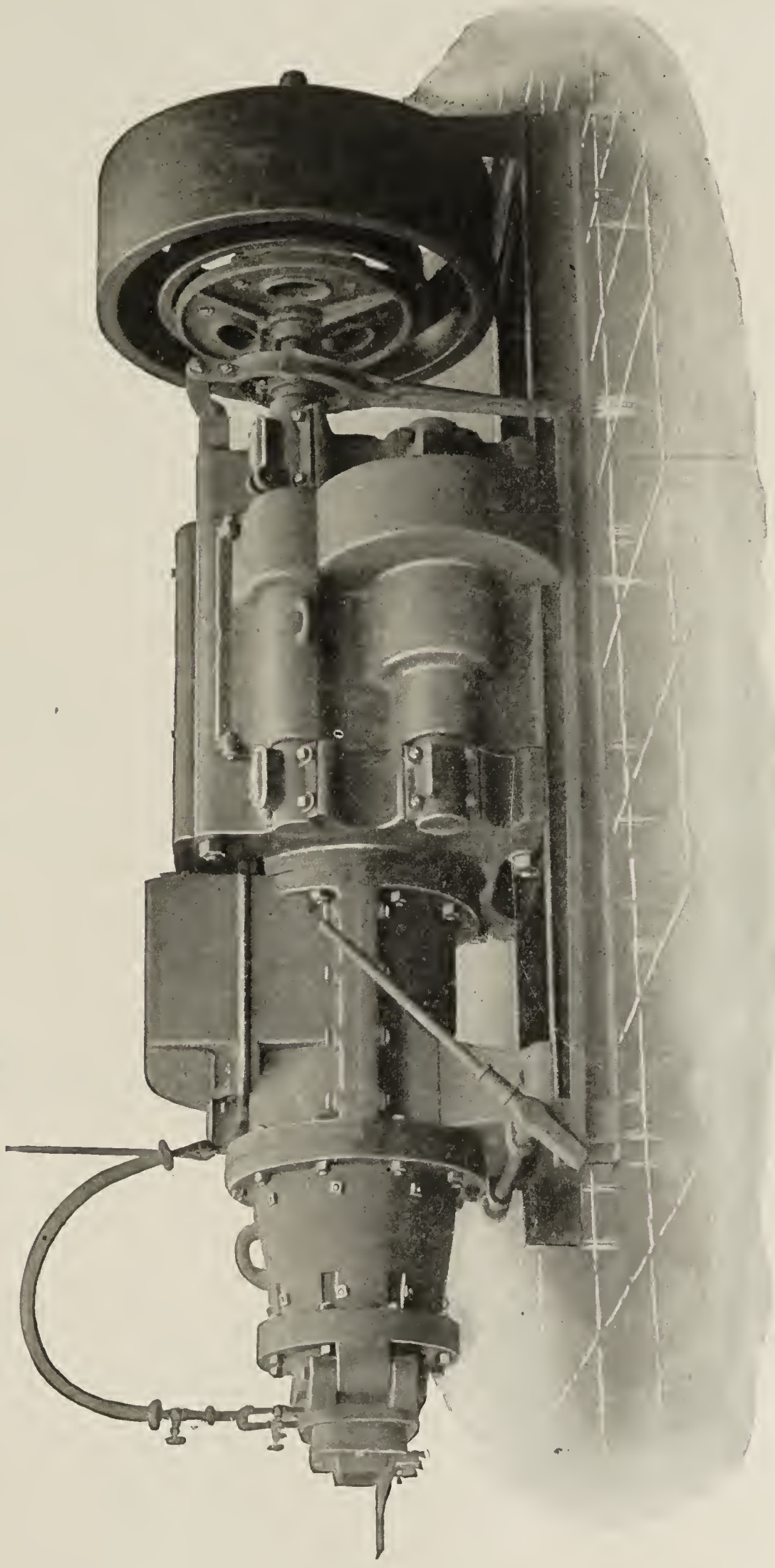
A \$5,000 damaged was caused at the plant of the Bond Sandstone Brick Company, at Lake Helen, Fla., by fire, which started in the sand drying room. The loss was fully covered by insurance. The company has a good supply of brick on hand so that orders can be filled promptly and the rebuilding of the plant is now under way.

The Fayette Brick & Supply Company, at Lexington, Ky., has changed hands and is now owned by Charles McConnaghy of Monticello. Many improvements, including the installation of some brick presses, are being made at the plant, which will more than double the capacity. A. J. Stone, who now has charge of Mr. McConnaghy's brick plant at Monticello, Ky., will manage the Lexington plant.

The Detroit Brick and Tile Manufacturing Company, Detroit, Minn., has been organized, and as soon as the necessary machinery can be installed, and the improvements now under way are completed, the yard will have a daily capacity of 40,000 brick per day. The present officers of the company are: W. A. Norcross, president; Geo. D. Hamilton, secretary, and Hubbard A. Hamilton, treasurer. The plant is equipped with machinery from the shops of the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., and will have a daily capacity of 20,000 brick. Later on the company

(Continued on page 178.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

expects to manufacture drain tile and hollow brick as well as building brick.

W. G. Bower will move his brickmaking plant from Vermillion, S. D., to Pierre, S. D., where he has secured a fine clay deposit.

The new plant of the Houma Brick Manufacturing Company, at Houma, La., has been started and is now turning out 25,000 brick per day.

J. R. Connelly, of Terre Haute, Ind., has purchased a tract of shale near Riley, Ind., where he expects to build an up-to-date enameled brick plant.

The Cooleemee Brick Company is the name of a new concern recently organized at Cooleemee, N. C., by J. D. Gains, J. A. Fritts, R. L. Fariss and others.

The plant of the Crookston Brick and Tile Company, Crookston, Minn., was damaged to the extent of \$500 by fire recently, which started in the kiln sheds.

The plant of the Algona Brick and Tile Company, Algona, Iowa, was entirely destroyed by fire early last month. There was no insurance on the plant, but it will be rebuilt at once.

The Pamlico Brick and Tile Company, Washington, N. C., have doubled their capacity by installing another No. 3 brick machine manufactured by J. C. Steele & Sons, of Statesville, N. C.

Mr. S. N. Sowell, of the Sowell Brick Company, Rock Hill, S. C., has installed one of J. C. Steele & Son's 25,000 daily capacity brick machines, and is using electric power for driving the same.

The Ambridge Brick Company, of Ambridge, Pa., has been incorporated with \$5,000, by H. Cooper, Bellevue, Pa., A. A. Hershperger and W. E. Wilson, of Pittsburg, and Thomas P. Speer, of Economy, Pa.

The Laketon Sand-lime Brick Factory, at North Manchester, Ind., is a thing of the past and the plant is being torn down for shipment to Canyon City, Texas, having been bought by a Texas land company.

The plant of the National Brick Company, of Chicago, Ill., located at Niles Center, was badly damaged by fire July 26, which is thought to be of incendiary origin. The loss is estimated at \$7,000. The burned portion will be rebuilt at once.

The main building of the Rochester Composite Brick Company's plant at Rochester, N. Y., was destroyed by fire July 10. The loss, which includes the machinery, is estimated at \$50,000, and is covered by insurance. Plans are under way for the rebuilding of the plant at once.

The engine room of the sand-lime brick plant of the Fort Wayne Press Brick Company, at Ft. Worth, Texas, was demolished recently by the bursting of the fly wheel. Fortunately, the accident happened at night, when there were very few employees at the plant and no one in the engine room.

The Carter County Fire Brick Company, recently incorporated at Baltimore, Md., is building a plant on its property at Soldier Station, Ky., where they have a fine deposit of fire clay. The plant will have a capacity of 100,000 brick per day. G. M. Ackerman, of Baltimore, Md., is president of the concern.

The Harbison-Walker Refractories Company has purchased two tracts of coal land in Washington County, Pa., aggregating 168 acres, in order to insure a sufficient amount of fuel for the various plants in this part of the state. The new purchases are within a short distance of the three plants that the purchasing company operates at Hayes Station, where it is frequently a difficult matter to secure sufficient coal at a reasonable price to fire the kilns of these plants.

Bloomfield, Ind., is to have a new brick manufacturing concern known as the Bloomfield Vitrified Brick and Tile Company. An up-to-date plant will be built at once, with a capacity of 20,000 brick per day. They have a fine shale deposit, which according to the tests that have been made, is second to none. The principal stockholders are T. H. Schmutz, Chanute, Kan., and C. C. Stein and Lloyd Begeman, of Westphalia, Ind. The company is capitalized at \$50,000.

Articles of incorporation have been filed by the Pocatello (Idaho) Pressed Brick and Manufacturing Company, with a capital stock of \$50,000. The incorporators are: C. W. Gray, president; Touxton Talbot, vice-president; L. D. Brown, treasurer; M. L. Gordon, secretary; L. L. Wall, general superintendent, and C. J. Todd, W. A. Staley and K. P. Brown. The purpose announced is the manufacture of brick, tiling,

pipings and hollow ware. The company has one of the finest shale clay deposits ever opened in the inter-mountain region.

The Birmingham Brick Company, of Rusk, Texas, has been incorporated with \$50,000, by A. S. Busby, J. S. Weightman and W. B. Neily.

The boilers at the plant of the New Haven Tile Company, New Haven, Ky., exploded recently, killing the engineers and seriously injuring a number of others.

The Hillsboro Clay Manufacturing Company, of Hillsboro, N. C., have put in a very complete outfit of Steele machinery, including brick machine of 40,000 to 50,000 daily capacity.

The A. E. Hull Pottery Company, Crooksville, Ohio, has increased its capital stock from \$50,000 to \$150,000. A. E. Hull is president, and W. Watts, secretary of the company.

Geigerville Coal and Fire Clay Company, of Carter county, has been incorporated. The incorporators are: William Hensley, William Atkins, B. F. Thomas and J. F. Burton, of Rush, Carter county, Va.

Fire completely destroyed the plant of the Concord Brick Manufacturing Company, at Natchez, Miss., August 9. The loss is estimated at \$10,000, in which there is an insurance of \$8,000.

W. R. Whitney, general manager and secretary of the Salina Vitrified Brick Company, Salina, Kan., has sold his interest in the plant to F. C. Hadden, vice-president of the company.

The Brown Tile and Brick Company has been incorporated to manufacture brick at Montgomery, Ind. The incorporators are J. F. Brown, Wm. Beck and C. W. Sinkard, and the capital stock, \$10,000.

The High Point Brick Company, of High Point, N. C., have moved their brick plant to a new location and put in a complete new outfit of machinery manufactured by J. C. Steele & Sons, Statesville, N. C., including their large No. 4 machine.

At a meeting of the stockholders of the Elk Fire Brick Company, held at their offices in St. Marys, Pa., recently, it was decided to greatly enlarge the plant. This step was found to be necessary because of the continued and ever increasing demand the company has created for its products.

Lawrence White, a boy employed at the plant of the Salt Lake Press Brick Company, Salt Lake City, Utah, was almost instantly killed by being buried beneath thousands of pounds of dirt which he was helping feed into the hopper. Life was extinct when the employees got the boy out from the mass of pulverized dirt.

Richard Brian, owner of the Brian Pottery, of Trenton, N. J., and one of the oldest and best known potters in the East, died at his home in Trenton, July 31, in his eighty-first year. Mr. Brian came to Trenton from England about forty years ago and had been actively engaged in the pottery business ever since.

F. W. Dennis, the kiln man of Norfolk, Va., is remodeling the kilns of the Industrial Brick Company, at Mt. Vernon, Ind., changing their up draft kilns to the Dennis type of down draft kilns. Mr. Dennis writes that they have a fine plant and are turning out a splendid grade of press brick at Mt. Vernon.

The plant of the Watertown Pressed Brick Company, at Watertown, S. D., which was destroyed by fire June 13, has been rebuilt and was ready for operation three weeks after the time it was burned down. Temporary buildings have been erected, but later on brick buildings entirely fire proof will be erected.

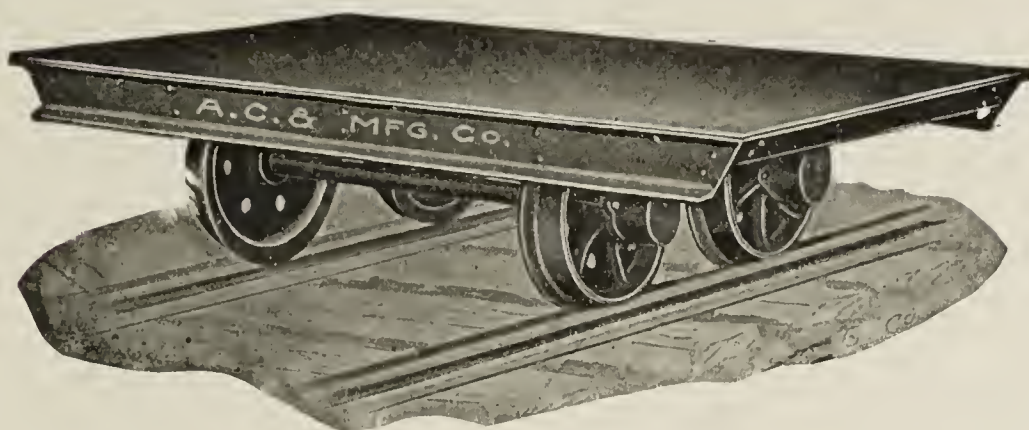
Straight Bros., tile manufacturers, at Fonda, Iowa, will build a tile factory at Adel, Iowa, which will be one of the most complete and up-to-date tile factories in the state. The plant will be operated by electricity. Mr. Halver Straight, who has just completed a four year's course in mechanical engineering, will have charge of the construction of the plant.

Liberty, Kansas, is soon to have a vitrified brick plant. The Liberty Shale Brick Company has been organized and will erect a plant just northwest of that town. The plant will start with a capacity of 25,000 brick daily, construction work will begin at once. The incorporators are all local parties.

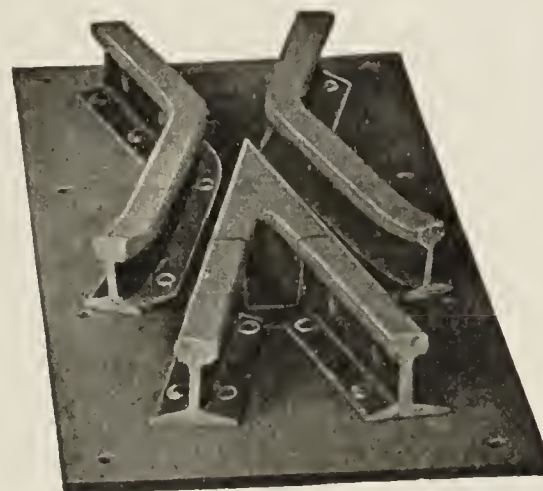
Major R. W. McClaughrey, warden of the federal penitentiary, Leavenworth, Kan., has received authority to establish a large prison brick plant. The American Clay Machinery Company, of Bucyrus, Ohio, is to install the machinery for \$13,653.44. The plant will have a capacity to make as high as 60,000 brick a day. Both building and vitrified paving brick will be manufactured.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

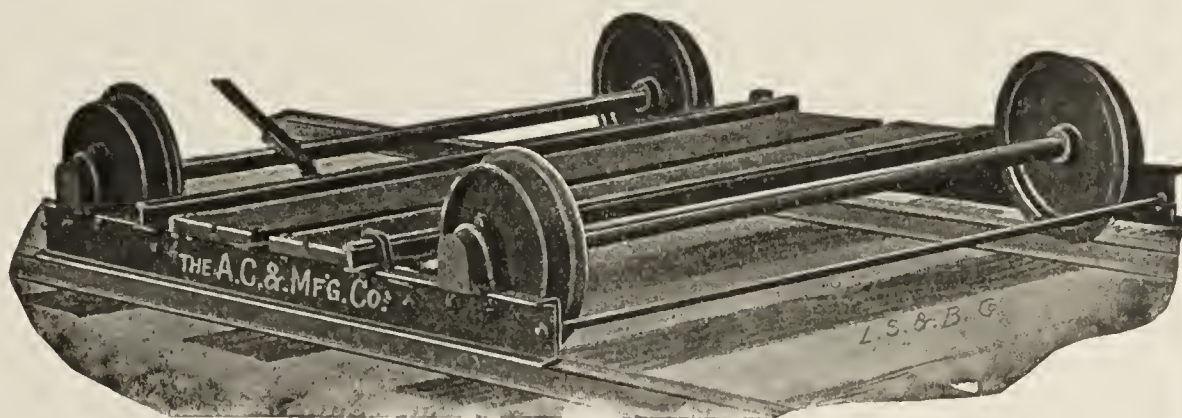
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



ON THE WHOLE, the month of July, made a good showing in local building as compared with June and even May. While a good deal of work in the line of large structures has been held up on account of the difficulty of obtaining money from the banks here and in the East, announcements have been made recently that the construction of many new buildings is to proceed with all possible haste. Since the new mayor, E. R. Taylor, has taken office, public confidence has been restored to a large extent and the banking houses are advancing money more liberally for construction purposes.

The valuations of the buildings for which construction permits were issued during the month of July in the principal cities of California, were as follows: San Francisco, \$4,752,778; Los Angeles, \$1,245,174; Oakland, \$373,085; San Diego, \$149,450. San Francisco permits show an increase of \$836,778 over the month of June. The total valuation of San Francisco buildings since the fire is \$78,250,620.

A great many good brick buildings, some of them very large, are being finished up and a number will be occupied within the next month or two. The buff brick walls of the new Whittell building, of fifteen stories, have been completed on Geary street between Stockton street and Grant avenue.

Two additional stories of steel and buff brick are being placed on the Wells-Fargo building, which is being reconstructed. The prices of all materials are more reasonable, especially lumber, which has reached a low ebb as compared with last January, when the retail price was up to \$32 per thousand. It has been down to \$22 for several weeks and some sales as low as \$18 have been reported this week. In fact there are no fixed prices. Many of the yards are anxious to get rid of their surplus stock of fir lumber and will accept almost any price on good sized orders. In some cases this is less than the cost of manufacture and freight charges. Cement is also lower. There are good stocks of foreign cement on hand and the largest cement manufacturers in California have reduced their price on the domestic article.

Prices of common brick are quite moderate and all of the plants are running to almost their full capacity, as there is hope that there will soon be a revival of building on a large scale. The official price of brick manufactured by the companies composing the Standard Brick Association is still \$15, but the actual selling price has declined to about \$9. Immense quantities of brick have gone into building in this city during the past three months, although not so much as would have been needed had it not been for the disastrous strikes in several lines of industry which resulted in curtailing building work considerably.

While actual strikes in the building trades have been few this year, the strained relations resulting from the strikes of other unions and the continued high wages paid to building mechanics and laborers, have unsettled the building contractors and material men. Accordingly, a strong effort has been made with the co-operation of leading contractors and officers of the Building Trades Council to arrange for a certainty of industrial peace in the building lines. A proposition was submitted to the various unions, to sign a term agreement running three years, providing for a readjustment of wages to conform to the changed conditions. This would involve a reduction of about 10 per cent. in the wages of carpenters and several other crafts. Some of the union men have considered the matter favorably, but it is feared that many of those whose wages it is proposed to reduce will object seriously.

The signing up of some such agreement is of almost vital importance to the builders, contractors, etc., and there is still strong talk of discouraging the construction of buildings in future unless some such agreement can be secured. The plan that has been carried out successfully in New York City for a two-year term, is looked upon very favorably by contractors.

Pressed brick for facing buildings is in good demand at profitable prices. Terra cotta is still in good demand, and although the great rush that was on in May has subsided

somewhat, there is a great deal of work ordered and all the plants are busy on architectural work. There is plenty of inquiry for large orders of this material and much work of an elaborate character is specified for large buildings under construction and yet to be erected.

The terra cotta factory of N. Clark & Sons, in Alameda County, Cal., is quite busy on high grade work, the labor troubles having subsided. The fine ornamental terra cotta in the front of the new Albert Pike Memorial Temple, which has just been completed in San Francisco, was made at this plant. The designs are very elaborate.

Large quantities of terra cotta tile will be required for the exterior finish of the large new Pacific building, nine stories in height, on the corner of Fourth and Market streets. The lower stories of the building, which is constructed of reinforced concrete, will be faced with a dark brown terra cotta tile, while the upper stories will have a light green tile facing. The new eight-story Westbank building, now under construction on the opposite gore lot at the corner of Market and Stockton streets, will also have an exterior finish of terra cotta tiling with a color scheme similar to that of the Pacific building.

The Northwestern Terra Cotta Company, of Chicago, has been awarded a contract amounting to \$118,000 for all of the terra cotta required for ornamentation, partitions, etc., in the new eleven-story Phelan building, on the corner of Market and O'Farrell streets, to cost over \$1,500,000. Gladding McBean & Company, of San Francisco, have secured a terra cotta contract on the new ten-story Kerckhoff building in Los Angeles, Cal.

S. H. Wagner, of Yerrington, Nev., is planning to establish a brick yard at that place and he is at present in Reno, Nev., arranging for the necessary tools and machinery. He has planned to burn a kiln of 100,000 bricks at once. He expects to be able to turn out good brick at that point at a cost that will enable builders to lay them at a total cost of not to exceed \$30 per thousand.

The Carnegie Brick and Pottery Company, of San Francisco, is making good progress with the erection of its new dryer and is now putting up twelve new cottages for workmen and their families.

B. M. Craine, a paving brick man of Boston, Mass., is in California looking over the paving situation. He is accompanied by his assistant, T. R. Ritchie, and will figure on some of the proposed brick paving work at Los Angeles, Cal. He is also looking over the vitrified brick making plants here. Last week he visited the site of the California Pressed Brick Manufacturing Company's works at Niles, Cal.

N. W. Evans, of Mayfield, Cal., is planning to put in a brick making plant at a site two miles from Mayfield.

C. H. Frost, of the Los Angeles Pressed Brick Company, has received an order for the ornamental brick required for the reconstruction of the Mills building in San Francisco. He reports orders on hand for more than \$600,000 worth of clay products for the coming six months, some of these orders being from Oregon, Utah and New Mexico. He also has an inquiry from Central America.

M. A. Murphy, manager of the Carnegie Brick and Pottery Company, expects to visit the eastern states soon. The company's new terra cotta manufacturing plant at Tesla, Cal., has been completed, considerably increasing the capacity of the extensive works, where fire brick, pottery and sewer pipe are manufactured. There is a very large demand for the highest class of ornamental terra cotta for the best buildings under construction in San Francisco and Los Angeles. Many of the designs recently executed are very elaborate. Among the contracts for architectural terra cotta that are being filled by the Carnegie Brick and Pottery Company are included some of the largest buildings in San Francisco.

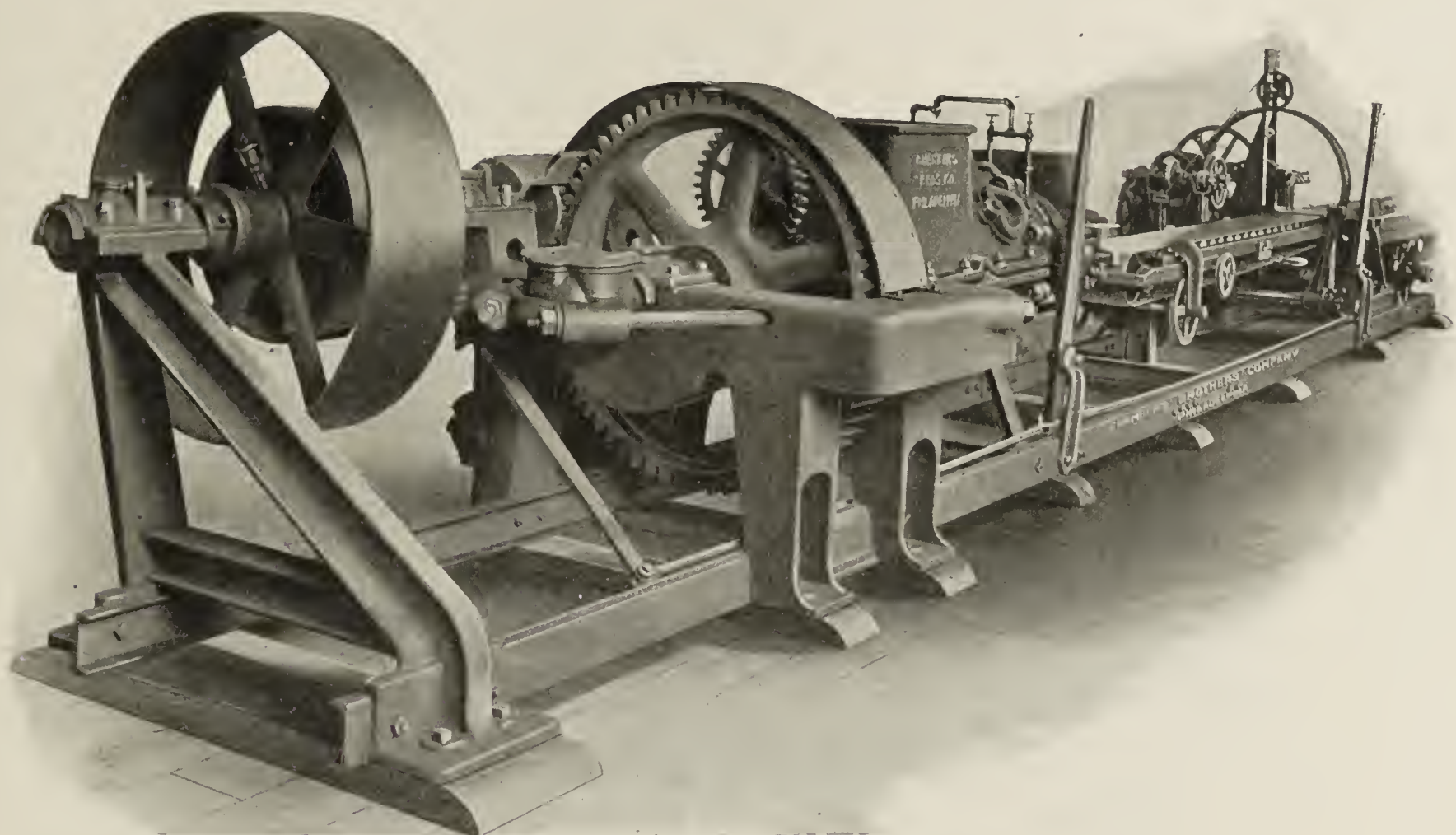
One of the handsomest and most unique structures in the West is being built on Sacramento street and Presidio Heights. It is a series of five apartment flats built on a terraced hillside. The ground terrace is to be laid out with lawns and planted palms and the one above will be laid out as a garden, all the walks paved in large tile of a warm brownish red. The exterior walls of the flats are to be finished in clinker brick and cement, with solid redwood beams and cornices left natural. The roofs will be covered with bright red tile, making a striking color combination. The interior will be carried out entirely in mission treatment, with heavy beamed ceilings. Each apartment has its individual entrance. These flats will cost about \$30,000.

San Francisco, Cal., Aug. 5, 1907.

SUNSET.

THE NO. 10 CHAMBERS BRICK MACHINE

With No. 6 Automatic Side Cutter.



This is a new machine and embodies a number of novel and interesting features. The No. 6 Side Cutter has been tested to as many as 110 brick per minute, and is confidently guaranteed for a capacity of 40,000 bricks daily. It is a single wire rotary cutter with a down shear cut, cutting but one brick at a time and cutting them absolutely square and smooth. Provision is made for the escape of stones, should they come in the path of the cutting wire, and the flexibility of the wire does not affect the squareness of the cut. See further description of this cutter page 150 of this issue.

Note the new gear frame and large diameter heavy gear of broad face. Observe how the end thrust is provided for, as well as the position of driving shaft and clutch pulley. No trouble to get at the journal bearings when necessary to rebabbit. Clutch pulley 44 inches diameter by 12 inches face. Driving Shaft $3\frac{7}{16}$ inches diameter. For hard work and a daily capacity of 20,000 to 40,000 bricks this machine is in a class of its own.

CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets, PHILADELPHIA, PA., U. S. A.

59 West Jackson Boulevard, CHICAGO.

See ad on page 115.

Written for THE CLAY-WORKER.

THROUGHOUT NEW ENGLAND.

WHILE the brick manufacturing business through New England hasn't had such uninterrupted weather favorable for the making of brick as some other sections of the country have enjoyed, very little complaint has been heard from that section. No long continued rains have caused serious damage, such as sometimes occur, but there have been numerous short, sharp showers, which have created troubles enough to make the yard work more or less precarious and expensive. Nevertheless, the output has been quite up to the average and business has been done at a good profit.

Information from Boston indicates fair market conditions. Among the inquiries reported during the past month, was one for 5,125,000 brick from one contractor. At last accounts he had not placed the order, but a number were figuring on it. No very large order has been actually placed during the month, consequently it is impossible to say just what the effect would be of one or two such orders. Some are of the opinion that prices would advance, while others, apparently equally well informed, adhere to the opinion that if the market holds its own through summer's heat, it is doing sufficiently well to permit of no criticism. Large manufacturers have made no change in prices quoted. The outlook during the remainder of the summer and into autumn is generally regarded as fairly satisfactory. The prices quoted now are: Up and down s. s. f. o. b. yards in Massachusetts and New Hampshire, \$7.50 to \$8 per 1,000; up and down w. s., \$9 to \$9.50; New Hampshire selected, f. o. b. cars New Hampshire, \$12; Massachusetts face brick, \$19 to \$20; fire bricks, \$27 to \$35.

In and about Boston building conditions and demand are generally satisfactory. A slight reduction in the volume has been noted during the hot weather which has been pending recently, but aside from temporary conditions of this character there doesn't seem to have been much shift in the situation. Many buildings are planned. Many are in process of erection, having reached more or less finished stages of construction and some are only under discussion or projected. Taken as a whole, however, the building situation promises to demand an unending quantity of brick this season and possibly through this season into the next. It is, of course, impossible to make accurate predictions now, but there is a feeling that the construction work which is likely to develop during the next few months will create quite satisfactory conditions as far as demand is concerned, and that is rented upon to keep prices up.

Through the state of Massachusetts, conditions in and about the yards are reported in a general way as good. It has been impossible to secure much detailed information from individual yards. Most probably because they have been too busy to stop to send out information about what they are doing. The brick man must be a man of action, otherwise he loses his best opportunities. The weather and the demand wait for no man. The result is, that sometimes when searching for information to send to others who may care to know what is being done, one is confronted with more or less difficulty in procuring it. Nevertheless, in this instance, at least, it is perfectly safe to ascribe prosperity to all the Massachusetts yards with few exceptions, and those few are not worth mentioning.

Building about Springfield, Mass., has been heavy this season and brick from the Hampden yards has been active all the season. There is a good, strong demand for all grades made in that vicinity. Not only is building in and about Springfield proper on a liberal scale, but Holyoke and other outlying towns are also under the same active conditions. The market is there and manufacturers have been in position to take advantage of all such opportunities this season.

Connecticut building operations, public and semi-public

works which have required more or less brick, have been quite as liberal as was anticipated. The result has been that all yards have been kept busy and trade has been in proportion. All about the central portion of the state the conditions have been quite satisfactory and sales have been heavy. Meanwhile demand shows no signs of diminution, and buyers are taking everything they can possibly obtain. Good prices are paid, fully up to the range of last season. Boston and New York prices are both used as a basis upon which to figure.

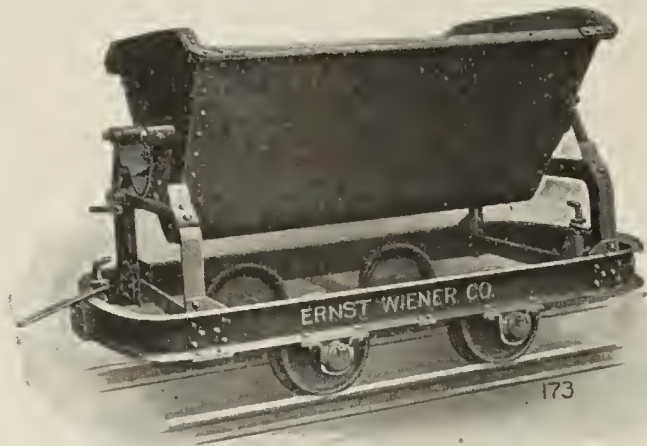
Through Northern New England, New Hampshire, Vermont and Maine, there has been no change in the general prosperous conditions which have hitherto prevailed. Some manufacturers have been frightened at the increasing use of reinforced concrete, but it is thought by the more conservative dealers and others interested that the concrete will never force the brick construction out of existence. Reinforced concrete may be used somewhat extensively as long as prices are low, but when the unions get the wage scale for spreading concrete up to the level of labor on brick work there will be little inducement to use concrete. There is none now, even though labor sought is so much less, excepting on buildings that it doesn't matter particularly how it looks.

Concrete can never replace brick in any sort of permanent work which owners are anxious should be stable and look well. It is the cheaper grade of construction in which only the poorest grade of brick would be used, if brick were used at all, where the competition will be felt. In time even this advantage will be wiped out and the builder and the owner will turn again to brick as the best solution of his construction problem.

HIRAM.

PAVING BRICK FOR DETROIT.

About 7,000,000 paving brick will be used in paving the streets of Detroit the coming year, according to estimates



CLAY-WORKERS

Drop all your old trouble and install "Wiener's Industrial Railway System."

Our **TRACK AND CARS** are the product of twenty years' experience, and are designed and built by engineers and mechanics who have made this line a life study.

CONSULT

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
• COMPANY •

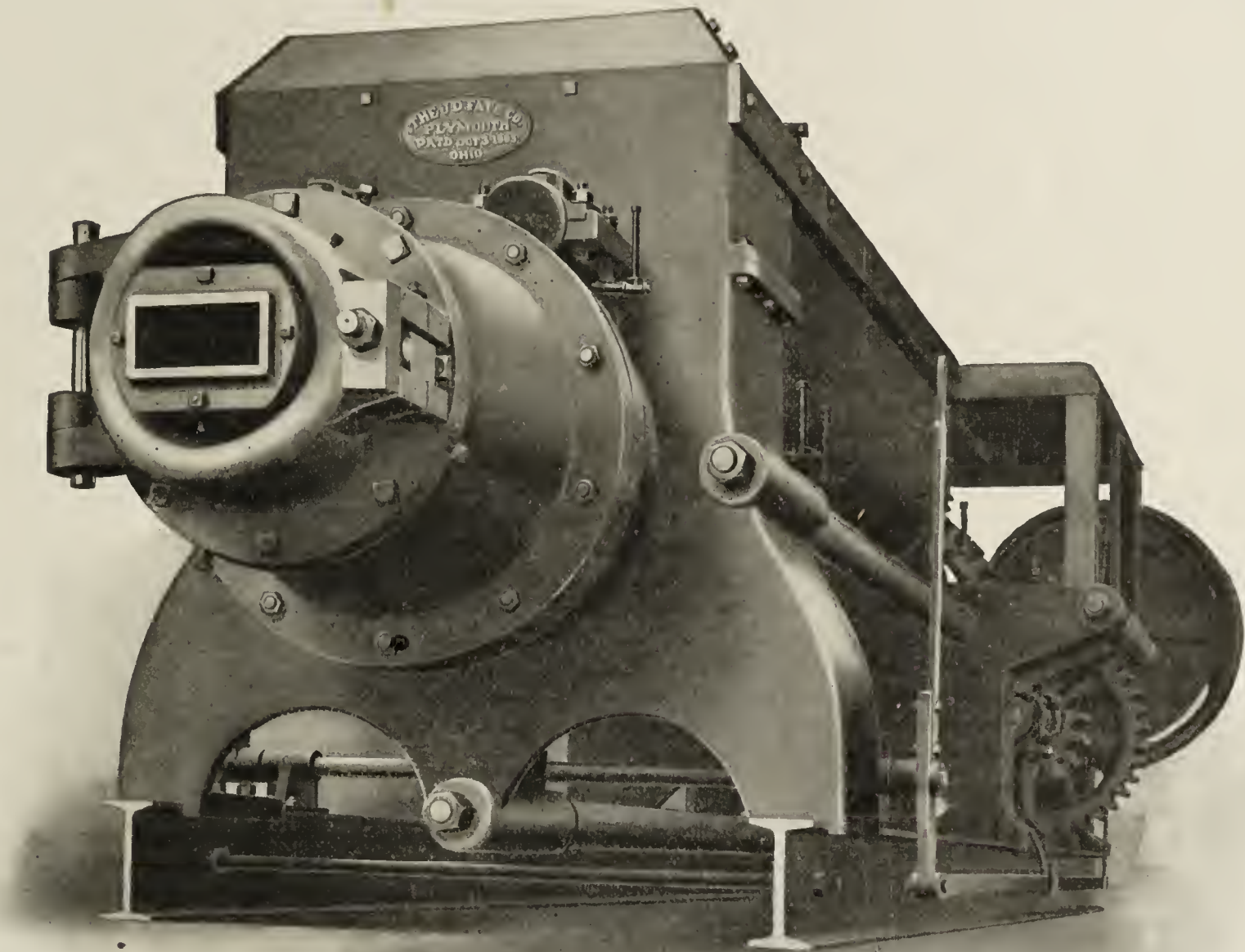
64 Broad Street, New York, N. Y.
DEPT. 13.

We carry a LARGE STOCK of Rails and Equipment at our works and warehouses, Youngstown, O., or Brooklyn, N. Y.

402 Oliver Bldg., Boston.
Barnaby Bldg., Bisbee, Ariz. 333 Cooper Bldg., Denver, Col.
The Youngstown Car Mfg. Co., Youngstown, O., representatives for West Virginia, Ohio and Western Pennsylvania.

THE FATE SPECIAL

The Largest Combined Brick Machine in the World.



Length of machine over all, 25 ft. Width, 6 ft. 4 in. Height, 6 ft. 6 in. Weight, 35,000 lbs. Mounted on steel "I" beams, has interlocking hubs and independent knives. Capacity, 15,000 to 20,000 brick per hour. All the bearings have automatic wick oiling device and all those with heavy end thrust are of the marine type.

One of these machines has been recently installed in each of the following plants: Johnson Bros.' Clay Works, Iowa; La Prairie Brick Works, La Prairie, Quebec; Fredonia Brick Co., Fredonia, Kansas, and the Logan Brick Co., of Logan, Ohio, and all are doing fine work. This is especially true of the one at Logan where they make a paving block $4\frac{3}{8} \times 4\frac{3}{8} \times 9$ and weighing 13 pounds and they get a capacity of about 90,000 of these blocks per day, being more than they formerly got with two large machines. If you want the largest, strongest and best brick machine and one with the largest capacity, write us and we will tell you more about this machine.

The J. D. FATE CO.,

Mention The Clay-Worker.

Plymouth, Richland County, Ohio.

Written for THE CLAY-WORKER.

IN AND NEAR NEW YORK.



BUSINESS OF BRICKMAKING in and around New York, which means up the Hudson for many miles, has been carried on under exceptionally favorable auspices this season. The weather has been unusually good, even for summer, and the makers have profited accordingly. The trade has been able to buy fresh brick so soon from the burning that they were

almost hot. They have poured into the New York market by boat and train. The demand has been insatiable, and business has been of immense volume. This has kept up prices and from the sellers' standpoint the market is now in excellent condition. Perhaps buyers would not add their testimony so enthusiastically to this assertion. However that may be, the market is unquestionably as good as makers have ever had, and the result is seen in the exceedingly prosperous conditions which surround the industry.

Price is generally a relative proposition. It is easy enough to say that price is a certain figure. It isn't always so easy to understand why prices should range around a certain figure. It might be one thing. It might be another. About New York it is the question of supply and demand, the same as everywhere, though the manufacturers who send their product to the New York market have often been accused of manipulating the market to suit the conditions of their own bank accounts. But it is impossible to see how this could be done, more especially when the market is made not by one firm, but by a good many, and each firm has the right to go after orders the same as every other firm. It would seem, therefore, that the criticism is not correct, and that the point made by some disgruntled sellers and more

disappointed buyers is not worth considering. Brick sell for what they are actually worth, not what some arbitrary combination of firms or individuals say they are worth. Spot prices range this month about as follows: Front buffs, No. 1, \$32 to \$33; grays, shaded and specked, \$32 to \$33; white, No. 1, \$32 to \$33; Hudson river common, \$6 to \$6.50; light hard, \$5 to \$6; pale, \$3.50 to \$4.50; No. 1 fire, American, \$25; No. 2, \$20; Scotch, \$35.

Business in all departments and in all grades is good. Buyers utter occasional complaints about being compelled to pay such heavy prices for the lower grades, but it is pointed out to them that demand is what creates the price, and no one denies that the New York manufacturers have the demand from which to obtain business. It is not only active, but it is continuous and only occasionally does anything occur which puts even a partial stop to the activity. The only cloud on the horizon is the flurry in stock caused by the pessimistic utterances of some leading financiers. They have predicted disaster until they are actually getting it. But the buildings trades always suffer more or less in such a flurry, largely because of the inability of operators to get money with which to go forward with their developments. In this respect these gloomy disquisitions are serious. Otherwise they are funnier than any alleged joke in Puck.

Building operations and propositions still keep up to about the normal range. No immense structures have been contracted for recently, but the great semi-public works have not yet begun to use the brick they are going to require. When they do sellers will find that there is some life to business yet. Demand will increase on substantially all grades of brick for the present, and the outlook is quite satisfactory. Few operators are pessimistic enough to think that the building trades will suffer severely from the financiers' flurry. It is possible that they will prevent the use of money for development of that character for a time, but it cannot be stopped

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for long, and the brick manufacturer who believes that his trade will be permanently injured will find his mistake later. It is a mistake, and the proof of it can be demonstrated before the flurry in Wall street is quite over.

John C. Eames, vice president of the H. B. Claflin Company, the largest dry goods operators in the world, is building a house of tiles out on the edge of the Palisades overlooking the Hudson. The material used is all terra cotta hollow tile, and the object of selecting this sort of material was to secure perfect protection from fire. So many beautiful residences along the Hudson have been burned during recent years that wealthy property owners there are a little nervous about risking any further money in such enterprises. It is the first entire terra cotta house in this section of the country, and its success will go a long way toward inducing others to adopt the same material. It may lead men away from concrete. Terra cotta is so much better looking, and a so much richer appearing building can be constructed of it that there are certainly favorable influences to determine a builder what he shall use. Along the Palisades the opportunity to secure striking effects is certainly unequaled in this portion of the country, and a few residences of that type along the bluffs would lead to further construction elsewhere and create a demand for terra cotta houses which would yield liberal profits to the manufacturers.

In Greater New York the census recently taken shows that there are 300,000 buildings, 30,000 business buildings, 8,000 manufacturing buildings, 7,000 mercantile buildings, 1,700 fire-proof buildings, 100 fire-proof buildings in course of construction, 150 large hotels, 100 wholesale groceries, 100 theatres, 90 breweries, 75 piano factories, 75 department stores, 50 wholesale drug houses and 50 large furniture houses. The activity of the New York fire and building department since the collapse of the concrete structure in Philadelphia, has probably saved considerable property from destruction. It

is a fact that many of the reinforced concrete buildings now under construction in New York represent the work of men who are not experts, and who are quite likely to meet with disaster at any time. The building department insists that the constructors, whether they are owners or not, though the owner is considered responsible, shall conform to the simplest of all the sections of the code, that of reasonable safety. The department does not intend to have any collapses like that of Philadelphia charged to their negligence. Hereafter the regulations will be more rigidly enforced and an extra large force of inspectors has been put on pending such to see that the law is complied with.

BURTON.

TESTING REINFORCED CONCRETE.

Bulletin No. 12, Tests of Reinforced Concrete T-beams, Series of 1905, has just been issued by the University of Illinois Engineering Experiment Station. This bulletin describes a preliminary series of tests on reinforced concrete T-beams undertaken to determine the effect of different widths of flange of beam which may be considered to contribute to the strength and stiffness of the beam, and also to find the effectiveness of the metallic web reinforcement used. The beams were reinforced with longitudinal rods having an area equivalent to 1 per cent. of the rectangle inclosing the beam. All of the beams failed through tension in the longitudinal reinforcement, no failure being noticeable in the flanges. The web reinforcement proved effective, no failure occurring by diagonal tension in the stem of the T-beam. Further experiments on T-beams are now in progress in the Laboratory of Applied Mechanics of the University of Illinois, which it is hoped will throw more light upon the strength of such beams.

L. P. BRECKENRIDGE.

Don't let good machinery which has been discarded rust out on the scrap pile. Put a card in THE CLAY-WORKER "For Sale" columns and find a purchaser.

A SURE CURE FOR THE CONCRETE CRAZE

"BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE"

AN ELABORATE PUBLICATION

Cover in 4 Colors.

Ninety-Six 10x12 Pages.

Eighty-three 7x5 Half-tones.

Issued by the

BRICK CONSTRUCTION ASSOCIATION,

which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

Every brick man should have a book, and see to it that everyone interested in construction in his locality has a copy.

The Brick Construction Association has distributed gratis, locally, over 3,000 copies among Architects, Engineers, Bank Directors, Builders, etc. **Do your share.**

Books sent prepaid at the following rates:

Single copies, up to 100.....	\$ 1.00 each
100 lots.....	75.00
500 lots.....	250.00

Brick Construction Association,

707 Lankershim Building.

LOS ANGELES, CALIFORNIA.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

FOR SALE.

Pentfield Brick Machine, good second-hand condition.
C. W. PARKER.
81 d Abilene, Kansas.

WANTED—A practical brick man as foreman. One who can handle men, also stiff mud machinery. Wages according to services rendered. Address, MILES,
81 d Care Clay-Worker.

WANTED—A man to put in and superintend a brick plant at Heber, Ark. Must furnish part of the capital. County seat on a new railroad; good clay with a fair local demand. Address,
CYRUS CROSBY,
81 p Heber, Ark.

WANTED—Competent, practical brickman, to manage going brick and tile plant in Southern Pennsylvania. Knowledge of machinery and kiln construction necessary. References, state age, experience, salary expected. Address, "RED SHALE,"
81 dm Care Clay-Worker.

FOR SALE.

Well equipped brick and tile plant near Portland, Oregon. Runs the entire year. Will take the entire output of plant at a good price per 1,000. Six thousand dollars needed to handle this plant. Best of reasons for selling. Address,
C. E. FULLER,
8 tf d 374 Water St., Portland, Ore.

FOR SALE.

One power repress, in No. 1 condition; used only a short time. Capacity, 10,000 per day. Ask for full particulars. Address,
AMERICAN ENAMELED BRICK & TILE COMPANY,
7 3 dm 1 Madison Avenue, New York City.

FOR SALE—Only brick yard in one of the best counties of Michigan. County building up rapidly. Capacity 1,000,000 per year. rail and lake transportation, abundance of clay to last 20 years, plenty of good machinery, dry shed capacity 200,000, kiln shed 1,000,000. Will be sold at a bargain to close an estate. Write for particulars.
BARGAIN,
81 dp 1t Care Clay-Worker.

WANTED—A practical man with some capital, say \$5,000, who is able to superintend the building of an up-to-date shale brick plant and to take entire charge of the manufacturing and business end of a \$50,000 plant. For such a man we will furnish money for the plant, make him general superintendent, give him interest in the business and a good salary. The best references as to ability and character required.
7 3 dm R. S. T., Care Clay-Worker.

FOR SALE.

At a bargain, a yard equipped with granulator, disintegrator and a Big Wonder machine. The Warner system of handling and drying brick, the Boss system of burning. Sixty-nine acres of good clay, with market for the output. Yard is in active operation and has a first-class reputation. A splendid opportunity. Reason for selling, failing health. Address,
P. J. CONNELL,
7 3 cm Muskegon, Mich.

FOR SALE—Within 100 miles of the City of Chicago, 60 acres of the best Illinois fire clay and shale land. Will join party in erecting plant or sell outright. This is worthy of thorough investigation. Address,
8 6 d G. A. R., care Clay-Worker.

FOR SALE—Late pattern Hereules brick machine and mold sander made by Horton Mfg. Co. Used one season. Going out of brick business. Will sell cheap.
MOCK BRICK CO.,
81 d Muncie, Ind.

WANTED—Experienced pressers, turners, etc., for stoneware plant in vicinity of New York City. Good pay and steady employment to reliable men. Address with references,
P. O. BOX 142,
8 3 d Brooklyn, N. Y.

WANTED—Position as ceramist in clay-working factory of any kind, by young graduate of the New Jersey State Ceramic School. At present employed temporarily in a fire brick plant. Address,
81 p WILSON, care Clay-Worker.

WANTED—A good, sober, industrious German brickmaker with twelve year's experience, wants a position either as foreman or assistant superintendent of a common brick plant. Can give best of references. Address,
8 p m R. care Clay-Worker.

FOR SALE.

Three 9-ft. Chambers Bros. Co. dry pans. 4-ft. wheels, 10-inch. face.
One No. 4 Austin crusher, in good condition.
For particulars, apply to the
DUNBAR FURNACE CO.,
8 2 dm Dunbar, Fayette Co., Pa.

FOR SALE.

Brick manufacturing plant, situated in town about 30 miles from New York. Capacity, 25,000 per day. In good running order, modern equipment, Martin wet process machinery, steam dryer, new building. Fifteen acres clay land. Reply,
T. R. BRICK PLANT,
81 d Care Clay-Worker.

WANTED—Position as manager or superintendent, by a practical up-to-date man experienced in the manufacture of all clay products, including fire brick and specialties, building and paving brick, hollow ware, and other brick and tile, sewer pipe, etc., of either clay or shale. Understand the stiff and soft mud, dry press and hand made processes. Can burn in up or down draft, continuous and other kilns. Capable of handling men and managing all details necessary for successful operation of plant, taking entire charge of same. Address,
81 2c EUGENE, care Clay-Worker.

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States.
WESTERN CLAY DEVELOPMENT CO.,
Van Meter, Iowa.

**FOR SALE OR EXCHANGE.
OWNER RETIRING.**

Brick plant, present capacity 8 million. Plenty of clay. Only plant in county. Finest section of Michigan; hour's ride from Grand Rapids. For information write
A. J. DEARBORN,
81 d 1116 Chamber of Commerce Bldg., Detroit, Michigan.

FOR SALE—Two brick and tile machines, Nos. 9 and 10 Brewer. Have made 5,000 per hour on No. 9 and 10,000 on No. 10. All in good condition. Reason for selling, clay not suitable for stiff mud process. Will change to dry press. Address,
D. A. LAYTON,
7 tf d Marion, S. C.

FOR SALE.

45 TON 1½ YARD STEAM SHOVEL
Three sets (3) engines; has just been thoroughly overhauled, is in fine condition throughout. All new fittings on boiler. Ready for immediate service. Will make exceptionally low price to move quickly. Write, wire or phone.

J. H. TAYLOR RY. EQUIPMENT CO.,
81 dm 1217-21 Wright Bldg., St. Louis.

FOR SALE—ENGINES AND BOILERS.**BOILERS.**

4 72x18 horizontal tubular, high pressure.
1 84x18 horizontal tubular, standard.
1 78x16 horizontal tubular, standard.
1 72x16 horizontal tubular, standard.
5 72x16 horizontal tubular, standard.
1 66x16 horizontal tubular, high pressure.
1 60x18 6-inch rivetted flue, standard.
3 60x16 horizontal tubular, standard.
Sixty others, all styles and sizes.

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20x48 Wheelock.
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18x26 H. S. & G.
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14x14 Vertical.
Forty others, all sizes and styles.
Also pumps, heaters, tanks, saw mills and general machinery. Send us specifications of your wants.
THE RANDLE MACHINERY CO.,
7 tf d 1735 Powers St., Cincinnati, Ohio.

FOR SALE.

Up-to-date stoneware plant in Southwest Texas. One each 18, 20 and 24 ft. down draft and one 12x14 ft. Howard kilns. Taplin, Rice & Co. 8 ft. Chaser Mill. 3 turning and 3 jolly wheels. Shop fully equipped. Output 100 cars per annum and equal in quality and appearance to any out of state. Unable to supply demand for goods @ 7½ cents and 8 cents per gallon Northern computation. Maximum carload rate 20 cents. Leaving to take charge of interests in Mexico. Will retain \$5,000.00 stock in new company. Address
SAENGER POTTERY WORKS,
8 3 d Elmendorf, Texas.

Robert Twells Will Buy or Sell Second-Hand Brick Machinery.

For some time past, I have been devoting my time to assisting fellow clayworkers who have had trouble in burning their ware, and have always succeeded in obtaining better results in burning, as well as improving the ware, shortening time of burning, saving coal and getting the desired color.

SECOND-HAND BRICK MACHINE EXCHANGE.

I have now opened an Agency or Exchange for second-hand brick machinery and brickyard supplies of every description. Why buy a new machine when you can buy a good second-hand machine for half the price? Many machines are taken out to make room for one of larger capacity, or because it was not adapted to the particular clay it had to work, or because the clay bank becomes exhausted, or the plant burned down, or the owners failed in business, or for a number of reasons, none of which reflect upon the machine itself. Tell me what you want, and I will tell you at once whether I can furnish it.

If you are putting in new machinery, and have any machines or supplies that you wish to dispose of, send me a description of same, stating exact condition of machine, and the lowest cash price you will take for same, f.o.b. cars at your place. Listing it for sale with me will not hinder you from selling it yourself if you get a buyer.

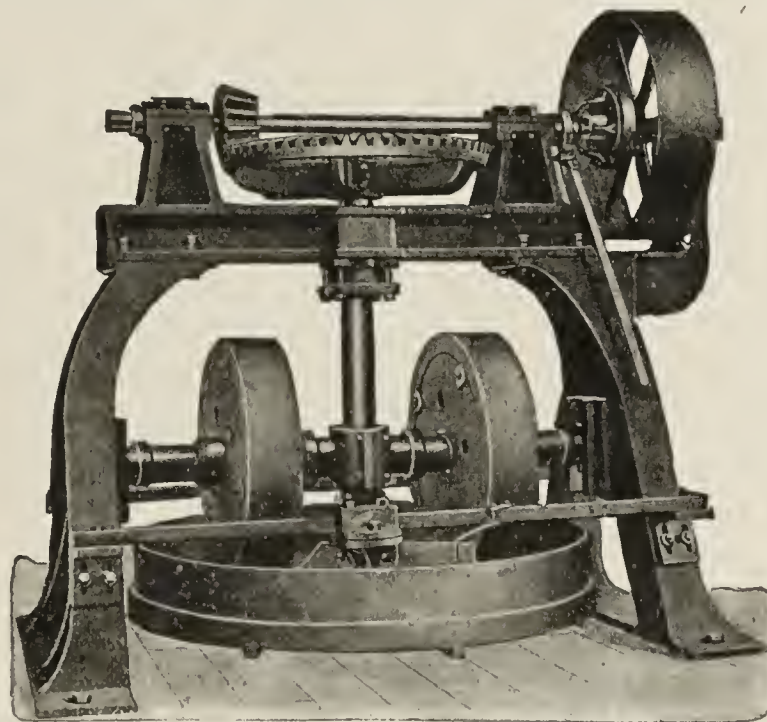
ROBERT TWELLS, Walnut Hills, Ill.

PHILLIPS & McLAREN CO.

PITTSBURG, PA.

Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.
Also
Rock and Ore Crushers.

When writing for Prices state
kind of Clay or Material to be
ground and capacity required.
Eastern Sales Agents
BORTON & TIERNEY CO.,
Stephen Girard Bldg.
Philadelphia, Pa.



Mention the CLAY-WORKER

When writing to Advertisers.

FOR SALE—Two Eagle represses. Never been used. Price, \$500 each, f. o. b. St. Louis. Address NO. 333, 4 tf d Care Clay-Worker.

WANTED—A first-class flashed brick burner. Good wages to the right man. None but experienced men need apply. Address, FLASH, care Clay-Worker. 8 1 a?

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND
CONTRACTING COMPANY,
5 tf d Zanesville, Ohio.

WANTED—Brick plant at Wenona, Ill. One million tons of material located in 'Y' of Illinois Central and Chicago & Alton Railroads. One hundred tons of new material dumped daily. Will make good paving brick and front brick. Coal mine adjacent. Plenty of artesian water. For information, address,

WENONA COAL CO.,
5 2 d Wenona, Ill.

WANTED—At Marion, S. C. and PeeDee, S. C., two brickyard machinists who can run and keep up brick machinery, automatic and Corliss engines, steam shovels, tram engines and steam dryers. Would prefer a man who understood burning of brick in up draft kilns with wood and finishing with soft coal, as the keeping up of the machinery will not take all of his time. Plants run the year round. He must be teetotal abstainer from whiskey and cigarettes. Best of references will be required. Address, D. A. LAYTON, 8 tf d Marion, S. C.

FOR SALE.

The Memphis Stoneware Company, of Memphis, Tenn., lost by fire almost its entire plant July 1st. The insurance is not sufficient to rebuild the plant, hence the company desires to sell what is left, which consists as follows:

One lot with 500 feet railroad frontage, with all necessary side tracks.

Four down draft kilns, 22 feet inside diameter.

Two 100 h. p. boilers.

Warehouse and stable.

Several jigger wheels, with blocks and cases.

Pug mills, disintegrator and rolls, and a great deal of machinery.

Memphis is the best location for a pottery in America, as it is the best home market. Memphis uses more stoneware than any city in the Union. We have a better rate to all common points in Texas and all points southeast of the Mississippi river than any other pottery.

Memphis buys \$50,000 stoneware per annum.

Here is a rare opportunity for a practical stoneware man with some capital. Address, MEMPHIS STONEWARE CO., 7 3 cm Memphis, Tenn.

[Continued on page 193.]

FOR SALE—

Immediate delivery. Two 6 ft. diam. by 68 ft. long hardening cylinders; 125 lbs. working steam pressure. One removable head, complete with track, head crane, safety valve, steam gauge, trap and head wrench.

FRANKLIN BOILER WORKS CO.,
TROY, N. Y.

REMARKABLE OFFER.

We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for **\$3.00**



The New Way.

“POST” SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen. Guaranteed by Makers.
NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

Gen. Lew. Wallace: The author of “Ben Hur” writes, “I have tried every kind in the market and unhesitatingly give the preference to the “Post.”

Judge Luther L. Mills, Chicago: The “Post” Fountain Pen is the Best I have ever used; simple, reliable, durable.

Dr. Josiah Strong: The great author of “Our Country” says: “I have been hunting for twenty years a perfect fountain pen; have tried many, and they have tried me; but the “Post” leaves nothing to be desired.”

The CLAY=WORKER, INDIANAPOLIS, INDIANA.

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IT
NOW**

T. A. Randall & Co., Publishers The Clay=Worker, Indianapolis :

You will please send me THE “POST” FOUNTAIN PEN and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued, beginning with

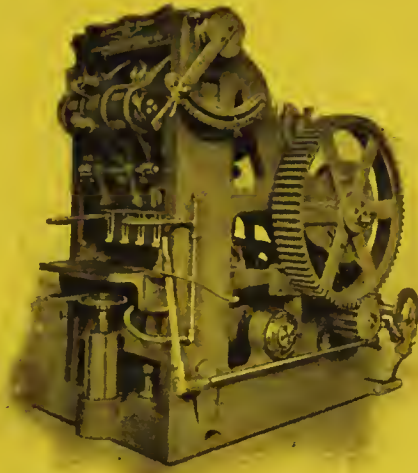
the.....Enclosed find \$.....

Name.....

Postoffice.....

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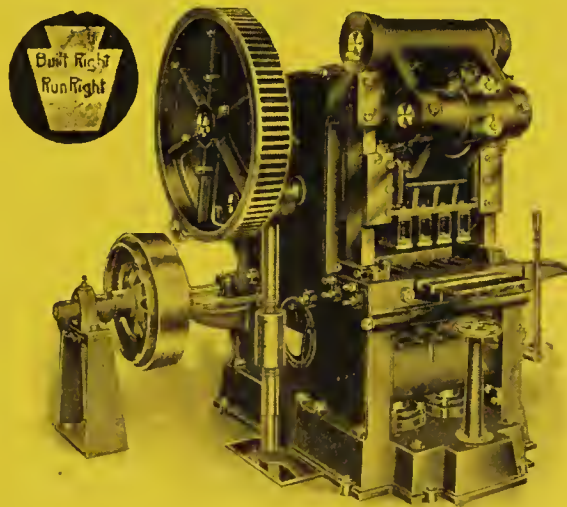
County..... State.....



D-3 MODEL DRY PRESS.

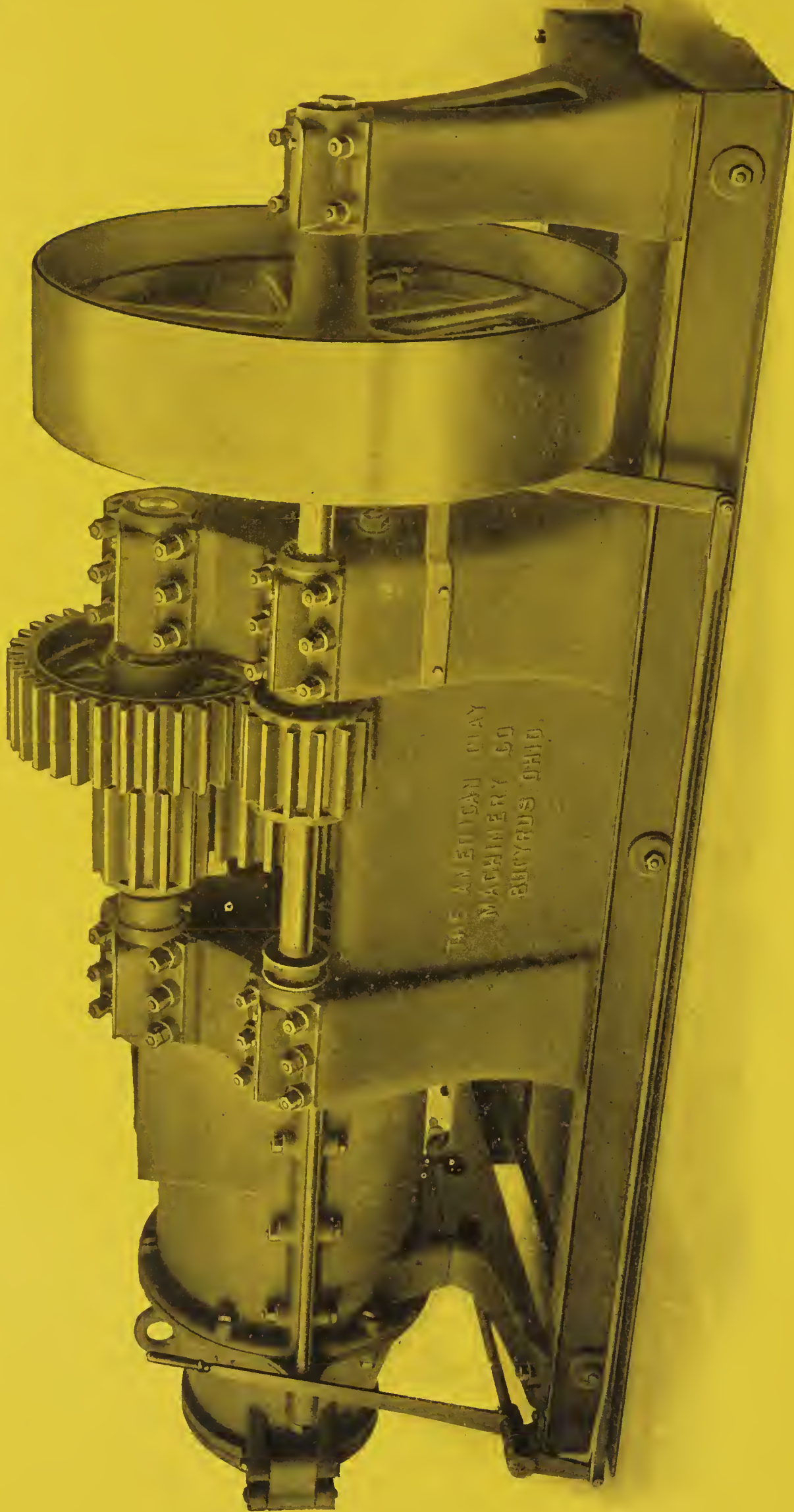
We build the largest, best and most extensive line of Dry Press Brick machinery in the World. Particulars on any size, capacity, or style for the asking. Better designs, better material, better workmanship, better results.

**The American Clay Machinery Co.,
Bucyrus, Ohio.**



MODEL B DRY PRESS.

MONEY=MAKING MONSTER MACHINE.

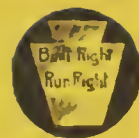


NO. 65 AUGER BRICK MACHINE.

There is no Auger Brick Machine built which will compare in massiveness and productive qualities with the No. 65 Auger Machine which we have recently placed upon the market. Its appearance stamps it as superior and performance verifies its appearance. Send for full description. We are the largest manufacturers of Clayworking Machinery in the World. We give you more range in machines and methods than any other builders of clayworking machinery. If you have a want for any machine of any kind to make any clay product by any process with any power we can supply it because we build EVERY machine and appliance needed in the various Clay Industries. Write for particulars.

THE AMERICAN CLAY MACHINERY CO., Bucyrus, Ohio, U. S. A.

DUMP CARS.



We build the most extensive line of wood and steel dump cars on the market, with a wide range as to size, style, capacity and price. We can exactly meet any needs or conditions. The accompanying cut shows our rocker dump steel car, with brake attachment.

These cars are constructed of steel and iron. They are strong and substantial and at the same time neat in appearance. They are provided with anti-friction pin bearings, which require very little oiling, and make the cars very easy to operate.

The body of the car is made of steel, reinforced with heavy angles securely riveted. The frame of the car is constructed of flat bars securely riveted at the corners and thoroughly braced with heavy substantial braces.



When loaded, the car is held in position by a lock bar, which is hinged to the rocker track. This bar is held to the top of the rocker by a removable pin when the body is in an upright position.

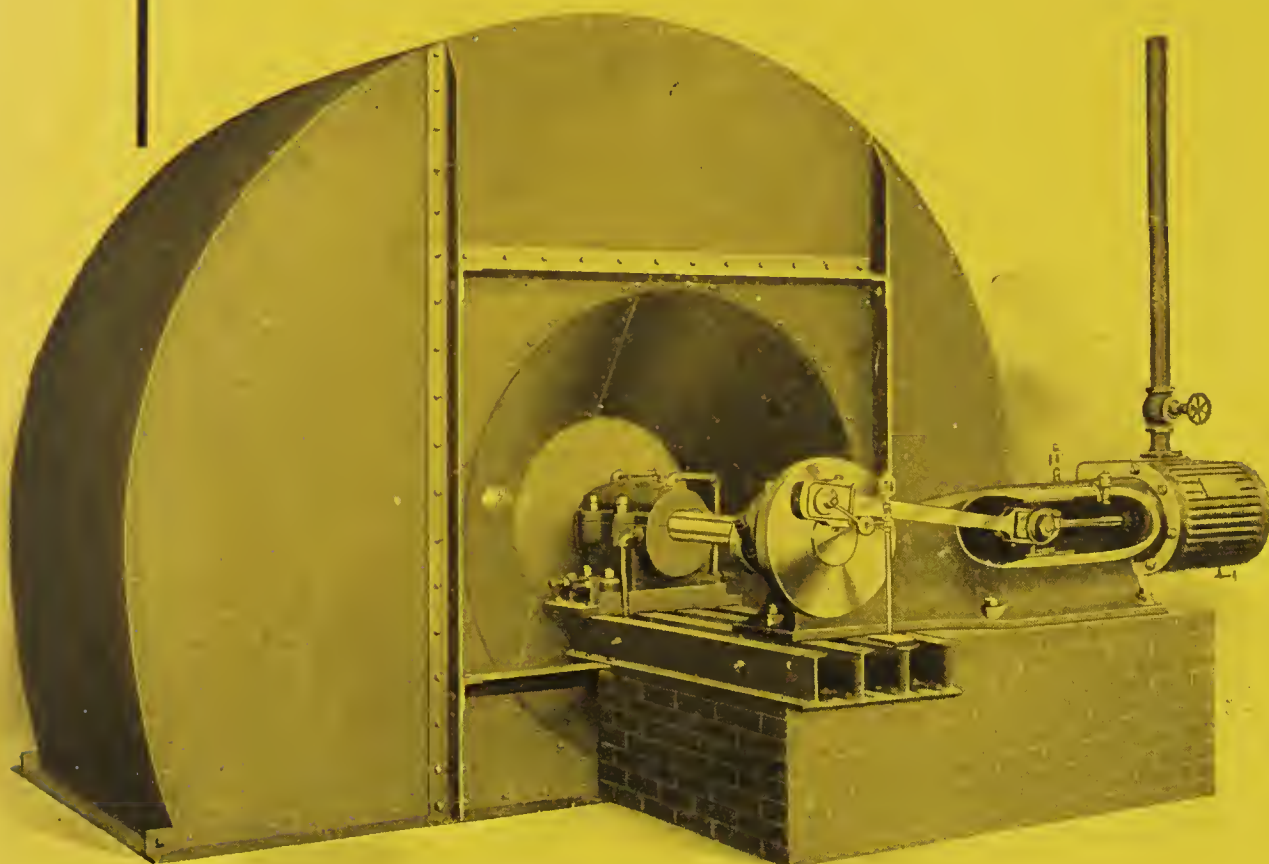
Strong chains are provided to prevent the body of the car from rocking too far when dumping.

The heavy chilled wheels are bored true and pressed onto the axle under heavy pressure. The axles are turned true in the bearings, and the bearings or boxes are bored absolutely true, making a very substantial construction. The draw-heads are securely bolted to the end frame. The bolts securing the draw-heads pass through the angle braces, so that the strain of pulling the loaded car is not applied to the end piece alone. These cars are erected complete in our factory, and thoroughly inspected before shipment.

The American Clay Machinery Co.,

Bucyrus, Ohio, U. S. A.

Every Class of Dryer And Every Class the Best.



We are Dryer Specialists in every sense of the word. We are not content with making one kind of Dryer, but make every kind. We are, therefore, in a position to consider your interests without any bias or prejudice toward any one kind of Dryer. This insures your getting a Dryer which will most successfully handle your clay, whether that Dryer be a Waste Heat, Steam, Hot Air, or Furnace Dryer. We build a full equipment for every Dryer in our factory, including Fans, Heaters, Cars, Transfers, Turntables, etc. We also build and equip Dryers operated by the carless system.

If you are in the market for a Dryer let us look over your plant, consider the clay and conditions, and design you a system that will be a success. Then if you place the order with us the equipment will be made in our own factory and will be of our standard quality.

As it is with Dryers, so it is with every class of Clayworking machinery. We build a full line for making Clay Products by every known process.

**The American Clay Ma-
chinery Co.,**

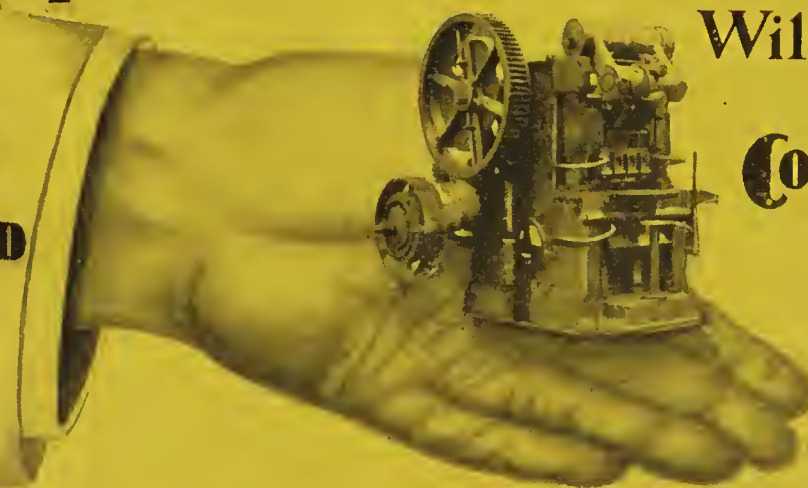
Bucyrus, Ohio, U. S. A.

ALWAYS
ON HAND

THE AMERICAN CLAY MACHINERY CO.

Willoughby, Ohio, Co.
U.S.A.

PLANTS
DESIGNED



COMPLETE EQUIPMENT
FURNISHED,
AND INSTALLED
SET IN OPERATION

SAND-LIME BRICK MACHINERY

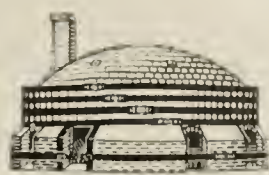
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 New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY



The Best and Cheapest
BAND LUG
 on the market.
 Write us for price.
 E. C. TECKTONIUS MFG. CO., Racine, Wis.



Valuable Deposit of BRICK AND POTTERY CLAY

at Meridian, Miss. The only similar deposit south of St. Louis. Large local demand for brick at good prices. Fine shipping facilities. This property can be easily and cheaply developed and will pay enormous profits. Owners unable to develop it will sell at a great sacrifice. For particulars address

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Banker and Broker,
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Money to Loan on
 Good Business,
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We Manufacture
 These Buckets
 In All Styles, Sizes and Gauges.
 Orders Shipped Promptly.

**COLD ROLLED
 SPIRAL STEEL CONVEYOR.**



We Also Make Shafting,
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 Sprocket Wheels, etc.

WEARS BEST, Costs No More.
 WE MAKE this Conveyor in All Styles
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SKILLIN & RICHARDS MFG. CO., CHICAGO.

WANTED, FOR SALE, ETC

FOR SALE—Steele & Sons No. 4 brick machine and cutter, pug mill, disintegrators, crushers, winding drum, cars, etc., used one month, same as new. Inquire,
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 Two complete sets brickmaking machinery, including Chambers brick machines, elevators, clay rolls, granulators, holsts, etc. Also, one Frey-Sheckler brick machine, at present in operation. Address,
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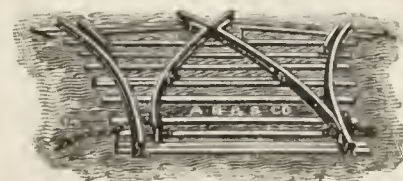
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 One steam power and one h. p. soft clay machines.
 One feed water boiler heater.
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 A number of dryer cars.
 Two second-hand dump carts, practically as good as new.
 All of the above in first-class condition. Address,
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 Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address **J. J. KOCH,**
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ATTENTION!
 Steam Shovels, Cars, Locomotives of all kinds and Rails.
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 Modern brick and tile plant in central Iowa, now in successful operation. Fully equipped with up-to-date machinery, waste heat dryer, dryer cars, four round draft kilns, in good condition. Eighteen acres of clay land. Principal product is drain tile, which is of excellent quality. First class shipping facilities and good, close market. Good yard trade. Good reasons for selling, but must be sold soon or be taken off the market. A splendid opportunity for a good, live man. Satisfactory terms will be made any one worthy of credit. Write us without delay. Address,
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 Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.
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EXPERT SERVICE.

Instructions how to improve burning Paving Brick, Drain Tile and Face Brick. Saves Coal, Time and Labor.

New simple method to create draft from the start of the fires.

Down-draft kiln plans for sale.

The least expensive and most effective kiln on the market.

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Care Clay-Worker.

H. H. Wright, Maitland, Mo., writes under date of May 22, 1907, "I am just emptying a kiln today—splendid burn. I can say truly that I never before burned a kiln so easy, as I have this one under your instructions. We always made hard work of it."

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Clayworking and Ceramics**

Established by the Legislature
in 1902 at the

New Jersey State College,

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NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

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Department of Ceramics.
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**The
COLOR**

That Never fades.

Tried out for 20 years.

For mortar, brick, cement,
stone, etc.

Red, brown, buff, purple and
black.

RICKETSON MINERAL PAINT WKS.,
MILWAUKEE, WIS.

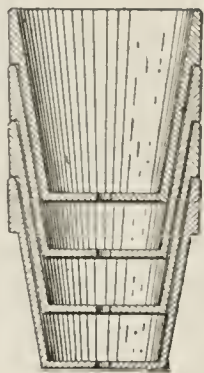
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Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

GEO. S. COX, East Liverpool, Ohio.

For End-Cut, Side-Cut
and Automatic Tables.

Satisfaction guaranteed.
Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.

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**The Kiln of Kilns is the
"IDEAL"**

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

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MANUFACTURERS OF

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We manufacture **BRICK AND TILE
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to withstand abrasion.

Send for prices of wire in coils.



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Wooden Brick Pallets.**

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Conveying, Elevating and Power-Transmitting Machinery.



The only perfect spiral conveyor. Continuous flight—no laps or rivets.
A Complete Line of the Best Supplies.

Belt, Chain and Cable Conveyors.

Ask for General Catalogue.

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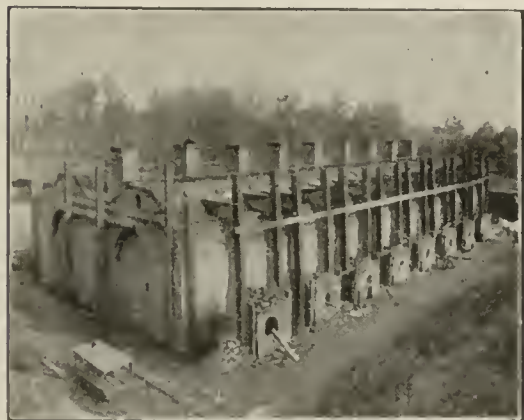
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Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

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Wood burning kilns changed to coal burning.
Brick plants installed and put in operation.
Write for booklet. Correspondence solicited.

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FOR ALL USES.

LUMP, GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS GOODS A SPECIALTY.

SAMPLES AND PRICES ON INQUIRY.

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Largest Manufacturers in
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Brick and Mortar COLORING.

Correspondence solicited.

Samples and estimates cheerfully furnished
on application.

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Sole Importers in the United States of the

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The only preventative for seum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

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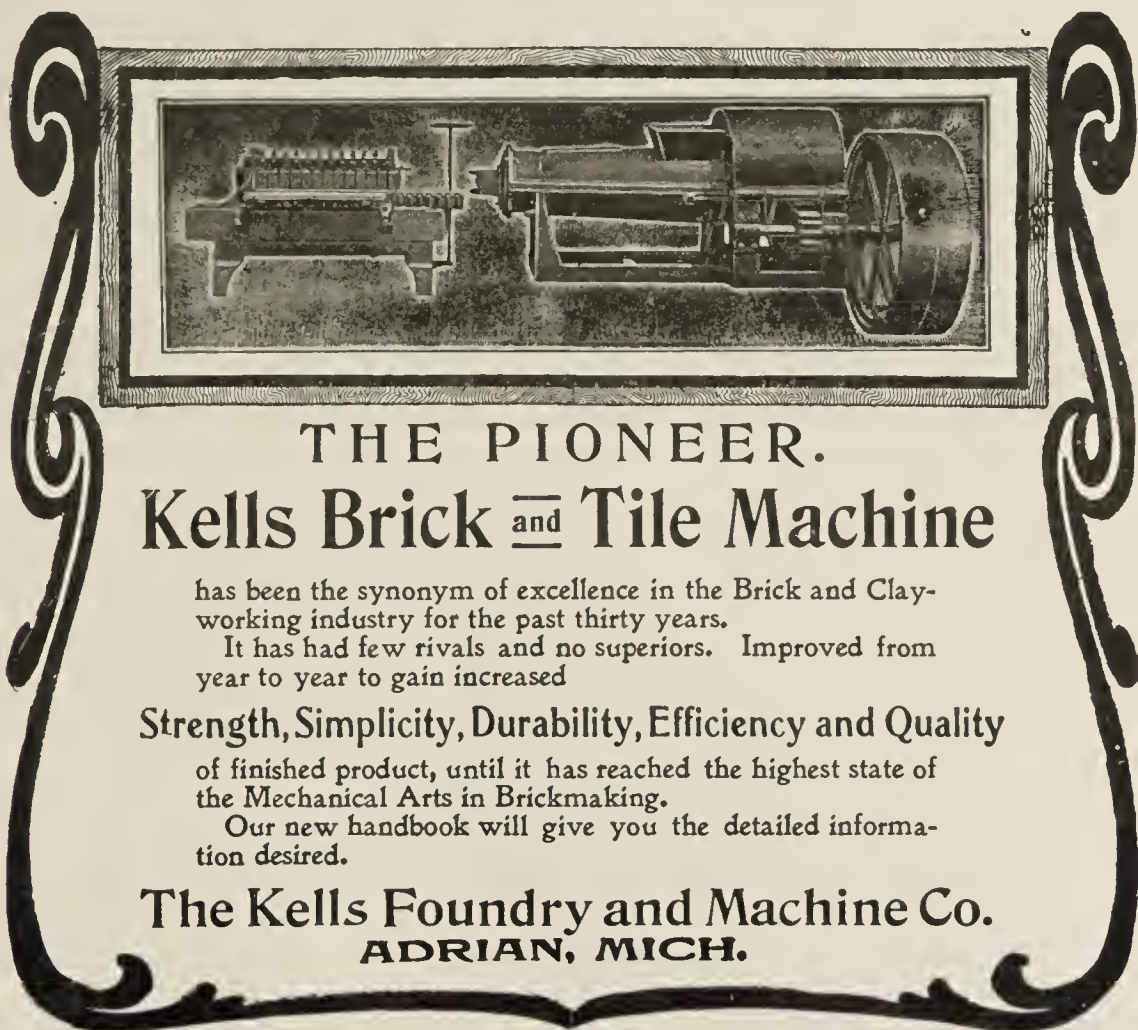
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Manufacturers of

Red Oxides for Brick-makers' Use.

Eclipse
Mortar Colors,
Red, Brown, Buff, Black.

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EXPERIENCED HELP?
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Want Ads.



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Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-working industry for the past thirty years.

It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

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ADRIAN, MICH.

\$2.00

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ONE YEAR (IN ADVANCE)

\$2.00

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," \$1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

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Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

Do you want to buy a

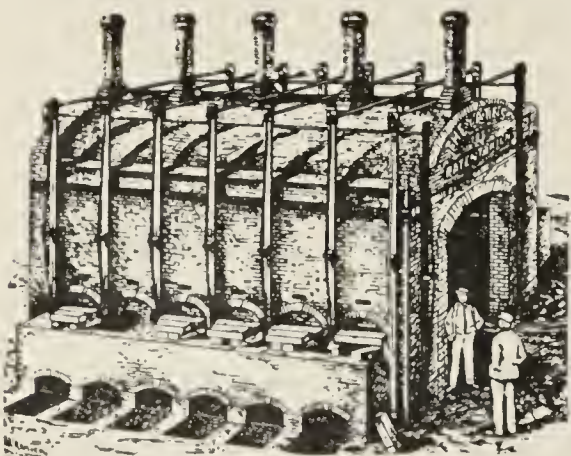
Good Clay Screen?

If So

Correspond with

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For Economy of Fuel and Percentage of Hard Burned Brick, This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

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**For Brick, Roofing Tile,
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"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

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**We build and equip complete
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SHALE AND CLAY BRICK PLANTS.**

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Testing and Controlling Apparatus for Clayworkers.

Draft Gauges, Pyrometers, Cones, Watersmoking and Dryer Thermometers. Test Kilns, Electric Furnaces, Experimental Ball Mills, Automatic Brick Counters, Watchmen's Clocks and other apparatus. All designed to keep a record of your business. Prices on application.

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TO PRODUCE POTTERY ECONOMICALLY
USE

CROSSLEY MACHINERY

THE CROSSLEY MFG. CO.
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If you intend to build or rebuild your brick plant acquaint yourself with the

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That's just the thing you need to get prosperous.
For descriptive booklet write to

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The Improved Flue System.

The most profitable kiln on the market
for burning any clay product.

Absolute Draft Control. Economy of Fuel and Time.
All Hard Brick.

Kiln and Yard Rights, with Plans, Specifications, etc., sold at very reasonable rates. Booklet, estimates and full information cheerfully furnished.

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Sewer Pipe and Clay-
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Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



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Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

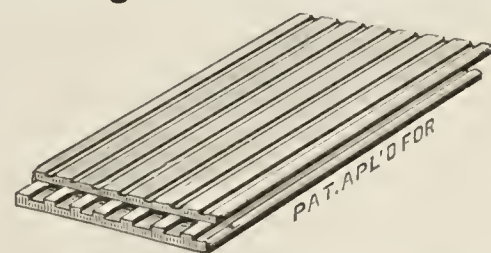
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Patent Revolving and Hand Presses for Interlocking Tiles, Dies for all shapes, Hips, etc., in metal or plaster.

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Terms
reasonable.

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references.

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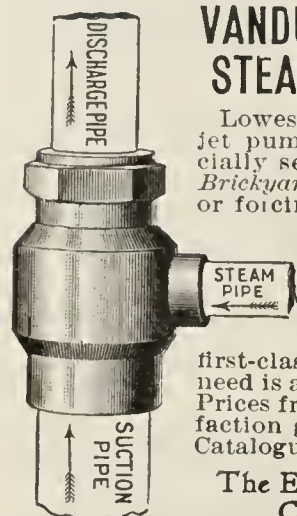
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Special attention paid to dry clay press
processes and down-draft kilns.

Contracts made contingent upon suc-
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Lowest priced reliable steam-
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or forcing water from ponds,
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valves to freeze, clog
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Always ready for in-
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Prices from \$7.00 to \$75.00. Satis-
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BUILDING KILNS.

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CHICAGO RETORT AND FIRE BRICK CO.

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Sewer and Culvert Pipe. Locomotive Tile.
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Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

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FIRE BRICK

Awarded Gold Medal at St. Louis for
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— Made by —

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ST. LOUIS, MO.

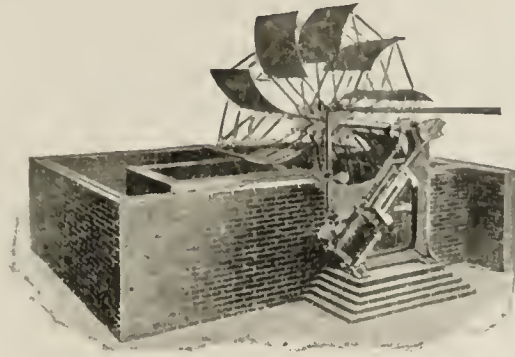
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Waste Heat Fans.

While we frequently have to repair other fans than ours we have never yet in years had to repair our own.

Durability is a strong feature and the use of a Brick fan house insures low first cost.

Efficiency is proved by the many thousands of these fans sold for Mining purposes. Outside journals. No water cooled boxes to make trouble.



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A New Clay Feeder and Mixer.

Send for full descriptive circular.



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Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

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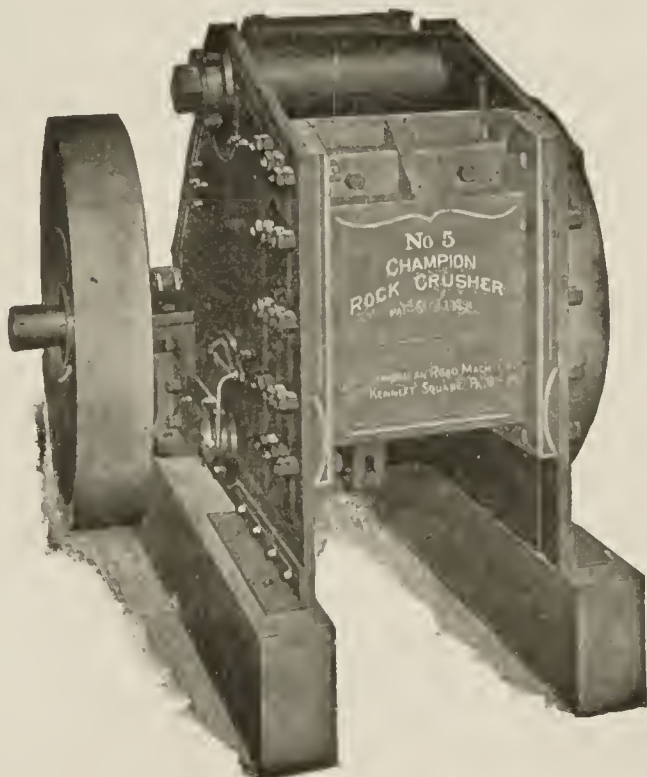
(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.



NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good

on paper.

It Looks Better

crushing shale, fire clay, rock and other hard material.

THE CHAMPION CRUSHER

is expensive, *to do without*, because it saves you money.

Catalogue is free on application. Address

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KENNETT SQUARE, PA.



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Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

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for any position or a position in any connection with the Clayworking Trades use the

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Arranged to Suit All Locations. These Kilns Can be Seen Burning

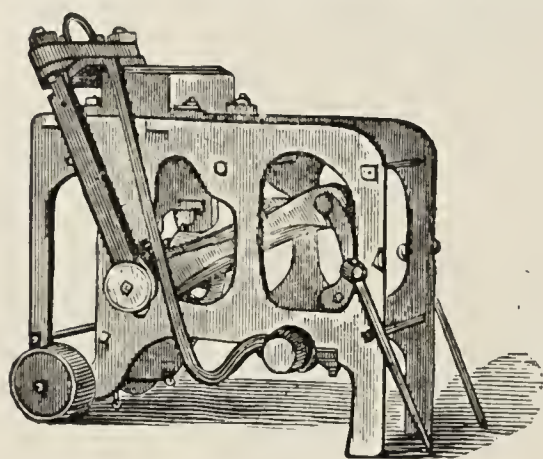
Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

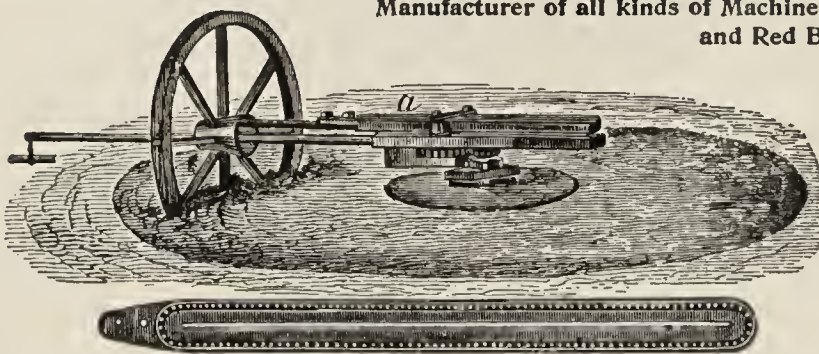


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

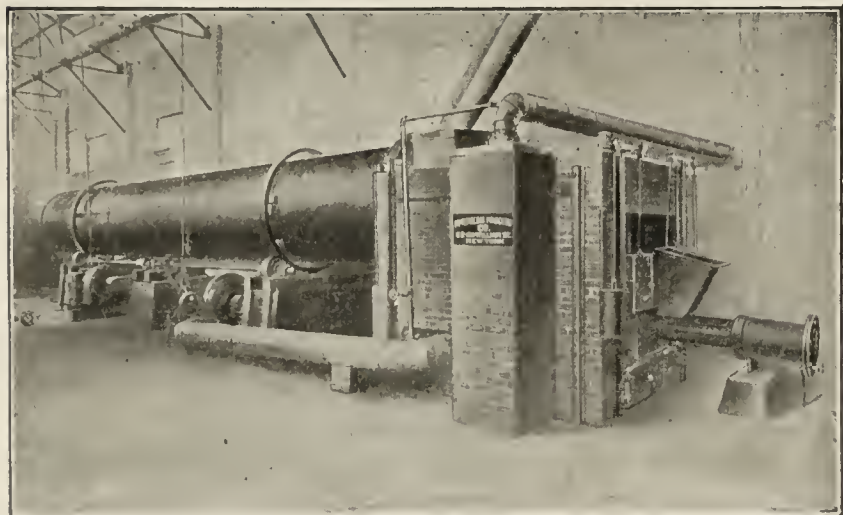
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL, 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel. Either black or galvanized. $\frac{5}{8}$ -inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.



PUMP OUT YOUR CLAY HOLES

with a pump that gritty, muddy water cannot injure.

THE PULSOMETER STEAM PUMP

requires no special foundation, but may be swung from a beam or tripod and raised or lowered as occasion demands without interrupting its work. No engine, belt, oil, packing or skilled attention needed. No easily deranged mechanism. Write for catalog telling all about these pumps.

PULSOMETER STEAM PUMP COMPANY, 14 Battery Place
New York

The
**ROESSLER-HASSLACHER
CHEMICAL COMPANY,**

100 William Street,
NEW YORK.

As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

Ludowici=Celadon Company,

General Sales Office—Chamber of Commerce Bldg., Chicago.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Fletcher, N. C., Nov. 27, 1906.
Mr. John C. Boss, Elkhart, Ind.

Dear Sir—We are very much pleased
with your system of burning brick.

Yours very truly,
Asheville Brick and Tile Co.
J. P. Fletcher, Mgr.

Catalogue descriptive of the BOSS METHOD, containing
testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

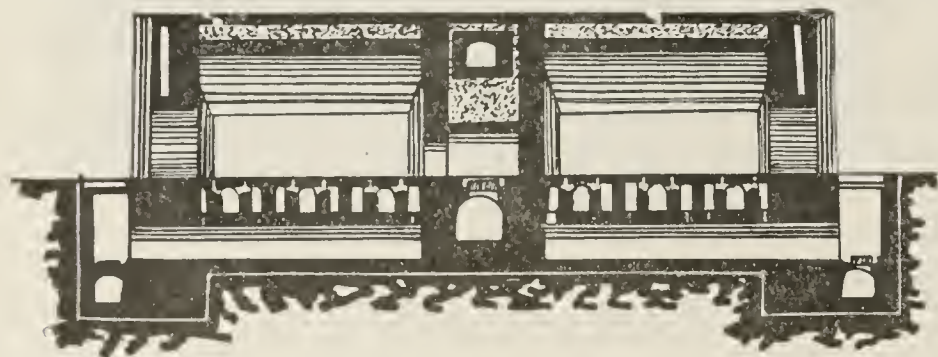
ELKHART, IND.

German Kiln and Construction Co.

(Incorporated)

Engineers and Contractors,

71 and 73 Nassau Street, New York City, N. Y.



All Styles of Kilns in the Ceramic Industry.

Hoffman's Continuous Kiln.

Railroad Tunnel Kiln.

Gas Continuous Kiln.

Kiln with Movable Fire Box.

Up and Down-Draft Kilns, Round and Square.

Shanks and Two-Story Kilns, largest in the world.

Muffle Kilns for Glazing and Enameling.

Chimneys built of radial brick.

We guarantee satisfaction, the best work and lowest
prices. Correspondence solicited.

An Old-Time Favorite.

Morrison's Latest Improved Kilns for Burning Building Brick.

It has no rival. Some of the larg-
est brick plants in the country use it
exclusively. Cost of construction
within reach of every brickmaker.
Price for license so reasonable that
no one can object.

Write us for descriptive pamphlet,
prices, etc. Address

R. B. MORRISON & CO.,

P. O. Box 756.

Rome, Ga., U. S. A.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with
your patent bottom. The two parent kilns are doing good work; just
finished firing one tonight. We are getting good burns; all tile hard
clear to the floor.

The following is a list of the amount of tile of different sizes that we
set in the 30 ft. kiln, as we are in the habit of setting them:

On floor	3 tier	3 in. tile of 5,000 each,	15,000
2 "	4 "	3,000 "	6,000
1 "	5 "	2,040 "	2,040
2 "	10 "	550 "	1,100
2 "	12 "	415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.

The 10 " " 6 ins. and 4 ins.

The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires
are first lighted until burn is completed. All the tile are hard from top
to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any
time wish any more information that I can give, write me and I will be
glad to assist you in any way possible. Thanking you for your commun-
ication and kind regards, I am Yours truly, H. A. YARGER

Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.



B. E. BECHTEL.

**We Are
PRACTICAL BRICKMAKERS.**

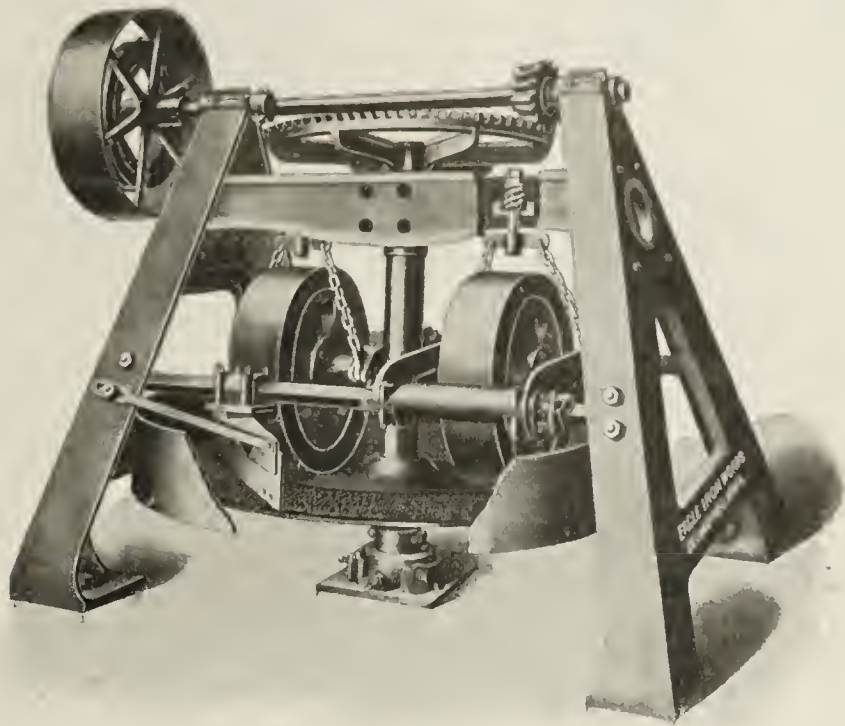
We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

Independent and Suspended Mullers

the distinguishing
feature of our **DRY PANS.**



Other valuable features which our catalogue
fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



~~~~~ Jacob Buhrer's Technical Bureau, ~~~~~ CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In Buhrer's Shortened Kiln (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in $1\frac{1}{2}$ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

STEAM SHOVELS FOR BRICK YARDS.



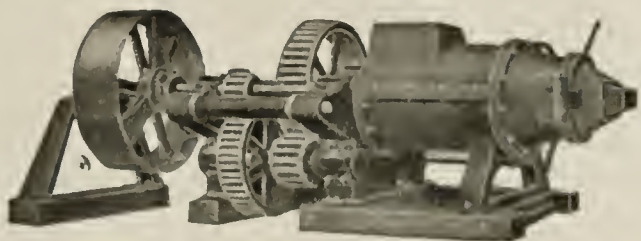
We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

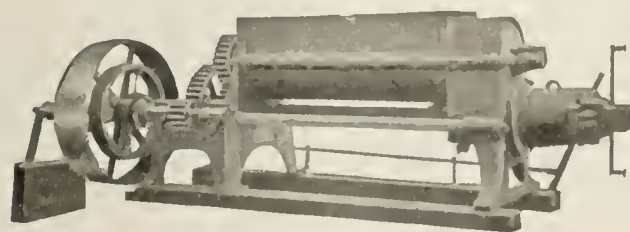
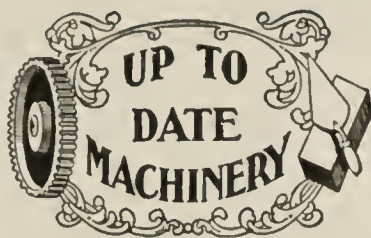
Marion, Ohio.

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

F. H. HOPKINS & CO., Agents
Montreal, P. Q.



Auger Machine.



Combination Machine.

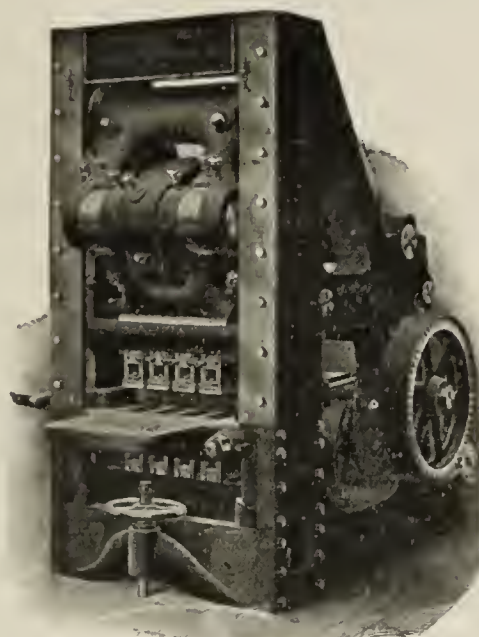
Up-to-Date Machinery

For Making

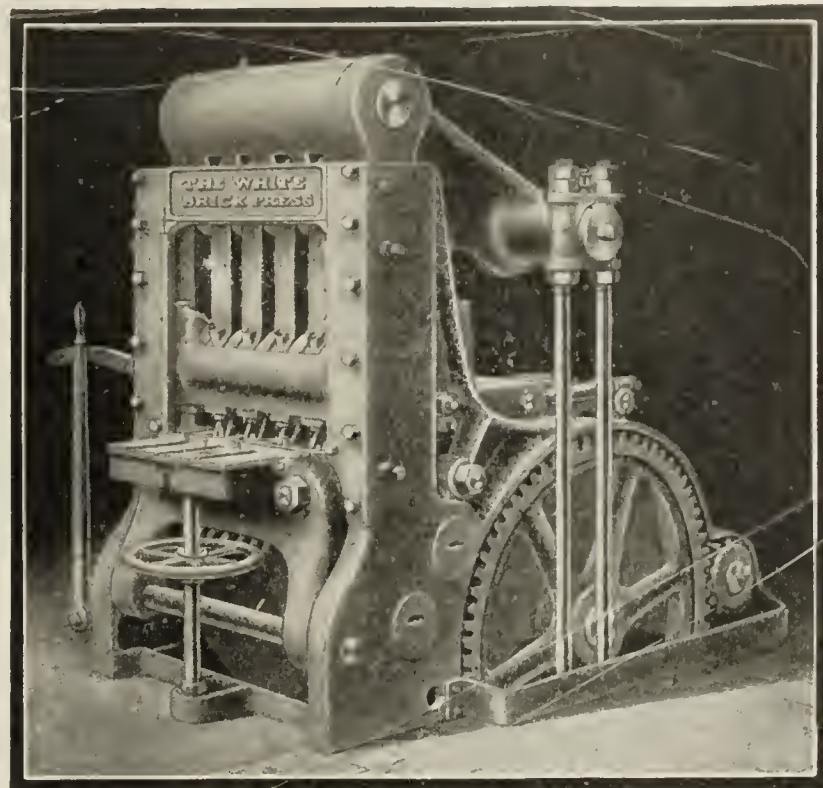
**ALL KINDS OF
BRICK.**

Specialty for 1907
**Rocking Grates
for Kilns.**

**CHICAGO
BRICK MACHINERY
COMPANY,**
77 JACKSON BLVD.,
CHICAGO.



Berg Press.



White Press.

**Handle Your Clay
With One Man and**

The Thew Steam Shovel.

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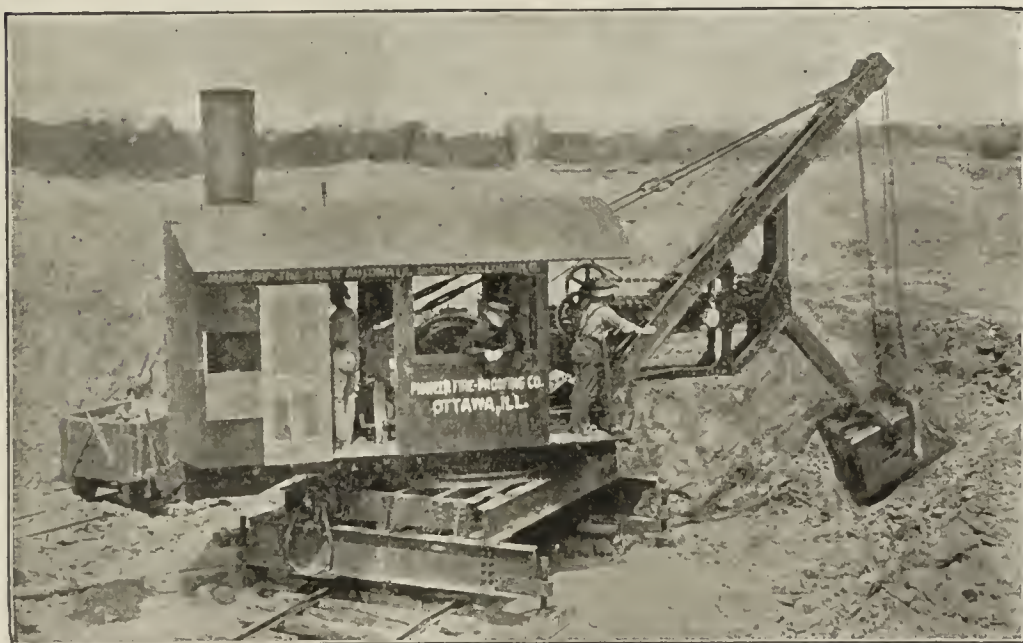
Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

●●●●●●●●

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

●●●●●●●●

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.



Type No. 2—For Shales and Fire Clays.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

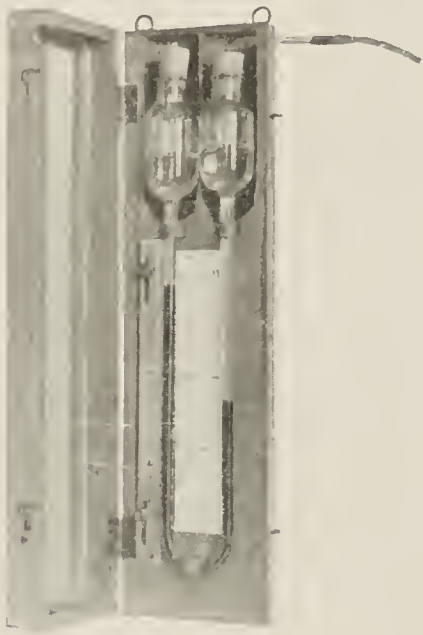
WRITE US FOR CATALOGUES OR INFORMATION.

THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

DRAFT GAGES

BETTER RESULTS . .

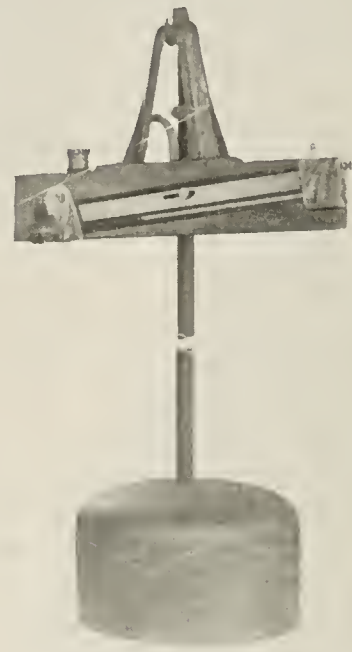
. . LESS FUEL



Seger Gage



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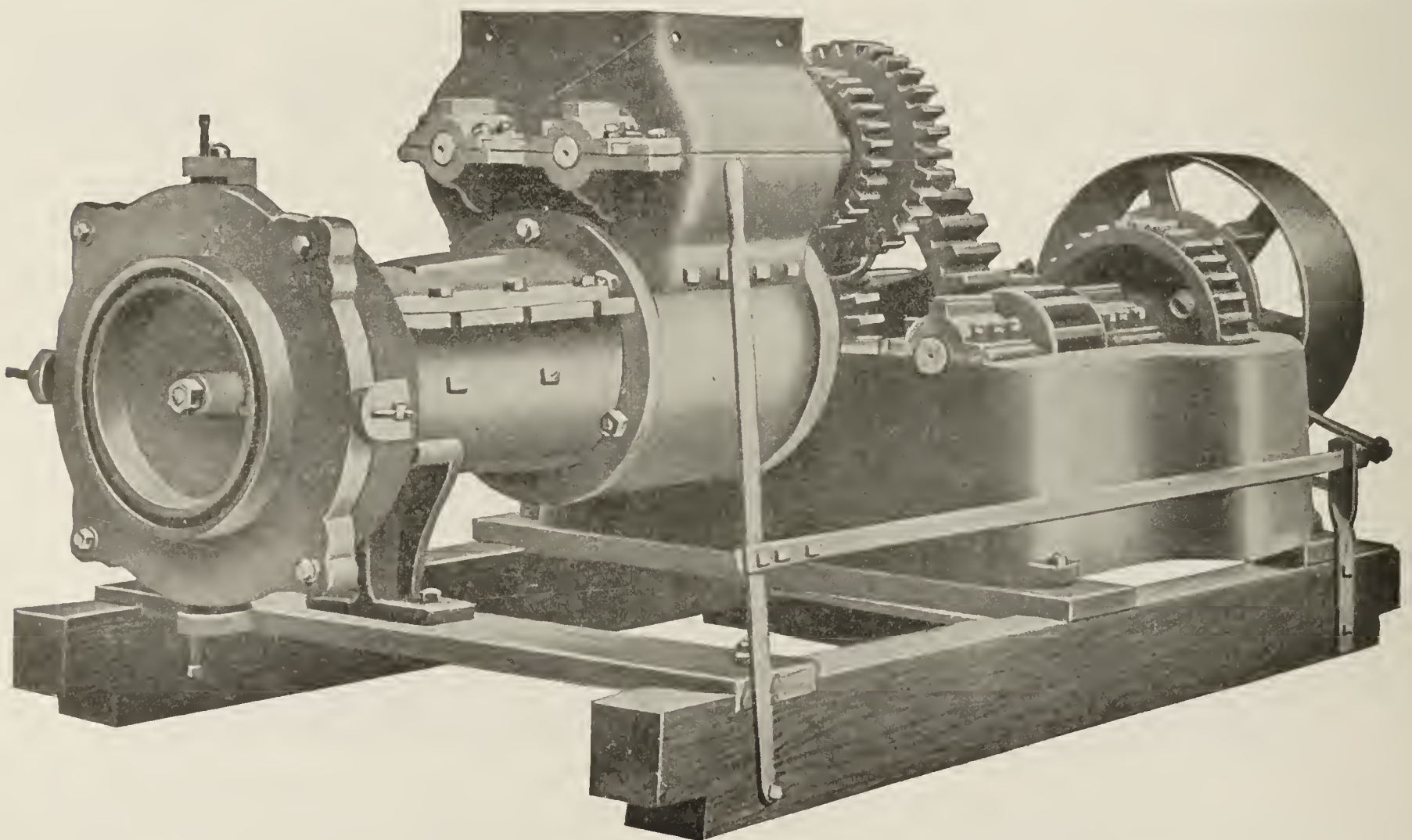


Incline Tube Gage

Pyrometers, Thermometers, Hygrometers, Electric Furnaces, etc.

THE RICHARDSON-LOVEJOY ENGINEERING CO.,

1534 NORTH HIGH STREET, COLUMBUS, OHIO.



NEW MODEL STIFF MUD MACHINE.

Write us for
information.

MADDEN & CO., Rushville, Ind.

BRICKMAKERS WHO FAIL

to take advantage of every opportunity to reduce the cost of manufacturing their products are working on a smaller margin than is necessary.

Every dollar's worth of labor or fuel saved is clear profit to the brickmaker.

Our new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud or soft mud brick.

THE DRYMORE SYSTEM

7TH AND CHESTNUT STS., ST. LOUIS, MO.

EXHAUST STEAM DRYING.

THE LAWRENCEVILLE BRICK AND TILE CO.

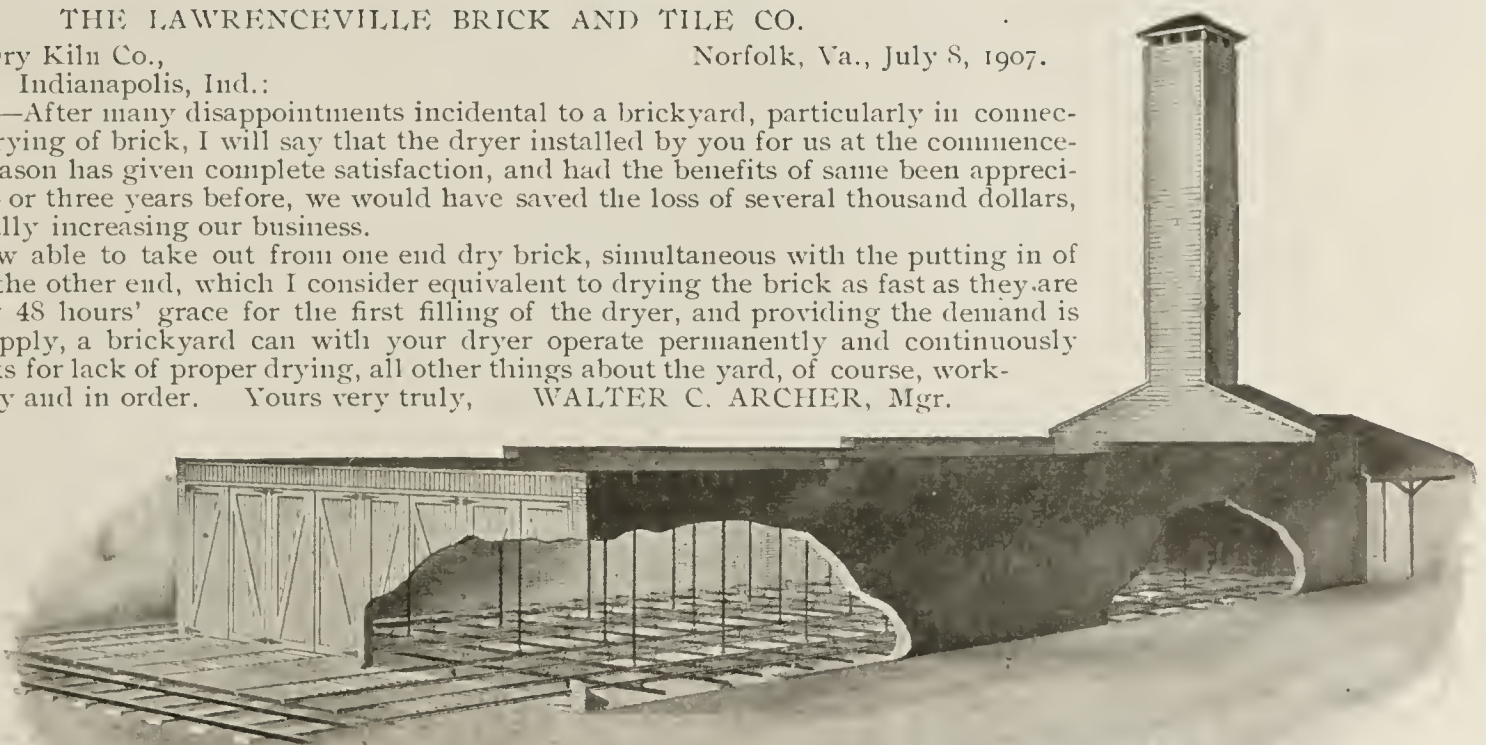
The National Dry Kiln Co.,
Indianapolis, Ind.:

Norfolk, Va., July 8, 1907.

Gentlemen—After many disappointments incidental to a brickyard, particularly in connection with the drying of brick, I will say that the dryer installed by you for us at the commencement of this season has given complete satisfaction, and had the benefits of same been appreciated by us two or three years before, we would have saved the loss of several thousand dollars, besides materially increasing our business.

We are now able to take out from one end dry brick, simultaneous with the putting in of green brick at the other end, which I consider equivalent to drying the brick as fast as they are made, allowing 48 hours' grace for the first filling of the dryer, and providing the demand is equal to the supply, a brickyard can with your dryer operate permanently and continuously without setbacks for lack of proper drying, all other things about the yard, of course, working satisfactorily and in order. Yours very truly, WALTER C. ARCHER, Mgr.

No Fan
No Engine
No Fire
Danger



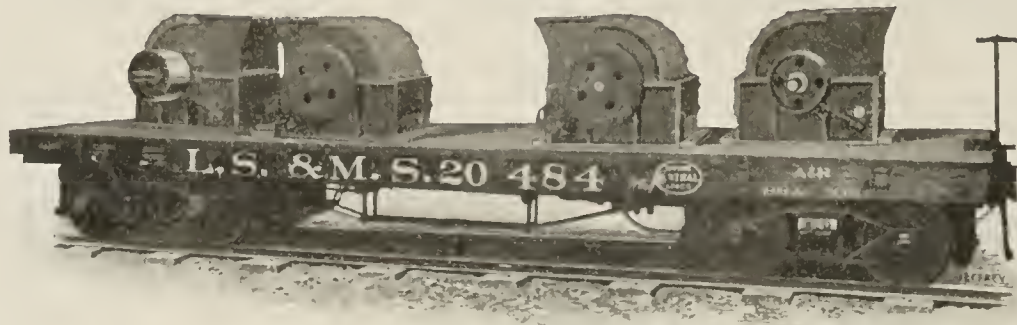
STEEL Foundations, STEEL Roof Supports, Roller Bearing Cars, Transfers and Turntables.

Send for our large catalogue.

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

THE NATIONAL DRY KILN CO., Indianapolis, Ind.

WE OFTEN SHIP PULVERIZERS IN CARLOAD LOTS
To Customers Who Want the Best on the Market.



Especially recommended for treating
Asphalt Rock, Brickbats, Fire Clay, Limestone, Shale, Slag,
Slate, etc.

Crusher Catalog No. 31 mailed upon request with others on
Elevating, Conveying, Screening, Mining, Drilling, Coal Handling.

THE JEFFREY MFG. COMPANY,
Columbus, Ohio, U. S. A.

New York Chicago Boston Denver St. Louis Pittsburg Knoxville Charleston, W. Va. Montreal

Success Brick Machinery Co.,

Memphis, Tenn.

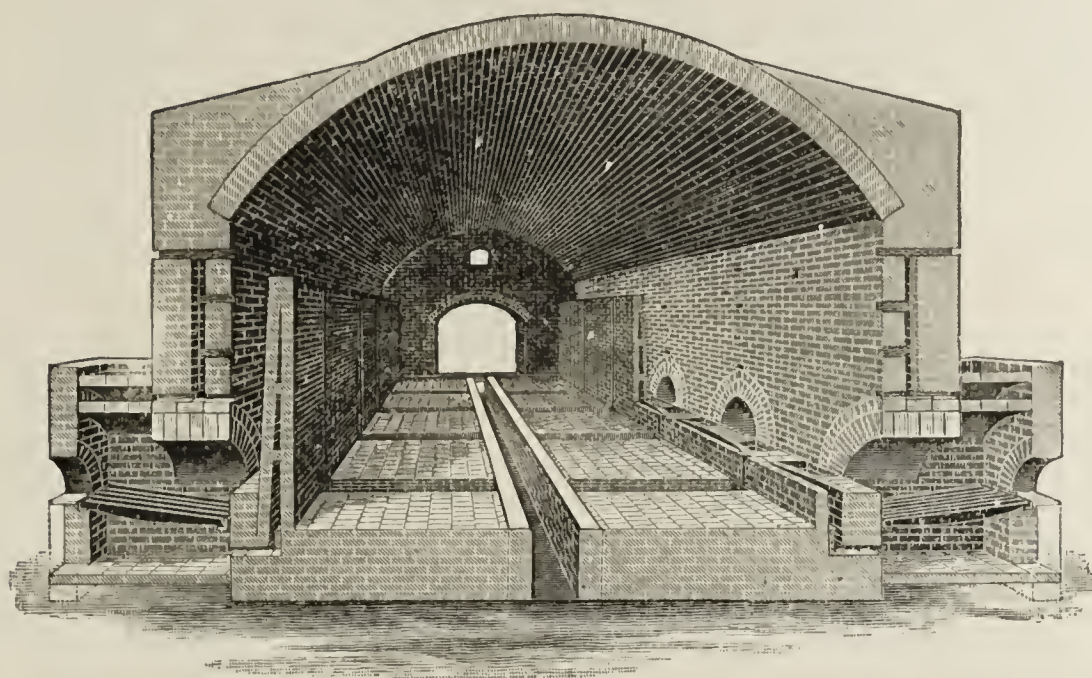
Equippers of COMPLETE Plants.

Let us figure with you on your machinery and supplies. Investigate our brick barrows, trucks, cutting wires, "Perfection" brick moulds, and other supplies.

Our REID'S SUCCESS ELEVATING BRICK CARS AND DRYING SYSTEM [the most modern method of handling your brick] now built in our own shop. Let us install an outfit in your plant. It will save you money.

The EUDALY DOWN DRAFT KILNS

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

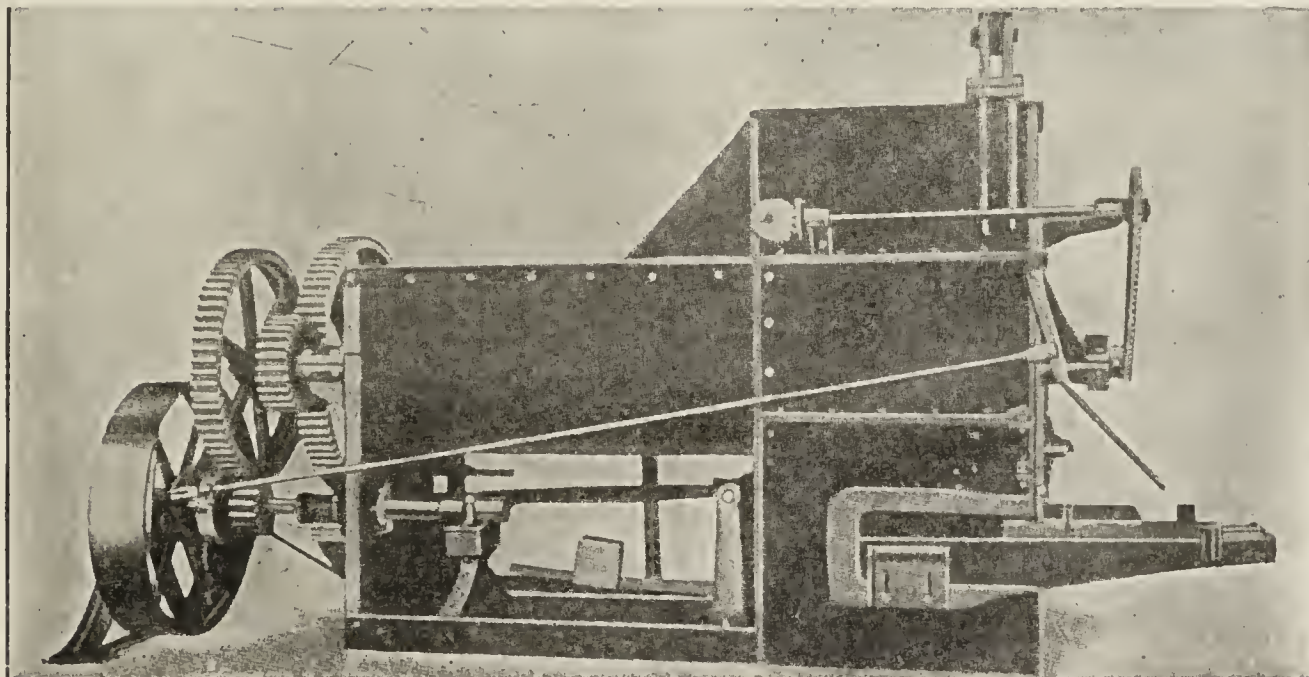
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal, or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg., Cincinnati, Ohio.

The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine, of large capacity strong and heavy, with vertical press. To meet this demand we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

For small capacity yards there is nothing that is quite as good as the "QUAKER" Machine, which is made for horsepower as well as steam.

James W. Hensley,
Indianapolis, Ind., U. S. A.

Let me give you full particulars.
List of users furnished on application.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO

Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untying knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the issue. Enclosed find \$.

Name

Postoffice

Street and Number

County State

The Youngren Continuous Kiln

Producer Gas Fired.



SETTING BRICK IN THE YOUNGREN CONTINUOUS TUNNEL KILN.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

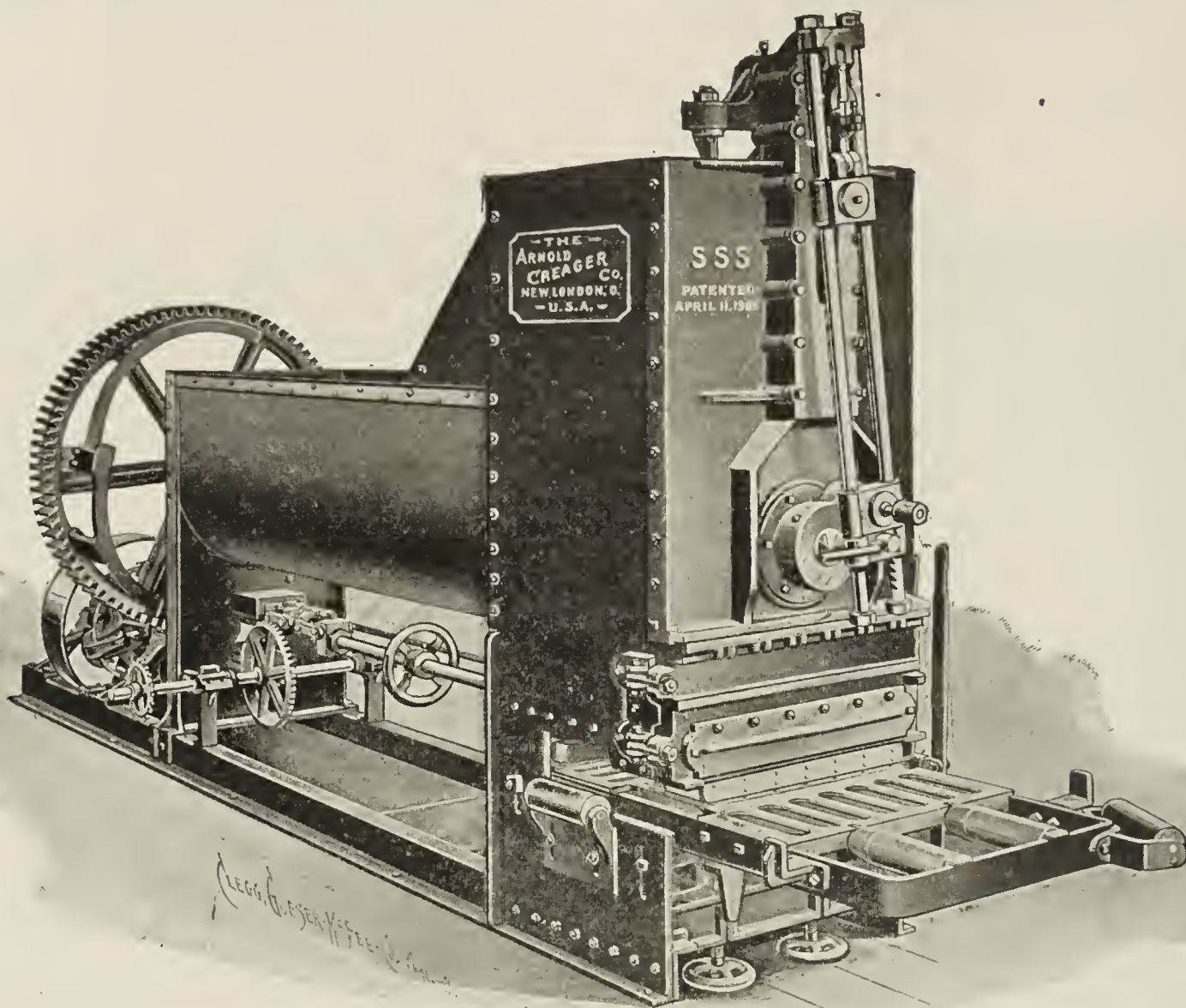
Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

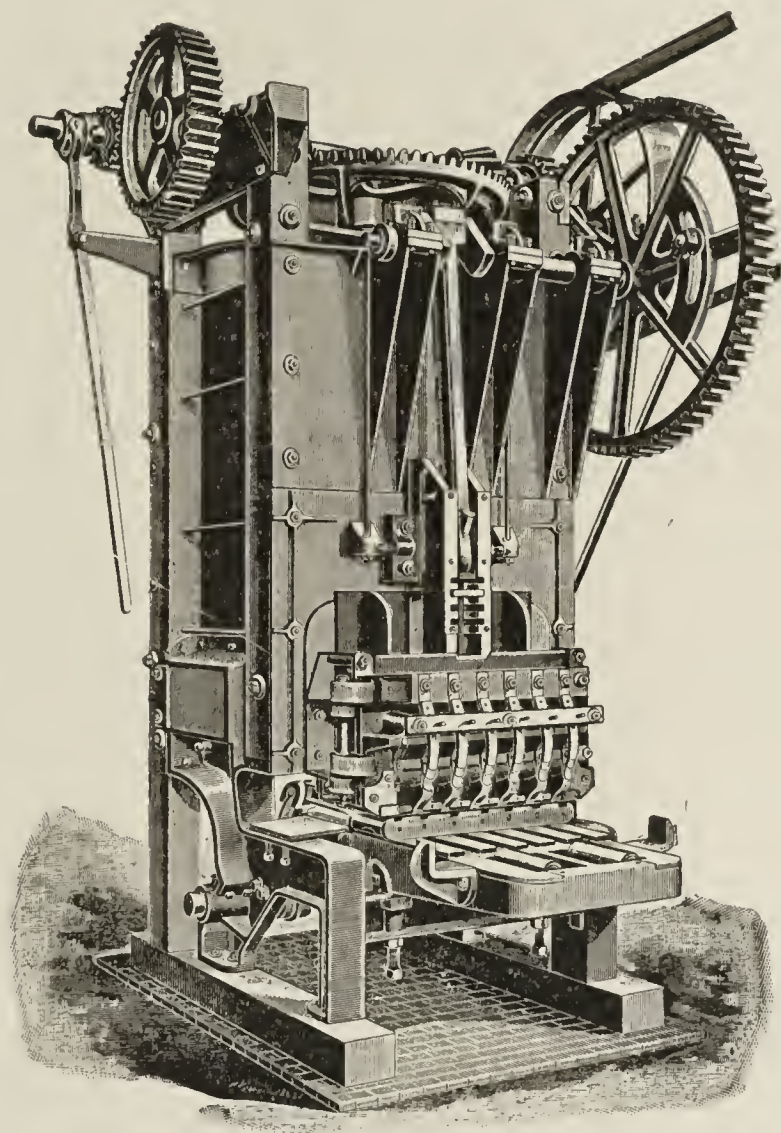
NEW LONDON, OHIO.

CINCINNATI, OHIO.

CABLE "AUTOMATIC".

GET YOUR MONEY'S WORTH.

NEW HAVEN BRICK MACHINES are by actual weight and measurement the heaviest soft clay brick machines on the market. They are thoroughly reliable and **all right**.



Write for
Descriptive
Catalog and
Commendatory
Letters from
Satisfied
Users.

We also
Make a
Horizontal
"New Haven."
Let us
Tell you
About it.

"New Haven" Vertical Brick Machine.

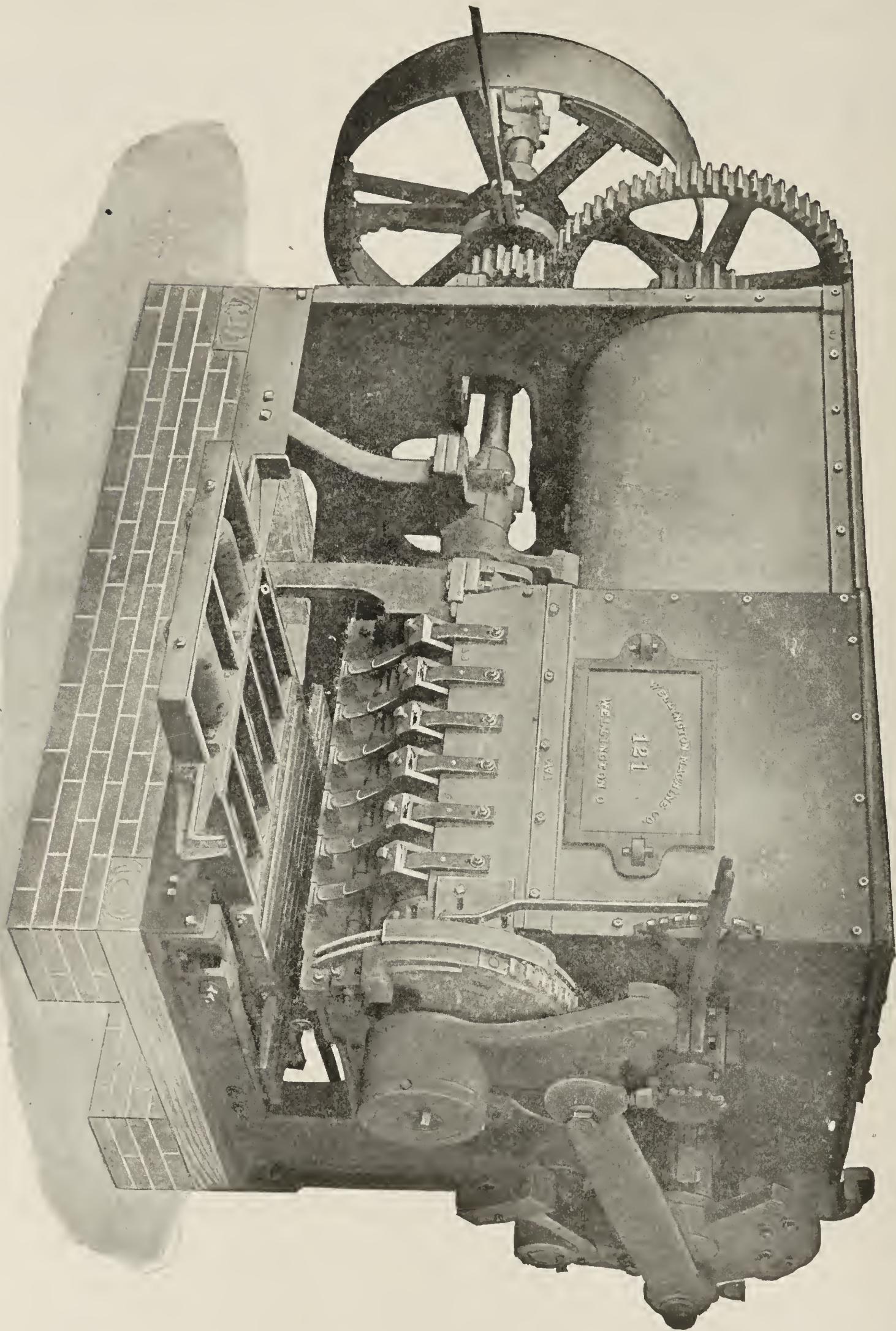
No one gives more for the money invested than we do.
If you want first-class machines that will not break down,
BUY OF US AND GET YOUR MONEY'S WORTH.
If you want a machine that will cost little for repairs,
BUY OF US AND GET YOUR MONEY'S WORTH.
If you want a machine that will turn out first-class brick every day in
the week, every week in the month, every month in the year,
BUY OF US AND GET YOUR MONEY'S WORTH.

The EASTERN MACHINERY CO.,

NEW HAVEN, CONN.

OVER
235
"Monarch"
Brick
Machines
in use
==
OVER
565
"Quaker"
Machines
in use.

==
WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

**ROLLER-BEARING
BARROWS.**

The Wellington Machine Co.,
WELLINGTON,
OHIO.

Send for Catalogue.

Sand Mould Brick Plants

OUR SPECIALTY.

The Potts Horizontal Brick Machine is well built, of the best material, simple in construction, strong and durable, has no equal for making brick having clean sharp corners and smooth surfaces.

The Potts Disintegrators are the standard machines of this class. Heavy frames, large steel shafts, adjustable secured steel cutting bars; rolls made from special iron thoroughly chilled.

The Potts Mould Sander, simple in construction, does not waste or spill the sand. A boy can operate it.

The Potts System Rack Pipe Dryer, the best drying system on the market, is built on scientific lines; every advantage taken to save fuel. Exhaust steam used during day, live steam at night. Brick thoroughly dried in 12 hours or less.

Let us tell you about it. There is no plant of machinery on the market today that can be compared with it for Quality, Quantity and Cheapness of Operation.

C. & A. POTTS & CO., Indianapolis, Ind.

Mention The Clay-Worker.

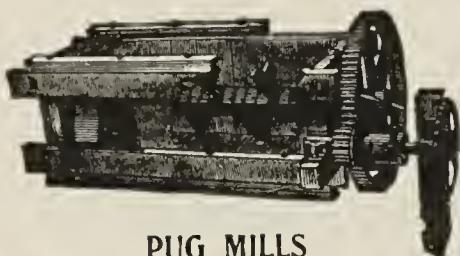
MARTIN'S LEAD



CRUSHERS

LET US FILL
YOUR ORDERS—
THEN YOU'LL GET
THE BEST THAT'S OUT

—IN—
FURNISHING
EVERYTHING
—THE—
BRICK MAKER
—NEEDS—



PUG MILLS

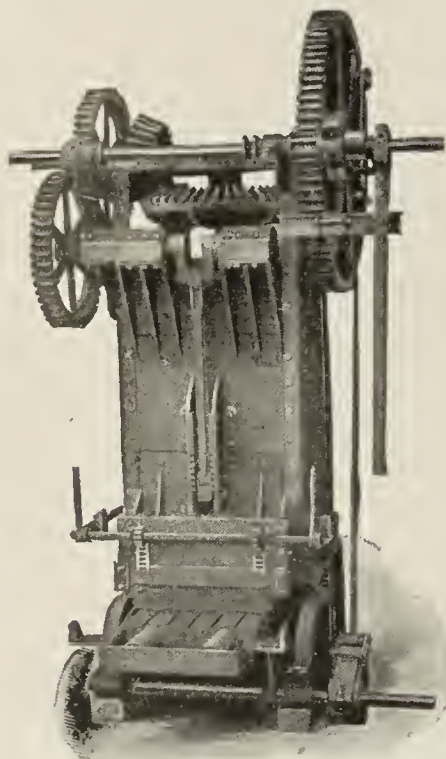
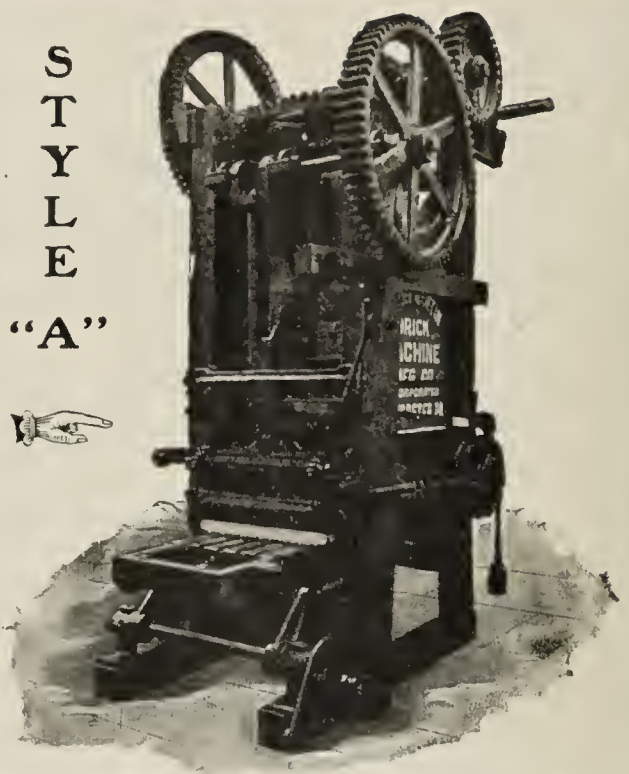


TRUCKS



OF ALL
STYLES
BUILT
FOR THE
HARDEST
KIND OF WORK

S
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L
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"A"



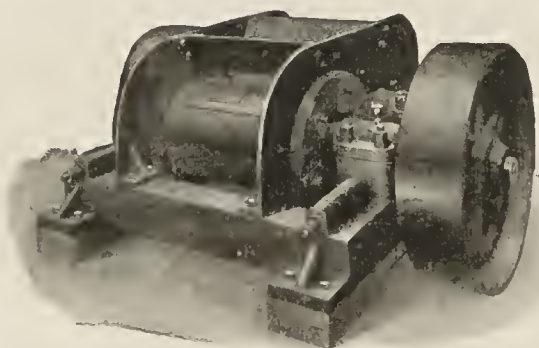
STYLE "P" ALL IRON AND STEEL
BRICK MACHINE



BRICK MACHINERY THAT

MAKE'S
GOOD
ON ANY
PLANT
IS "MARTIN"

HAVE YOU
OUR BIG
CATALOG?

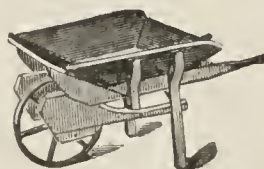


MARTIN'S PATENT DISINTEGRATOR

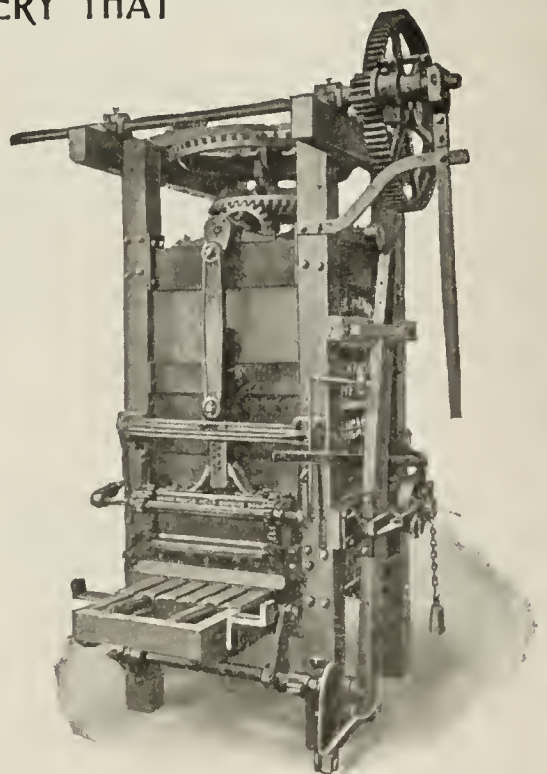
"MARTIN"



WRITE US
FOR
PRICES



LANCASTER,
PENNA.
U. S. A.



BRICK DRYERS

The "MARTIN SYSTEM"
STEAM RACK PIPE
DRYING & CONVEYING

BRICK==ARE FULLY COVERED BY "PATENTS" GRANTED

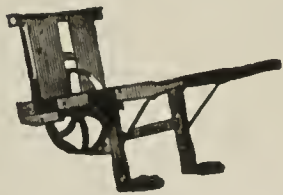
NOTICE

==PATENTED==

February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.

OWNED
AND
CONTROLLED

BY THE HENRY MARTIN BRICK MACHINE
==MFG. CO., INC.==LANCASTER, PA.==



ADAPTED FOR SOFT-MUD OR STIFF-MUD
BUILDING BRICK==LABOR-SAVING THROUGHOUT
NO FANS, BLOWERS, TUNNELS, ENGINES OR CARS.

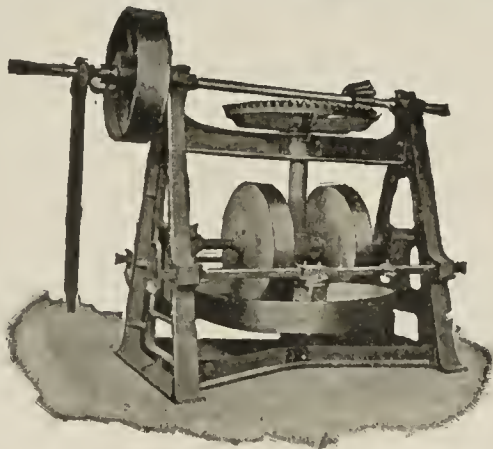


HORSE POWER BRICK MACHINE
EVERY MACHINE GUARANTEED



The "Martin Patent
System" of Drying is
Superior in Every
Respect to Any Other
System==Quick to In-
stall and Low in
Price and Takes up
Very Little Yard Room

STYLE "A" BRICK MACHINE



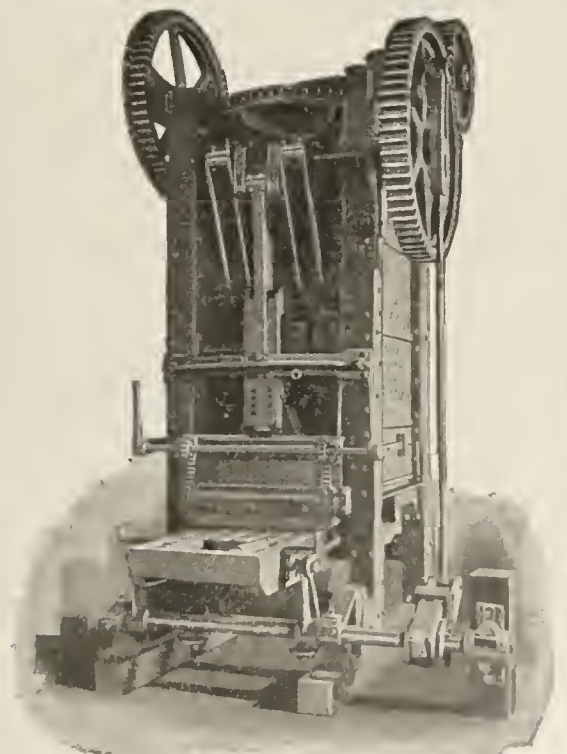
5-7-9-FT. DRY OR WET PANS

THE SALE AND THE CONSTRU-
CTION OF THE "MARTIN" PATENT
SYSTEM" DRYER IS UNDER
THE DIRECT SUPERVISION
OF THE FACTORY OFFICE
AT LANCASTER, PA., U. S. A.

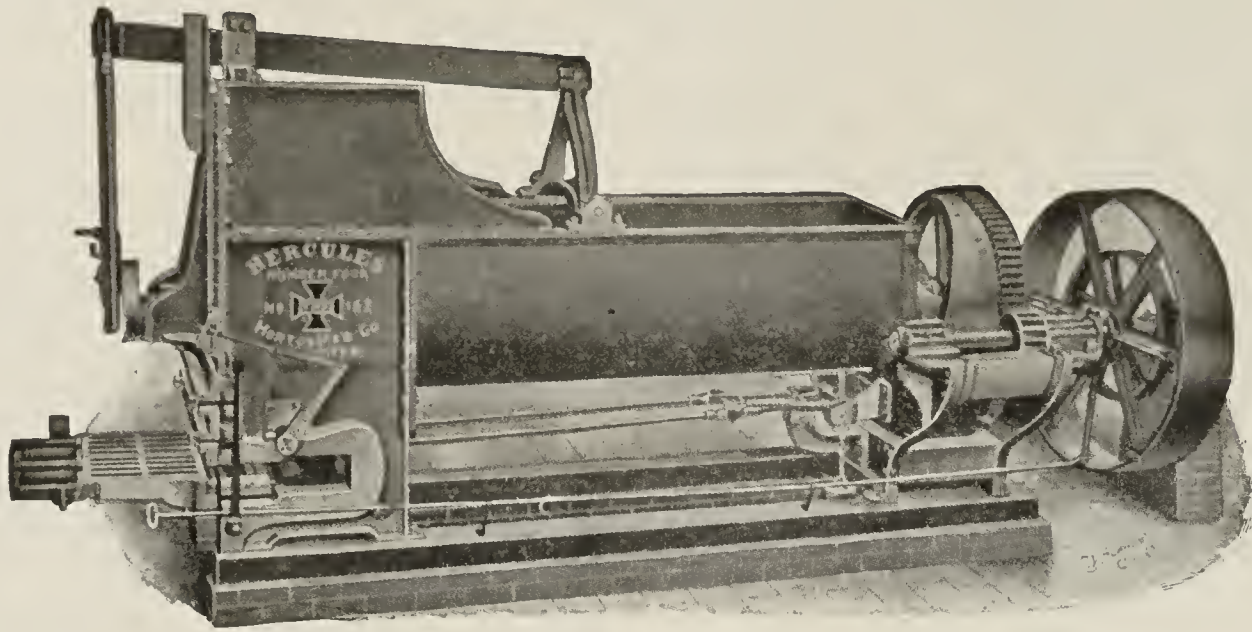
LET US MAKE
YOU AN INTER-
ESTING OFFER



THE HENRY MARTIN
BRICK MACHINE MFG. CO. Inc.
LANCASTER, PA., U. S. A.

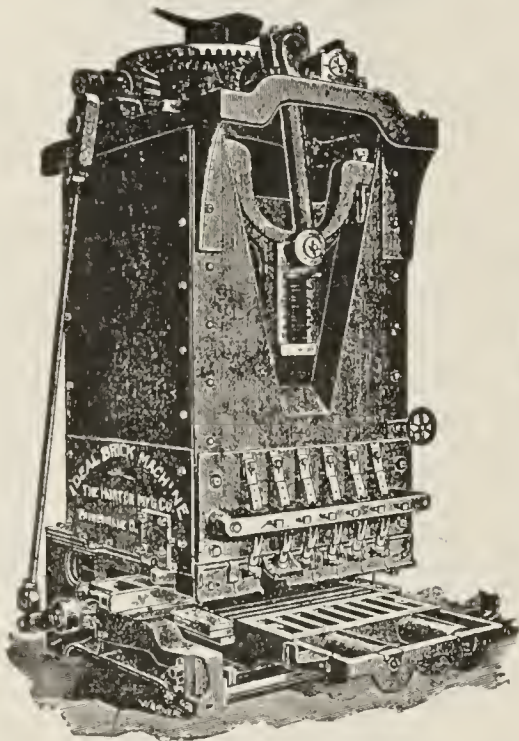


Do Not Miss This Opportunity.

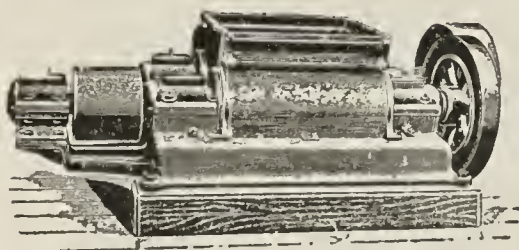


Hercules No. 4 Brick Machine.

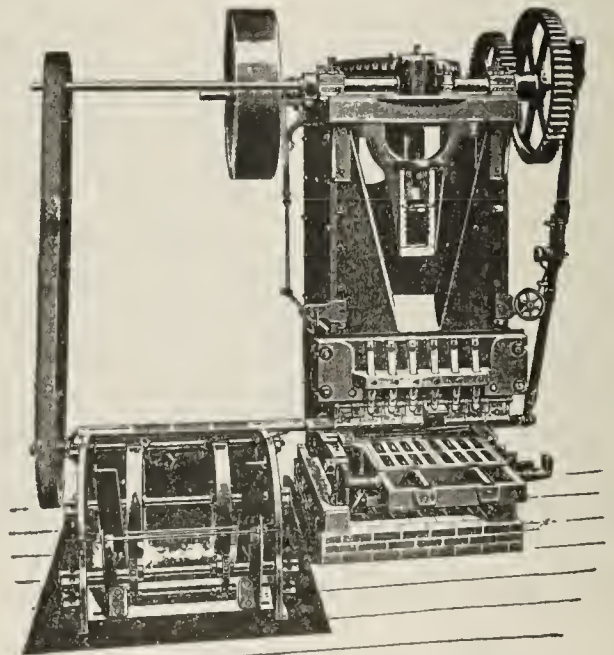
Let Us Have Your Inquiries Today.



Ideal Horse Power.

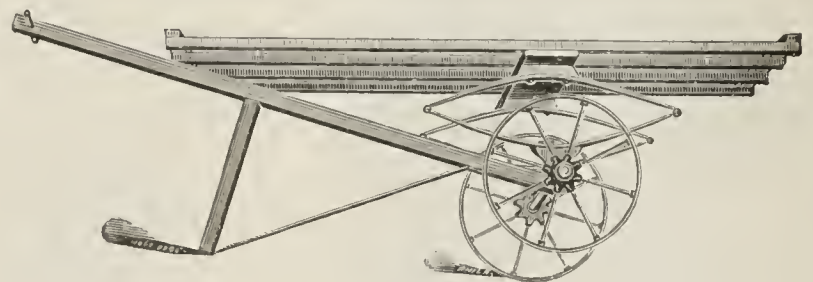
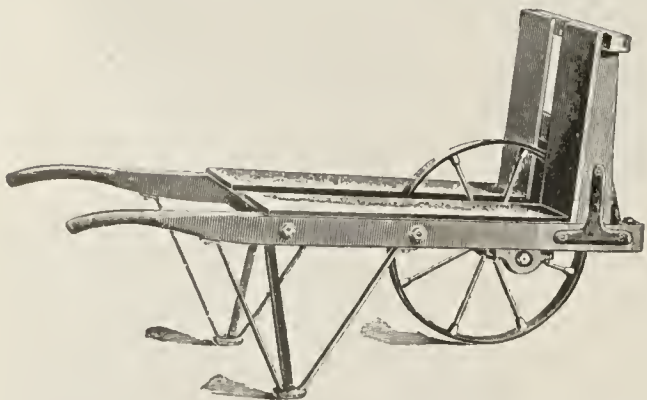


Disintegrator.



Ideal Steam Power and Sander.

OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

BOOKS FOR CLAYWORKERS.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Clay Glazes and Enamels, by Henry R. Griffen. Price \$5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application

Tables of Analyses of Clays, by Alfred Crossley. Price \$1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

Clays; Their Occurrence, Properties and Uses, by Heinrich Ries. Price \$5.00.

A valuable and reliable treatise on the origin of clay, chemical and physical properties, kinds of clay, methods of mining and manufacture and distribution of clay in the United States, including a chapter devoted to Fuller's Earth, its distribution in the United States, mining and uses, etc. The book is well illustrated, which adds much to its value.

Bricklaying, by Owen B. Maginnis. Price \$2.00.

This book contains extensive explanations of the most improved modern methods of bricklaying, and is the current practice and experience of the best authorities, making an invaluable work of reference for architects, engineers, contractors, builders and mechanics.

The Clayworkers' Handbook, by the Author of "The Chemistry of Clayworking." Price \$2.00.

A manual for all engaged in the manufacture of articles from clay, containing chapters devoted to Materials Used in Clayworking, Preparation of the Clay, Machinery, Transport, Conveyors, etc., Drying and Dryers, Engobing and Glazing, Setting or Charging, Kilns, Firing, Discharging, Sorting, Packing and Dispatching, Defects, Tests, Analysis, etc., etc.

Burning Brick in Down Draft Kilns, by W. D. Richardson. Price \$1.00.

A manual on the "Burning of Brick," covering all the essentials of good burning, including chapters on kiln repairs, stages of burning, oxidation period, vitrification period, cooling, with valuable tables and illustrations of various testing apparatus.

Engineering for Land Drainage, by C. G. Elliott. Price \$1.50.

Giving instructions for laying out and constructing drains for the improvement of agricultural lands intended for the use of those who are charged with the responsibility of making plans for and executing drainage improvements.

Kiln Records, by W. D. Richardson. Price \$1.00.

To establish a successful system of burning, observations and records should be made regularly, carefully and conscientiously, and this can be done to best advantage by the use of Mr. Richardson's Kiln Records.

Vitrified Paving Brick, by H. A. Wheeler, E. M. Price \$1.00.

A review of present practice in the manufacture, testing and uses of Vitrified Paving Brick.

Practical Farm Drainage, by C. G. Elliott. Price \$1.00.

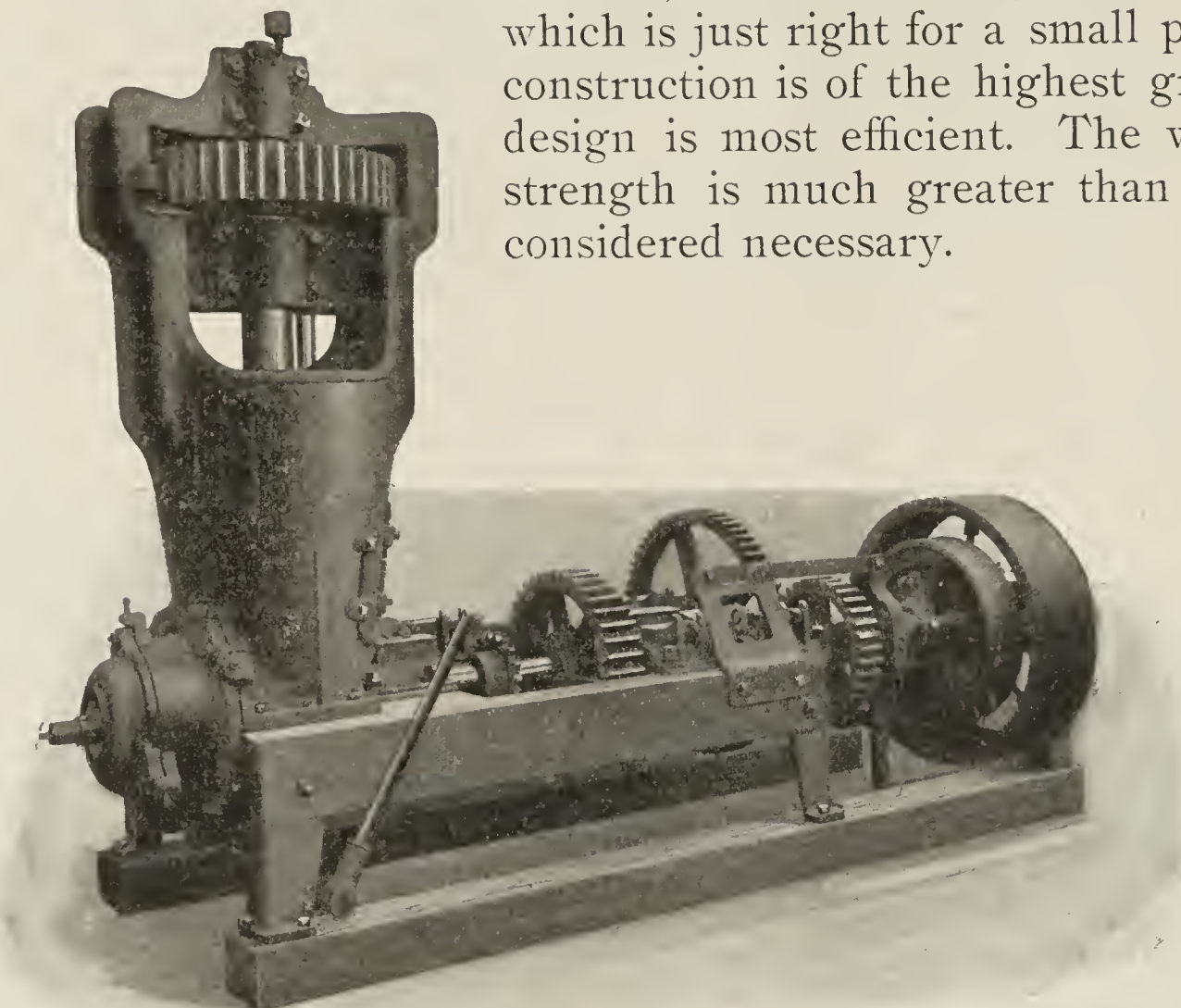
A Treatise on the Benefits of Farm Drainage, with plans and illustrations for making and laying tile.

These Books will be Mailed, Postage Prepaid, to Any Address in the United States or Canada, on Receipt of Price.

T. A. RANDALL & CO.,
Indianapolis, Ind., U. S. A.

Drain Tile Machines.

We build them in three different sizes: The No. 10A, a very large one, capable of making all the ware you can possibly take care of; the No. 9B, a medium size, and the No. 5B, which is just right for a small plant. The construction is of the highest grade. The design is most efficient. The weight and strength is much greater than is usually considered necessary.



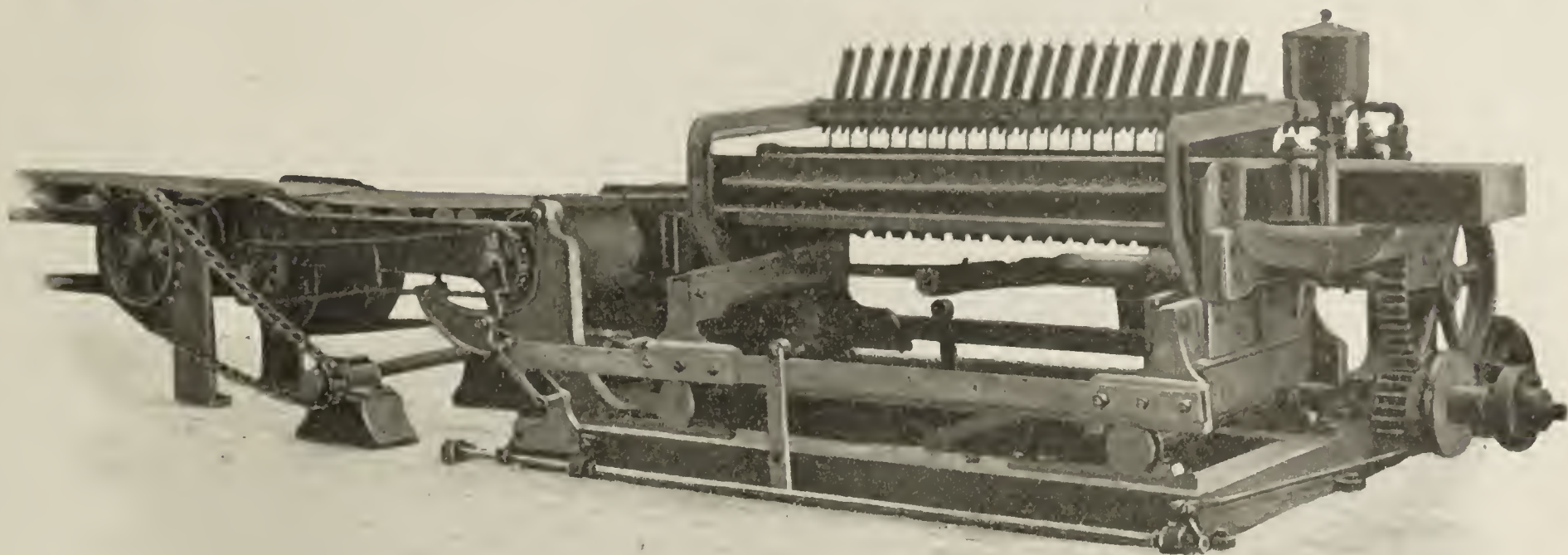
This is The Brewer No. 9B.

It weighs 6,820 pounds. The upright portion is cast in one piece and machined to the frame. The knives are **forged** from hard high-carbon steel. The augurs and casings are made of white-iron. All horizontal journals are self-oiling. The up-thrust bearing is of the marine pattern. The back-thrust bearing is self-oiling, self-aligning and adjustable.

It is about 1,000 pounds heavier, has longer journals, larger shafts and heavier gears than the No. 9A Machine of which it is a reconstruction.

H. BREWER & CO., TECUMSEH,
MICHIGAN.

Modern Clayworking Machinery.

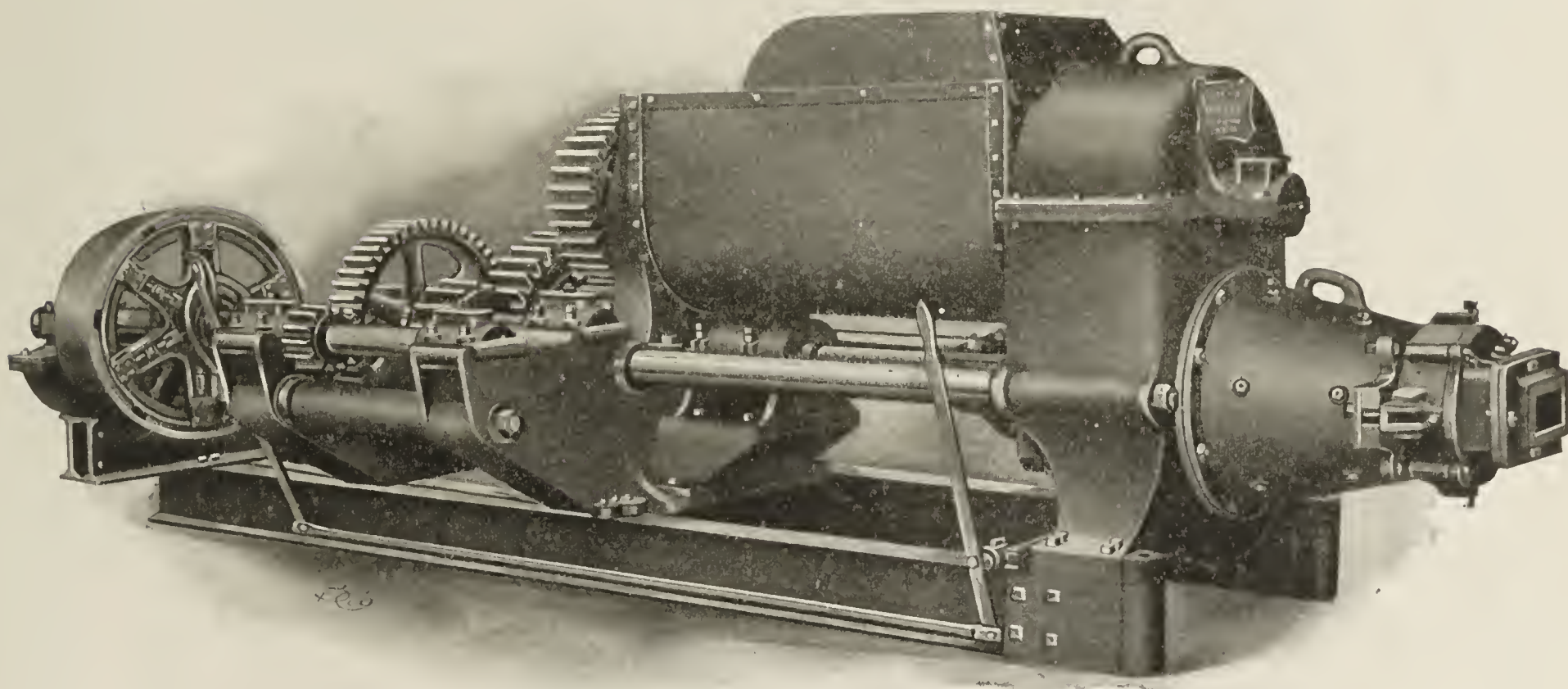


Automatic Side-Cut Table.

Cuts brick 28 inches from brick machine die.

Short cutting wires.

Capacity 25,000 to 125,000 brick in 10 hours.



No. 6 Combined Brick Machine and Pug Mill.

Steel gears throughout.

Self-contained on steel I beams.

Length of pug mill five to thirteen feet.

Interlocking hubs and independent knives.

Capacity 50,000 to 75,000 brick in ten hours.

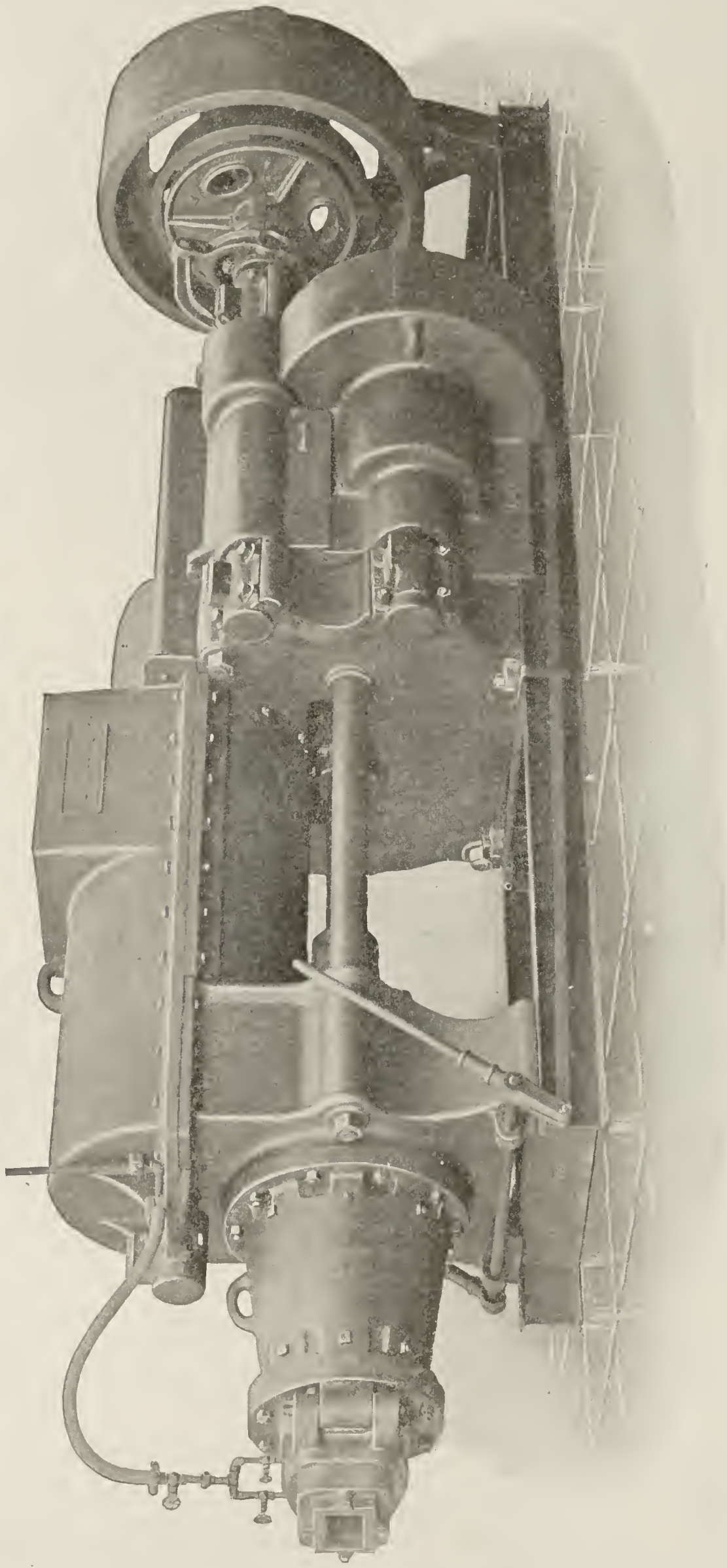
Our Piano Wire Screens Are Doing Excellent Work.

THE BONNOT COMPANY, Canton, Ohio.

Write for Circular No. 12.

Mention The Clay-Worker.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

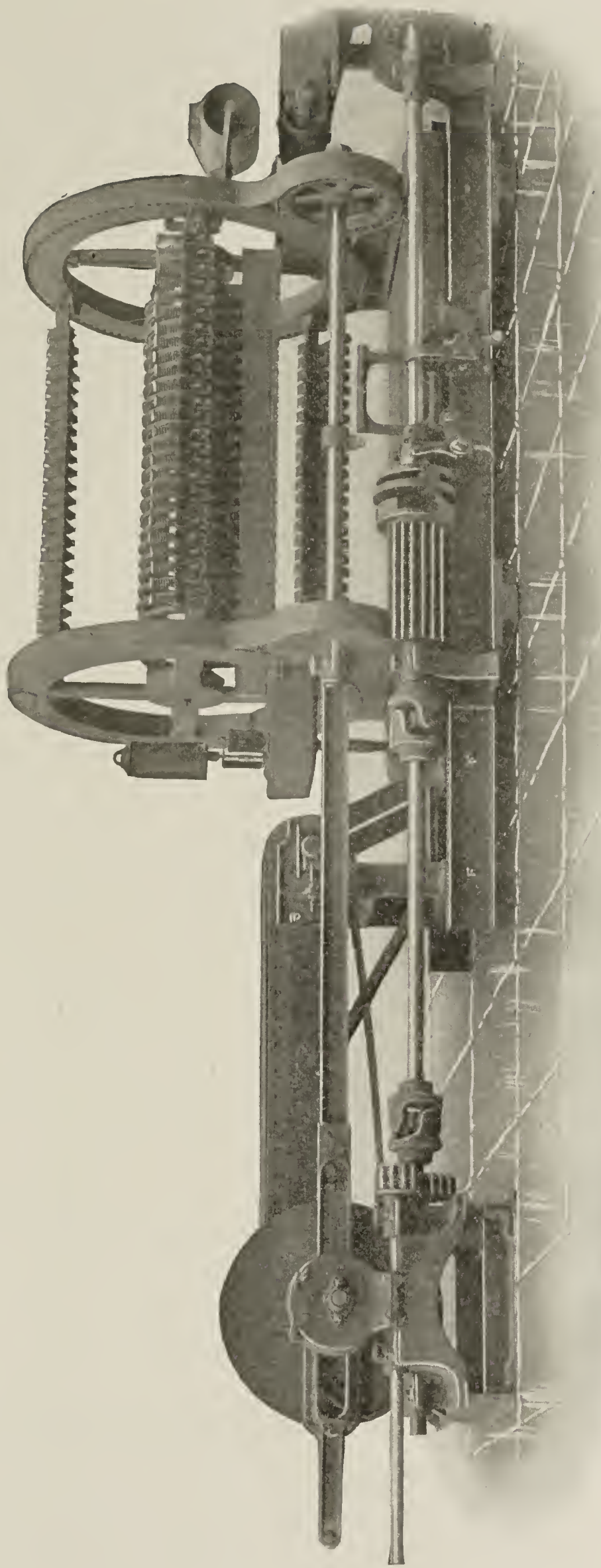
Height from floor to top of hopper, 5 ft. 8 in.

Size of hopper, 26-in. x 26-in. Weight of machine about 26,000 pounds.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

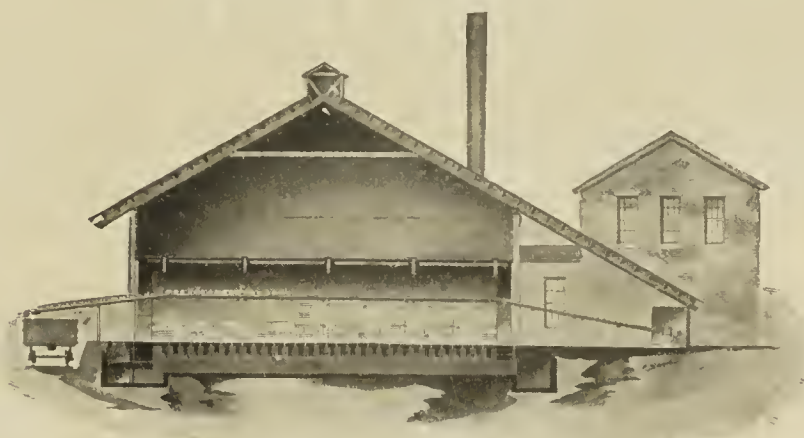
E. M. FREESE & CO., Galion, Ohio.

NOTICE=

WHEREAS, one Chas. Weller is offering for sale a patent, also the yard rights to the use of same, which patent simply covers the location of certain ducts to be employed for admitting heat and air to the brick kilns, for the purpose of drying the bricks set therein, and as same can not be used except in combination with other features of the so-called Scott System, all of which are fully covered by several basic patents controlled by the undersigned, notice is hereby given that any and all infringements of same will be promptly prosecuted.

Scott Kiln-Drying Company,
Detroit, Mich.

[Licensees Alex. A. Scott Patents.]



CROSS SECTION OF A SEMI-CONTINUOUS KILN

Showing method of loading cars in a yard equipped with

Scott Kiln=Drying System

(Alex A. Scott Patents)

by means of which brick are being made and burned—every expense included from the bank to the finished product—for \$1.85 per thousand.

Shall we send you our Catalogue No. 213C?

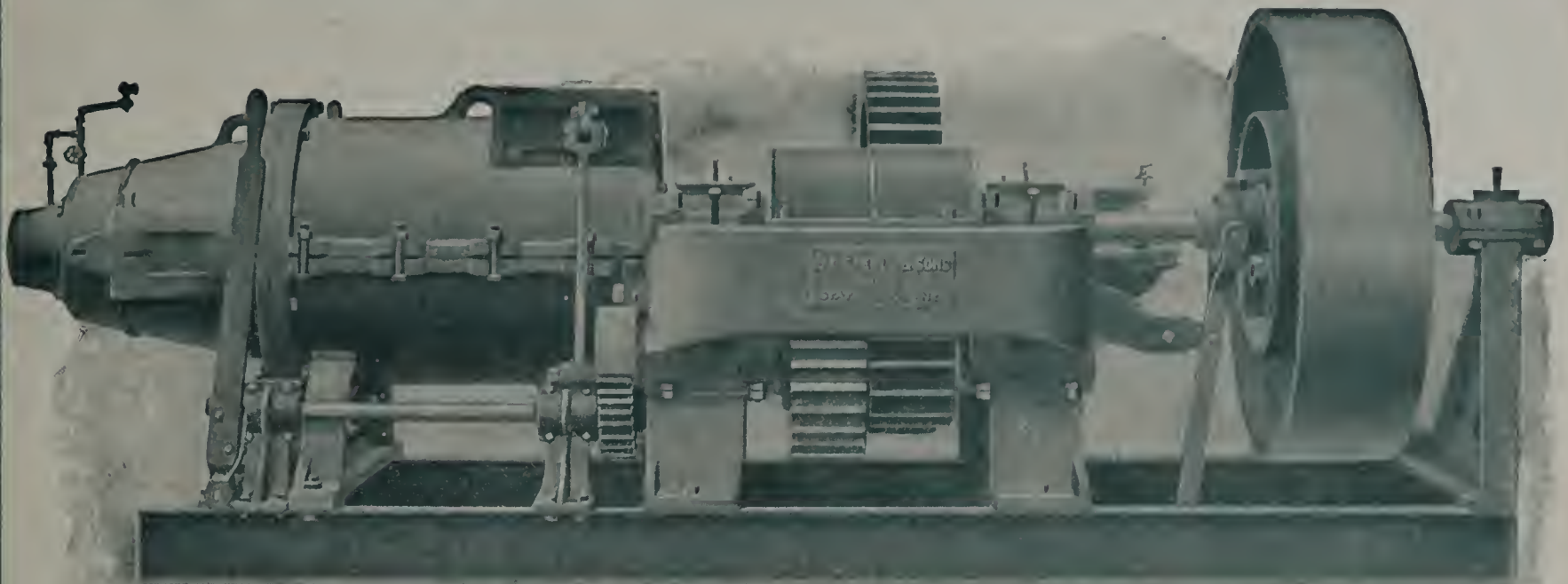
American Blower Company

Detroit, Mich.

141 Broadway
 New York

Empire Bldg.
 Atlanta

Marquette Bldg.
 Chicago



**No. 5. CAPACITY 50,000 to 100,000
PER DAY.**

**Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.**

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen :—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

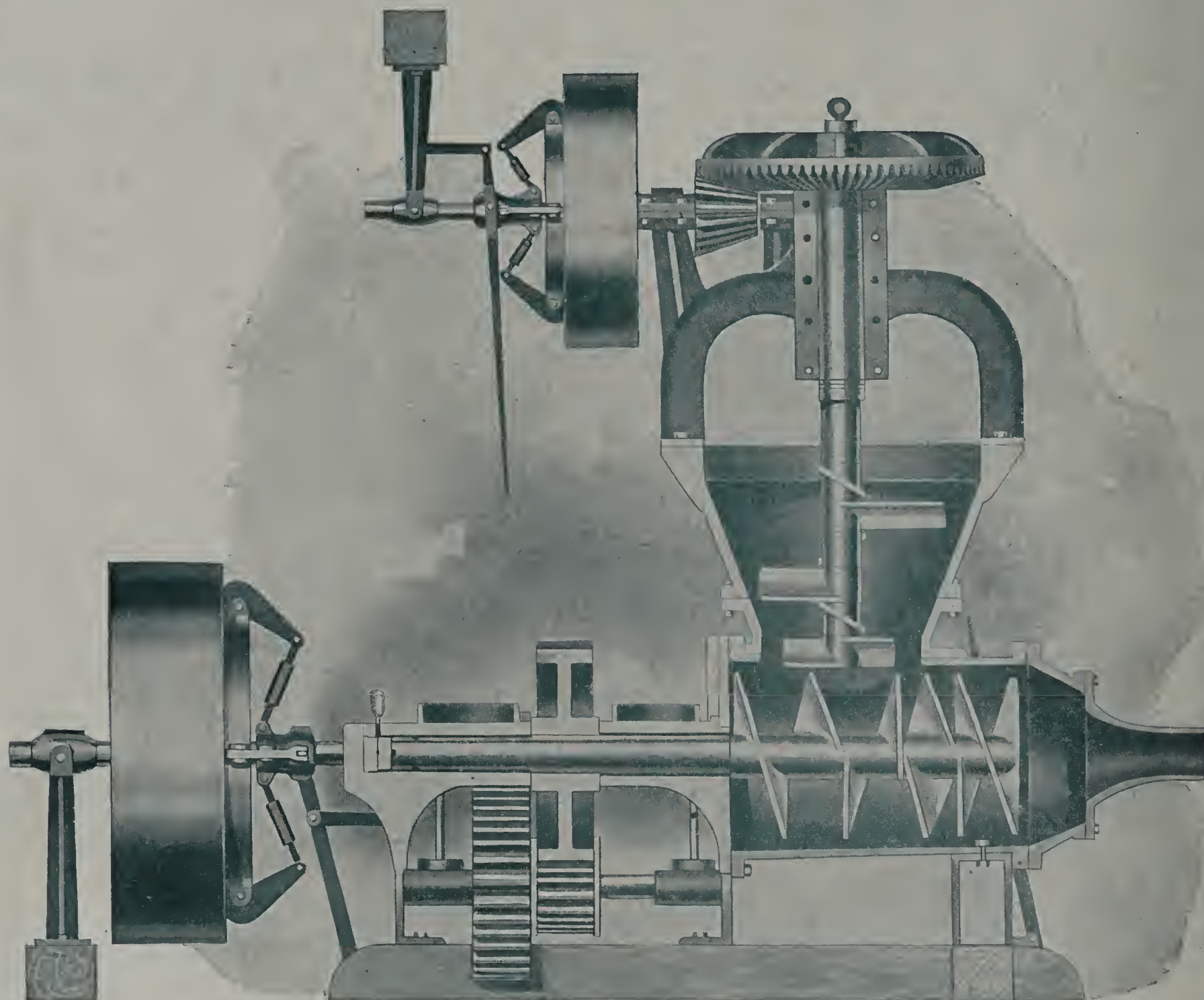
Success Brick Machinery Co., Memphis, Tenn., Western Agents.

OUR SPECIAL "ELI" BRICK MACHINE

LATEST IMPROVED.

Large Capacity. Runs Easy.

"Has all the merits of any machine and then some."

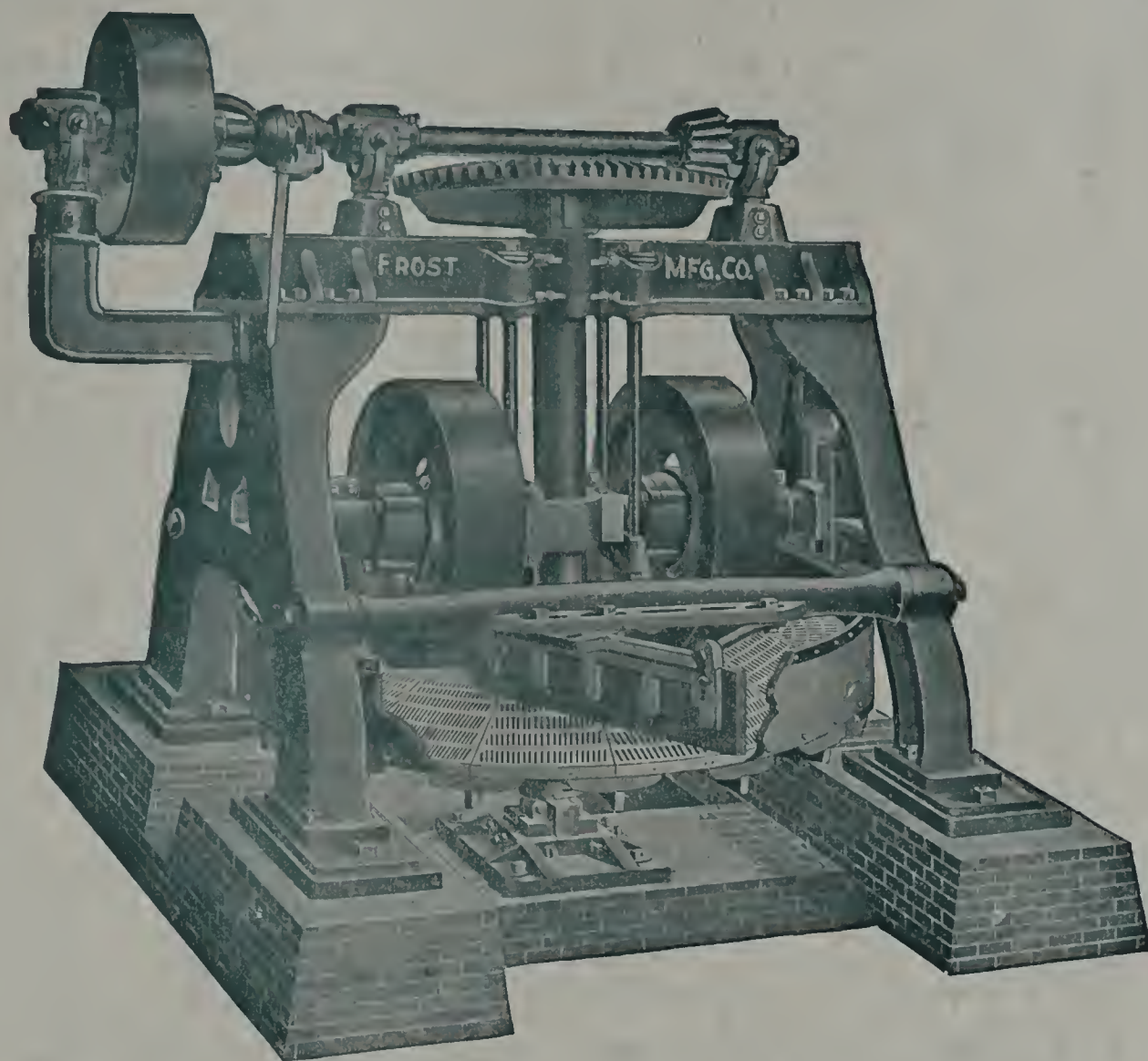


SPECIAL "ELI" BRICK MACHINE

Write for Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,
MORENCI, MICH., U. S. A.

FROST DRY PAN



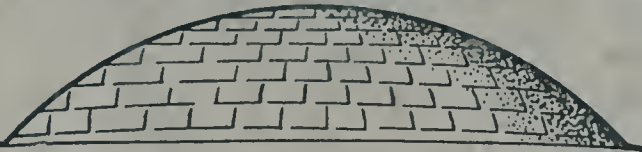
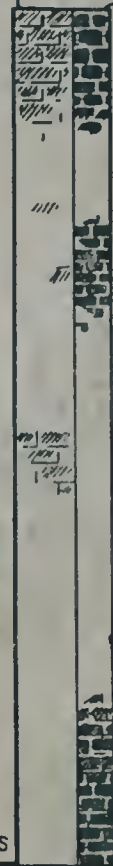
When you buy a Pan buy a **FROST** Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.
SALES DEPARTMENT:
135 Adams St., CHICAGO, ILL.
Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN



Utilized in an "A B C" Dryer

insures ideal results.

Note the experience of the Blue Ridge Enameled Brick Co., Newark, N. J.: "We are very much pleased with the drying apparatus furnished us; it is doing all that could be expected or wished for by us, and in consequence do not hesitate to recommend it for one wanting a good dryer."

Catalogue No. 159-C tells about Dryers of this type.

American Blower Co.
Detroit Mich.

The Perfect Clay Screen in a New Dress.



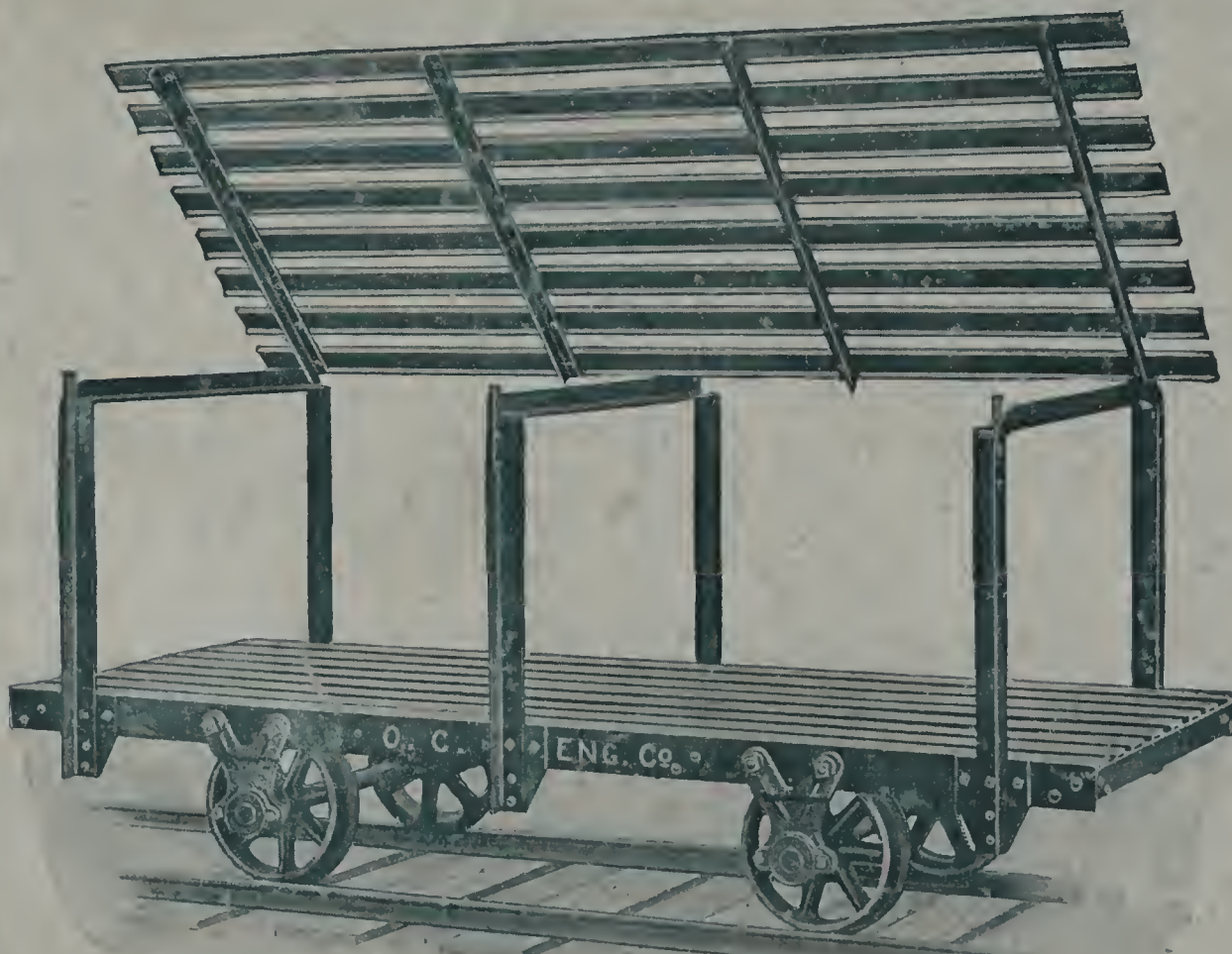
A piano wire plate that fits just the same as our perforated metal plates.

By using every third plate, you get more screening surface than is had with any other screen of this kind.

SPECIAL FEATURES. Short wires do not require high tension and are less liable to break. If a wire does break, take out the plate, put another one in its place. This can be done in an instant. If you want a piano wire screen without the frame and mechanical parts, four of our plates more than equal the area of any screen of this kind now offered. But with the mechanical features THE PERFECT CLAY SCREEN fills all requirements.

DUNLAP MFG. CO.,
Bloomington, Ill.

The Ohio Ceramic Engineering Co. CLEVELAND.



Our Improved No. 167
Double Deck Dryer Car
for Brick, Tile, etc.

Uprights outside of side rails.

Decks free from obstruction.

Easiest loaded car on market.

Top deck slats placed across if desired.

Length over all, 6 ft. 11 in.

Width over all, 35½ in.

Track gauge, 24 to 28 in.

Weight, 550 lbs.

Cap, 500 to 600 brick.

**TURNTABLES, TRACK
CARS, ETC.**

THE CLAYWORKER

PUBLISHED MONTHLY BY
T A RANDALL & CO
INDIANAPOLIS.



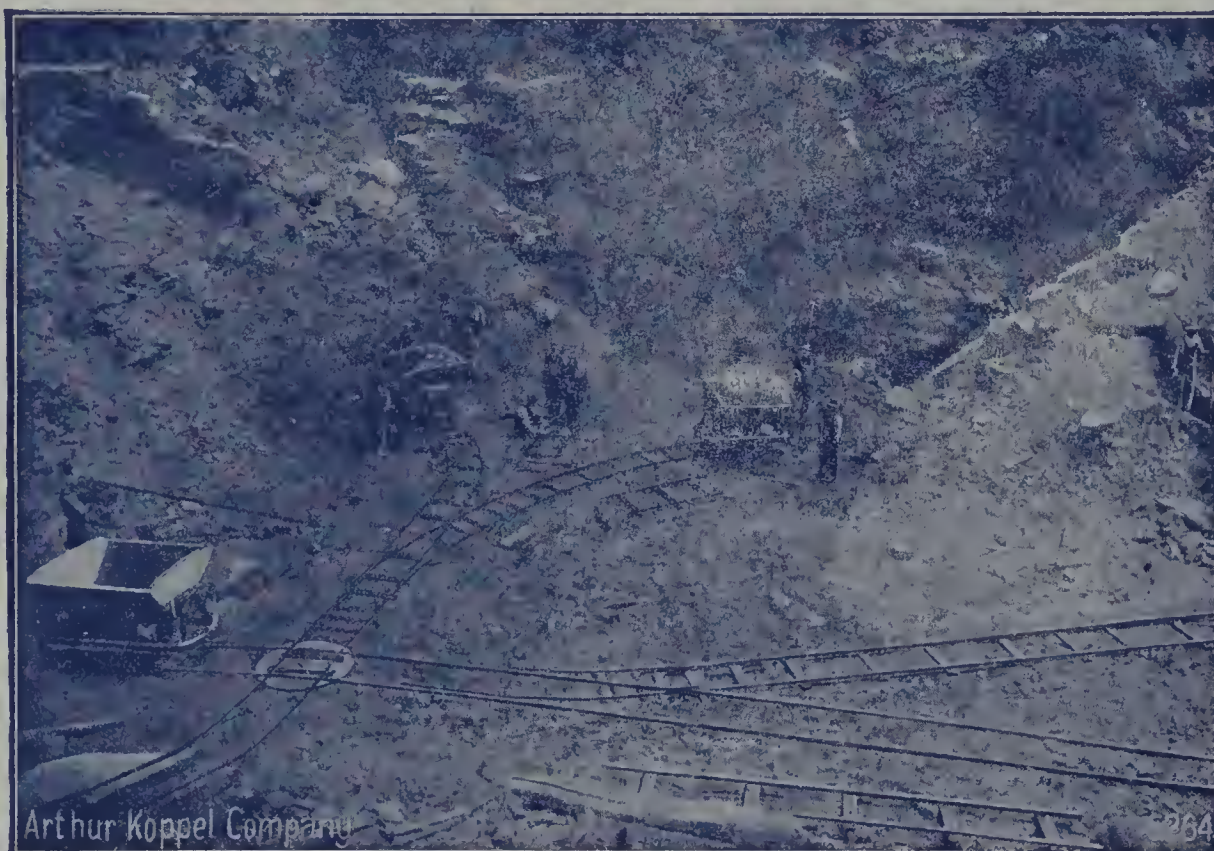
Table Contents, Page 292.

SEPTEMBER, 1907.

Index to Ads, Page 300.



We Are Manufacturers and Consulting Engineers of
INDUSTRIAL and PORTABLE
— RAILWAYS —



This illustration shows the **CLAY MINES** of the National Fireproofing Co., Pittsburgh, Pa., with **KOPPEL'S COMPLETE INSTALLATION OF INDUSTRIAL AND PORTABLE RAILWAYS**, Portable Track and Switches, Turntables and Steel Dump Cars.

WRITE FOR CATALOG NO. 41

ARTHUR KOPPEL COMPANY

PITTSBURG
1607 Machesney Bldg.

NEW YORK
136 Morris Bldg.

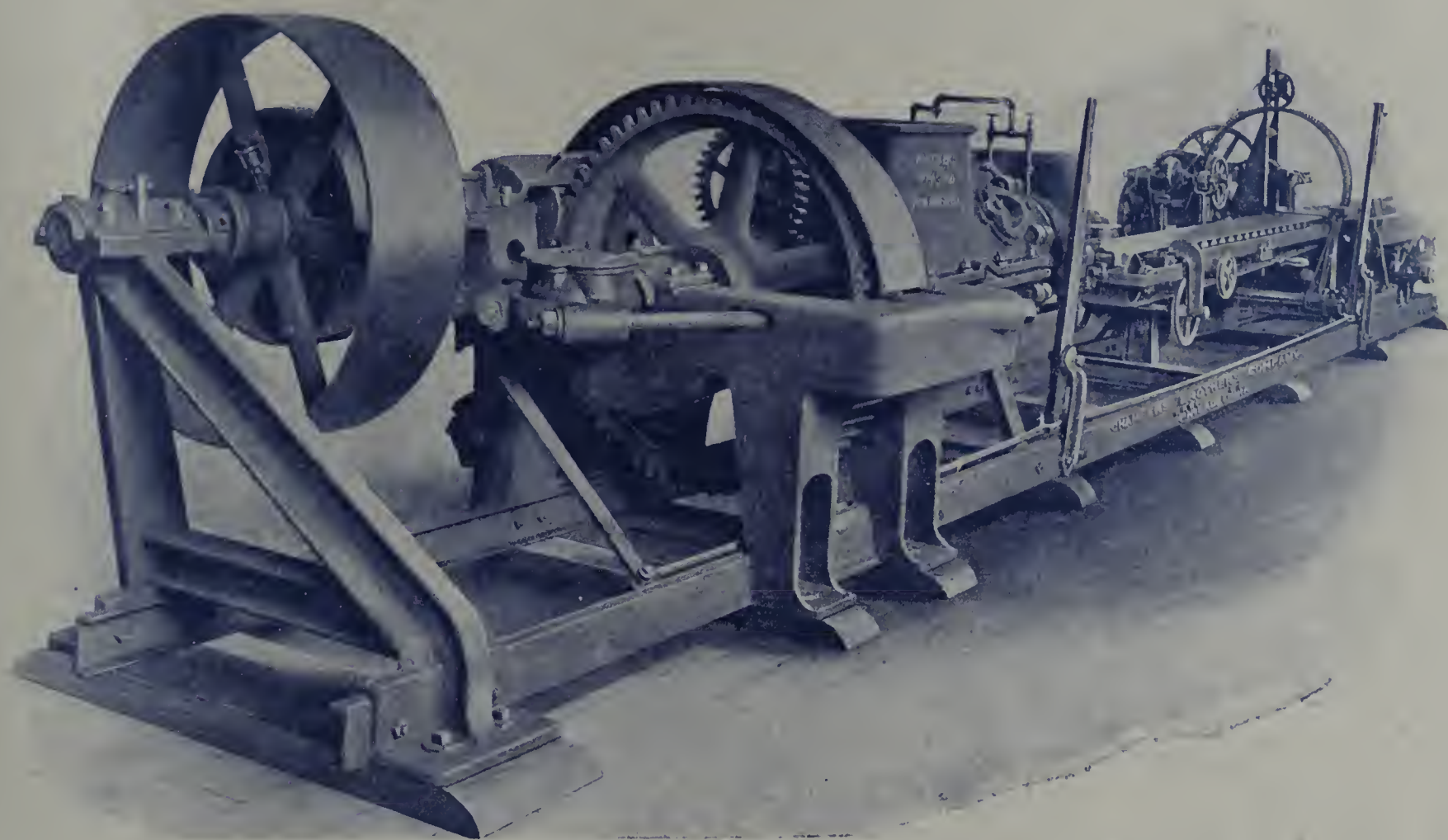
CHICAGO
1639c Monadnock Bldg.

BOSTON
53 Oliver St.

SAN FRANCISCO
1515 Chronicle Bldg.

THE NO. 10 CHAMBERS BRICK MACHINE

With No. 6 Automatic Side Cutter.



This is a new machine and embodies a number of novel and interesting features. The No. 6 Side Cutter has been tested to as many as 110 brick per minute, and is confidently guaranteed for a capacity of 40,000 bricks daily. It is a single wire rotary cutter with a down shear cut, cutting but one brick at a time and cutting them absolutely square and smooth. Provision is made for the escape of stones, should they come in the path of the cutting wire, and the flexibility of the wire does not affect the squareness of the cut.

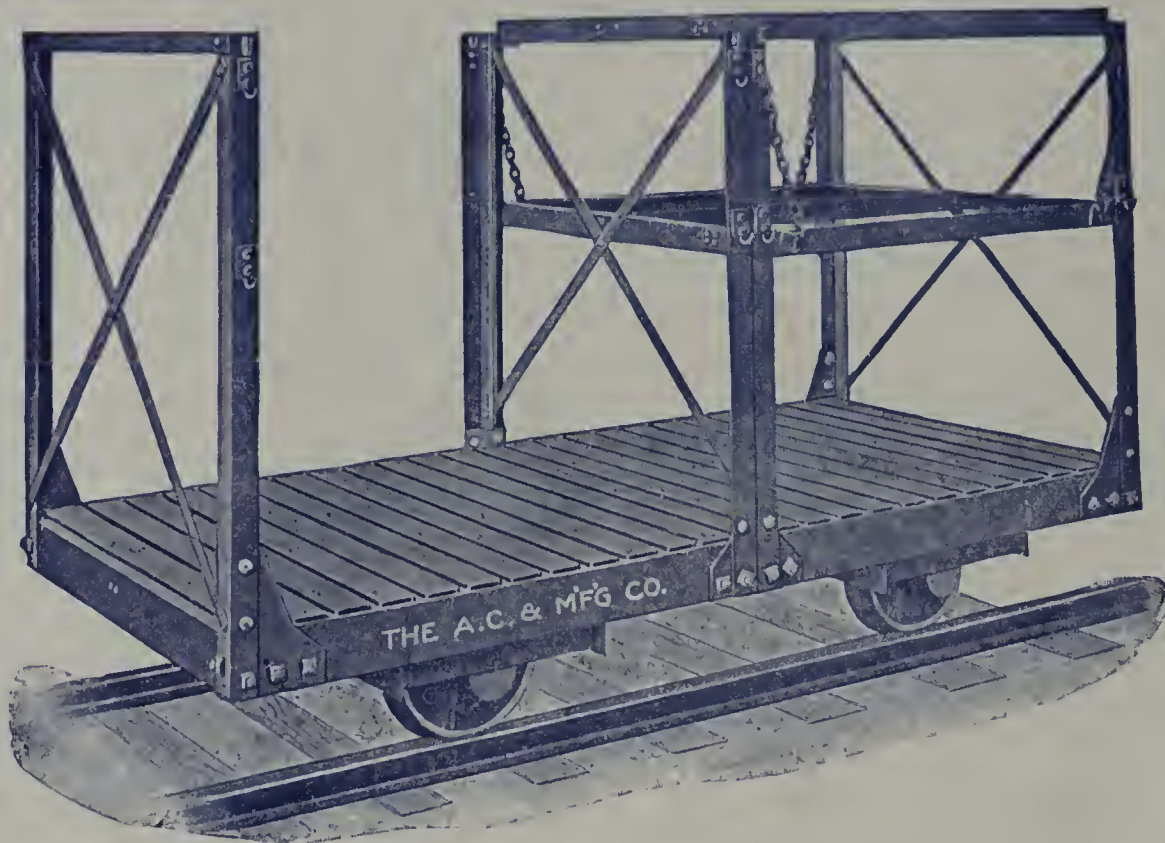
Note the new gear frame and large diameter heavy gear of broad face. Observe how the end thrust is provided for, as well as the position of driving shaft and clutch pulley. No trouble to get at the journal bearings when necessary to rebabbit. Clutch pulley 44 inches diameter by 12 inches face. Driving Shaft $3\frac{7}{8}$ inches diameter. For hard work and a daily capacity of 20,000 to 40,000 bricks this machine is in a class of its own.

CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets, PHILADELPHIA, PA., U. S. A.

59 West Jackson Boulevard, CHICAGO.

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 297.)

G. E. LUCE ENGINEERING CO.,

601 Plymouth Building,
CHICAGO, ILL.

Practical Design and Supervision of Brick Plant Construction.

From our long experience in various clayworking fields we are able to offer suggestions which will bring your old plant to its highest efficiency or start your new one a little better than the best.

A careful study of the drawings we exhibited at the St. Louis Convention would convince you OUR PLANTS MAKE BRICK. If you were not there send for copy of one of the most complete Brick Plant drawings ever exhibited.

THE HARRINGTON AND KING PERFORATING CO



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.
For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.
For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,
CHICAGO, ILL., U. S. A.



A DIFFERENT PROPOSITION.

The drying of brick today is a different proposition from that of even a few years ago.

The brickmaker of today is forced to dry his product rapidly, but yet economically, in order to meet business competition.

If you only realized what TIME and MONEY-SAVERS, as well as MONEY-MAKERS,

RODGERS WASTE HEAT DRYERS

are, it would require no talking on our part to convince you that the best brick drying proposition on the market today is the Rodgers.

L. E. RODGERS ENGINEERING CO.,

Waste Heat Dryer Specialists,
Brick Works Engineers.

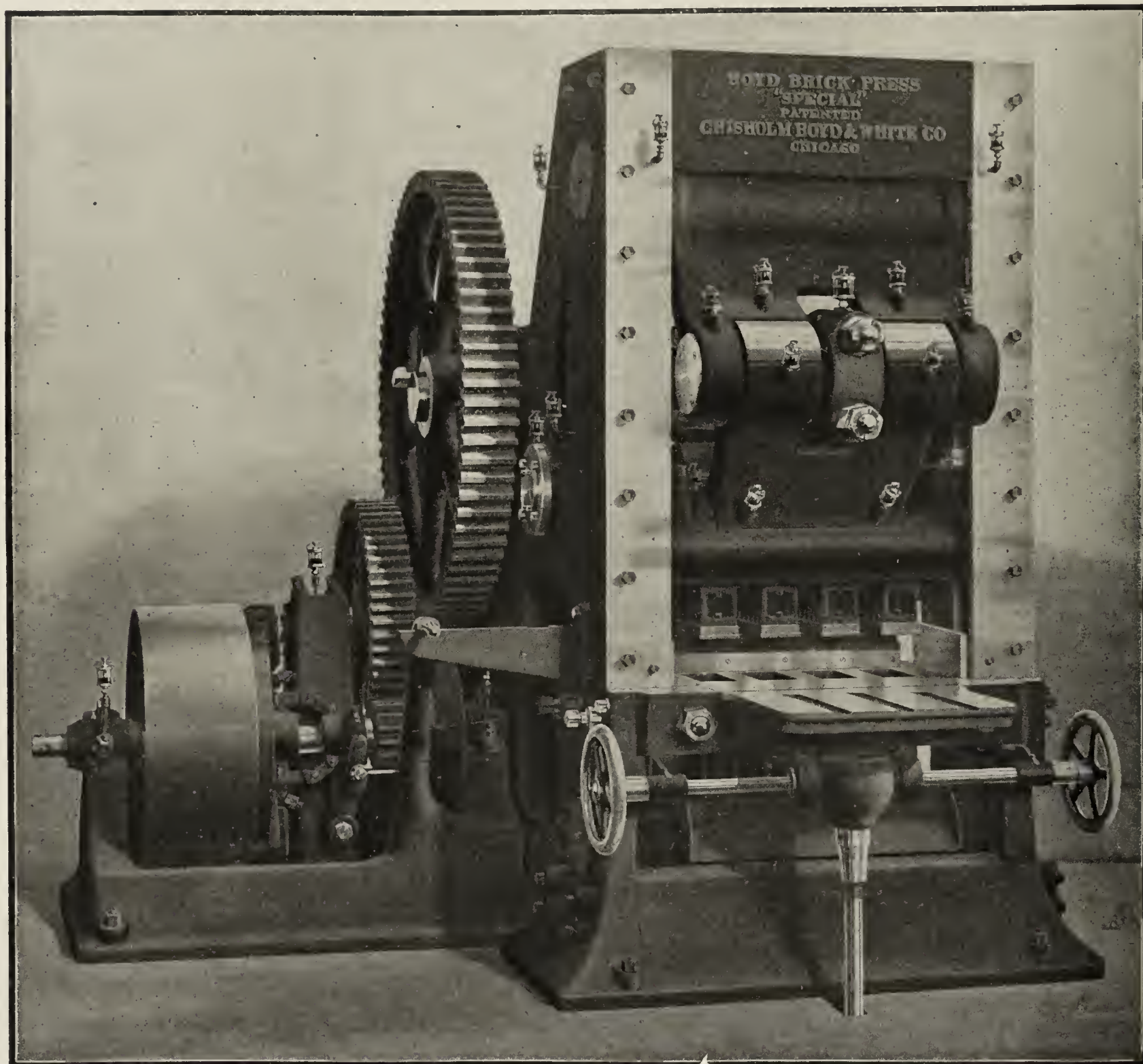
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Built in Two, Four and Six-Mold Sizes.



FOUR-MOLD SPECIAL.

BRICK PLANTS designed and complete machinery equipment furnished. Machinery and product guaranteed.

More Boyd Presses in use than all other Press Brick Machines combined.

The Boyd Press has great strength and endurance, great pressure and long dwell. Boyd Presses built 18 years ago are still in use and doing good work. Brick presses that last are the cheapest in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

Daily Capacity,
75,000.

WORKS:
Powell's Station, Tenn.
Phone 1675, New.

KNOXVILLE BRICK COMPANY

DRY-PRESSED SQUARE AND SHAPES
AND COMMON BUILDING BRICK.

D. A. CARPENTER
PRESIDENT.

A. F. SANFORD
VICE-PRES.

E. L. WILLIAMS
SEC.-TREAS. & MGR.

J. W. REAGAN
SUPT.

OFFICE:
Rooms 107 and 109, Empire Bldg.

TELEPHONES:
367 People's; 925 Cumberland.

Knoxville, Tenn., July 9, 1907.

Messrs. Chisholm, Boyd & White Co.,
Cor. Fifty-seventh & Wallace Sts.,
Chicago, Ill.

Gentlemen:

The Four Mold Boyd "Special" bought of you in December, 1906, has been in operation about five months and is giving entire satisfaction. It is set up by the side of the old press, bought of you seventeen years ago, and at a glance the improvement is apparent in the stronger, heavier construction, to say nothing of the improved mechanical features.

The "Special" presses about a half-pound more clay than the old press into the same size brick, thus resulting in a much harder brick.

We wish to say that the seventeen-year-old Boyd Press is still doing excellent work and we are highly pleased with our experience with the Boyd Presses.

Yours truly,

Knoxville Brick Company

Greene
Mgr.

The Boyd Brick Press as built today is stronger, more durable, will last longer and make better brick than those built seventeen years ago. It was then the standard by which other presses were judged and is the standard now. Steady progress, merit and improvements have kept it at the front.

Leave cheap imitations and experimental machines alone and adopt the press with experience back of it. Brick Presses are not perfected in a day.

The Boyd Press is built in our own shops under our personal supervision and we are responsible for the quality of workmanship and material.

Avoid machinery built in jobbing shops by contract, which is generally let to lowest bidder, for such machinery will prove costly in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

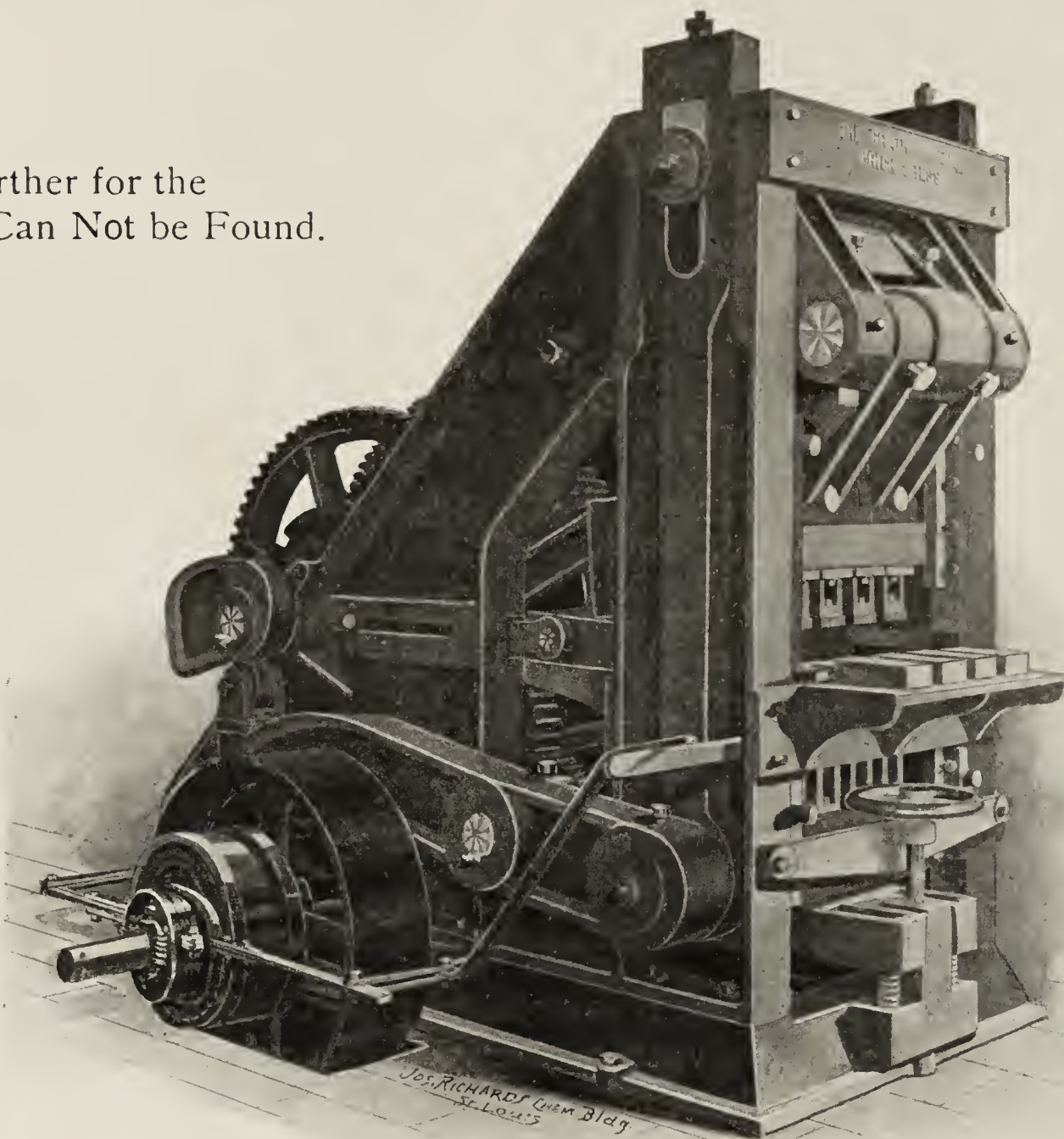
THE ONLY PERFECT BRICK PRESS

For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

FOUR MOULD MODEL.

Seek No Further for the
Equal Can Not be Found.

The Best
is the
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Manufac-
turer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
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And
Keep up
With
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LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

The Press of TODAY.

SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not top heavy. No gears on outside of frame. ONLY PRESS having these features.

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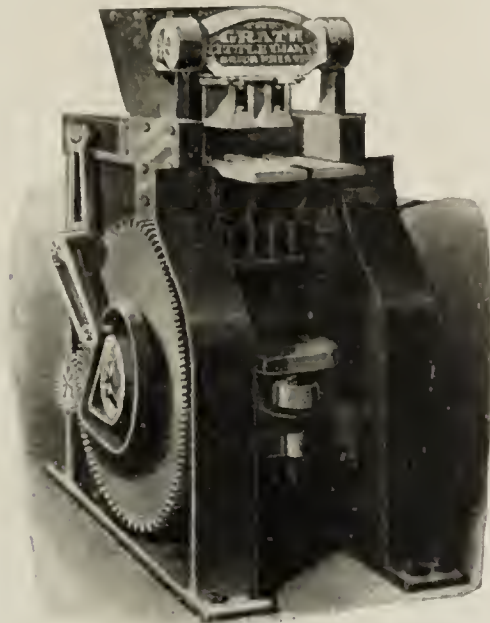
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

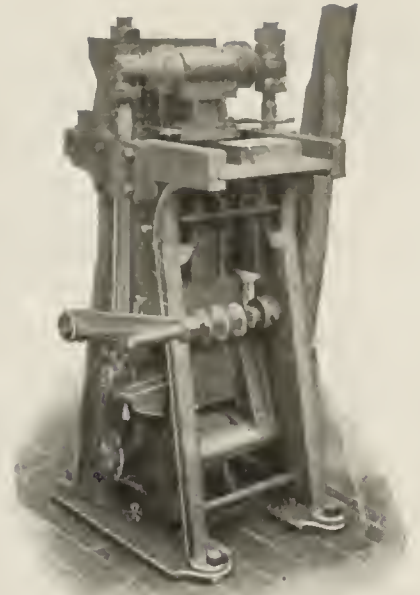
St. Louis, Mo., U. S. A.



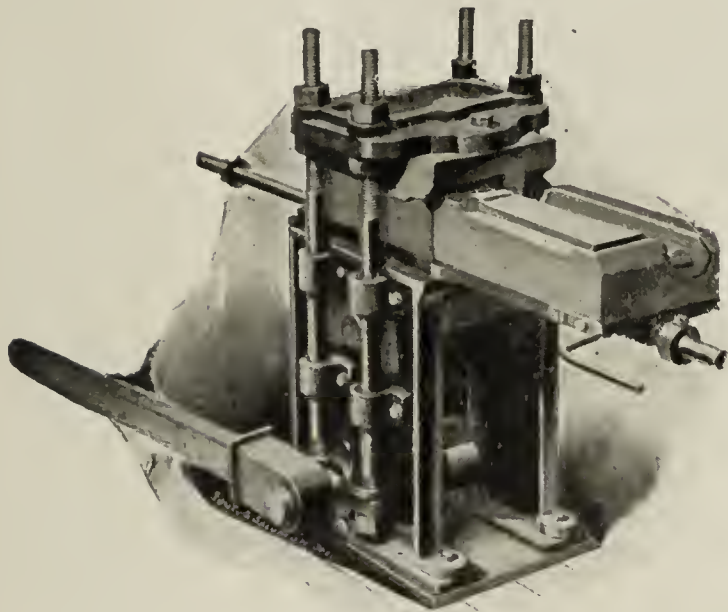
The Grath Little Giant
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Capacity-5000 per day



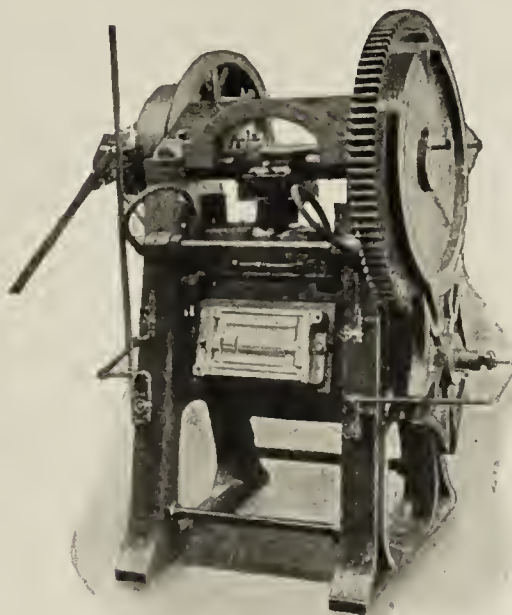
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
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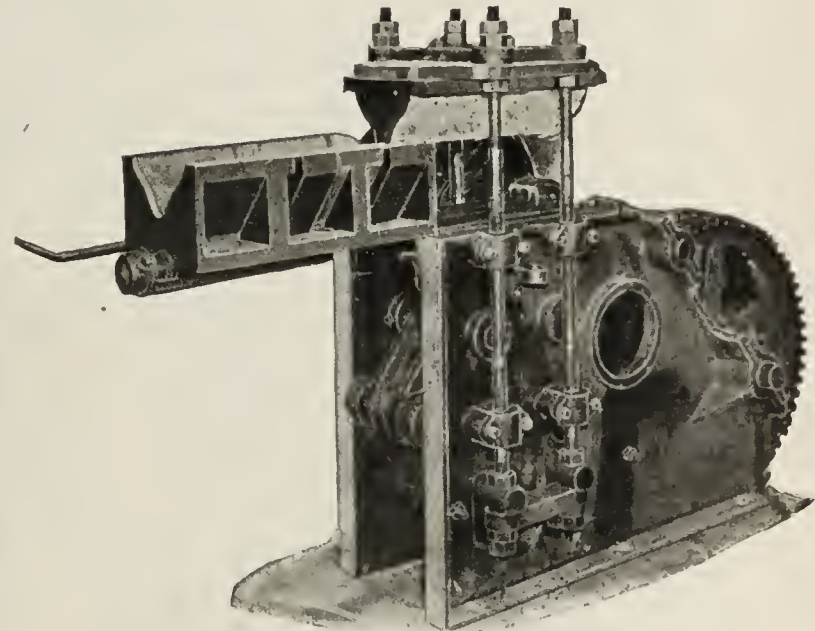
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
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From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



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Hand-Power Roofing Tile and
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For Plaster or Metal Dies.
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Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

The New Grath Down-Draft Continuous Kiln.

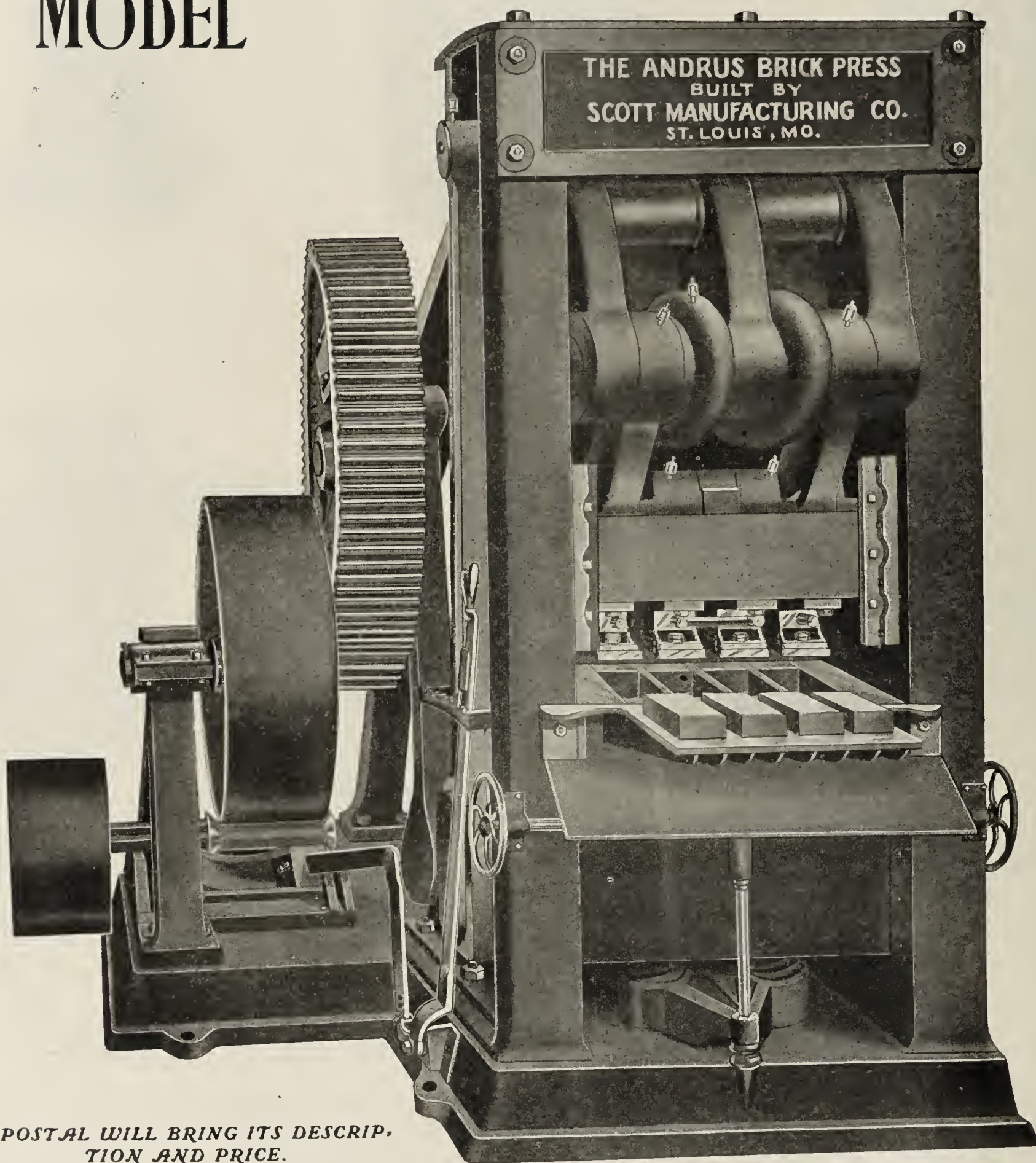
Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the **ordinary single** down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get **advantage** of all **waste** heat from your burning chamber, which you **lose** and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in **same** manner as the direct, through the furnaces up the bag and down through the ware. **Simple** and **sure** in operation. (GUARANTEED.)

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OUR LATEST MODEL



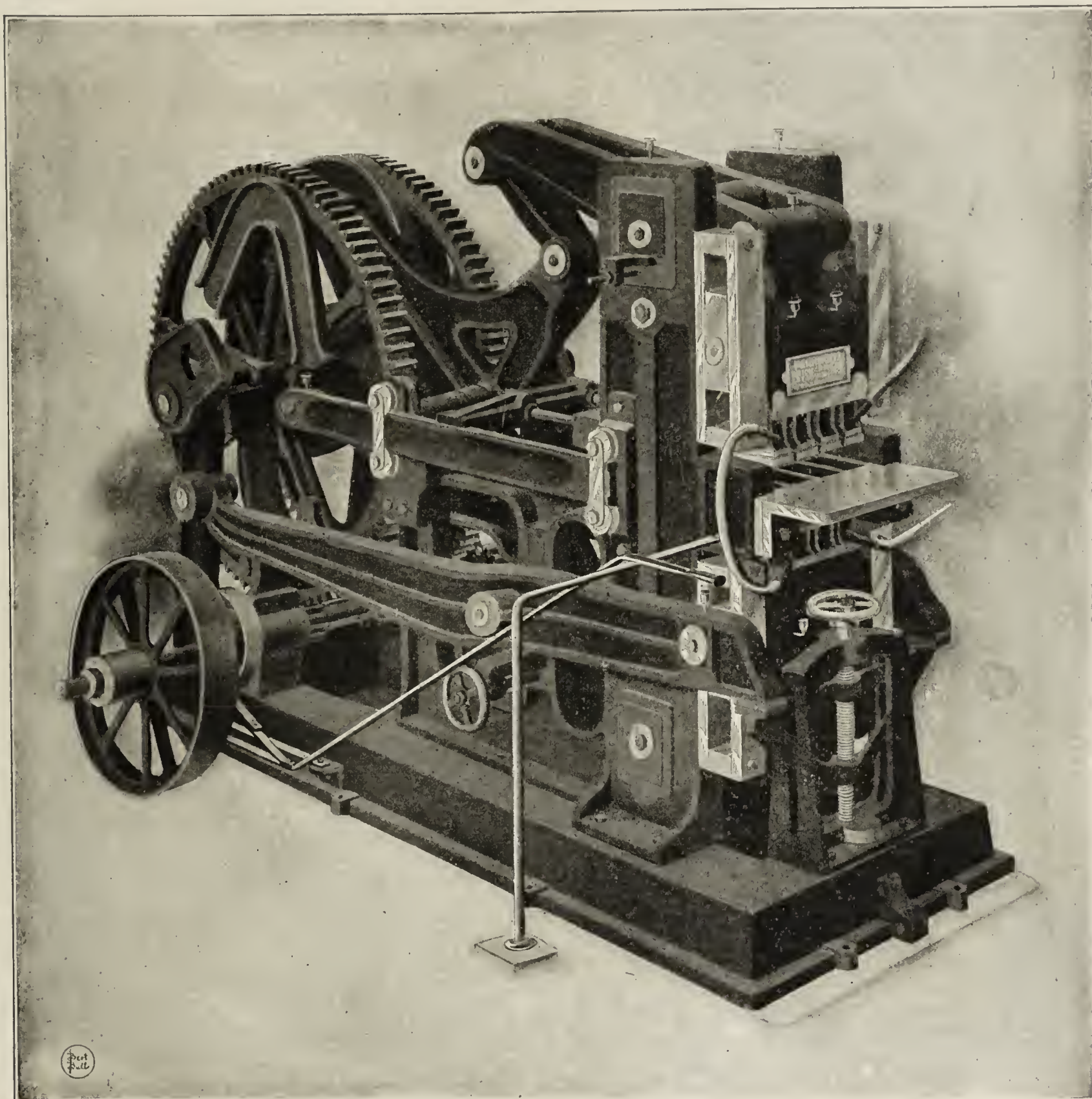
A POSTAL WILL BRING ITS DESCRIPTION AND PRICE.

THIS IS THE PRESS THAT SCOTT BUILDS.

Scott Manufacturing Company,
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The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.



If you want an up-to-date Dry Press, one that will give you
RESULTS—See this machine in action.

The Fernholtz Brick Machinery Co.,

Boyle Avenue and Old Manchester Road, St. Louis, Mo.

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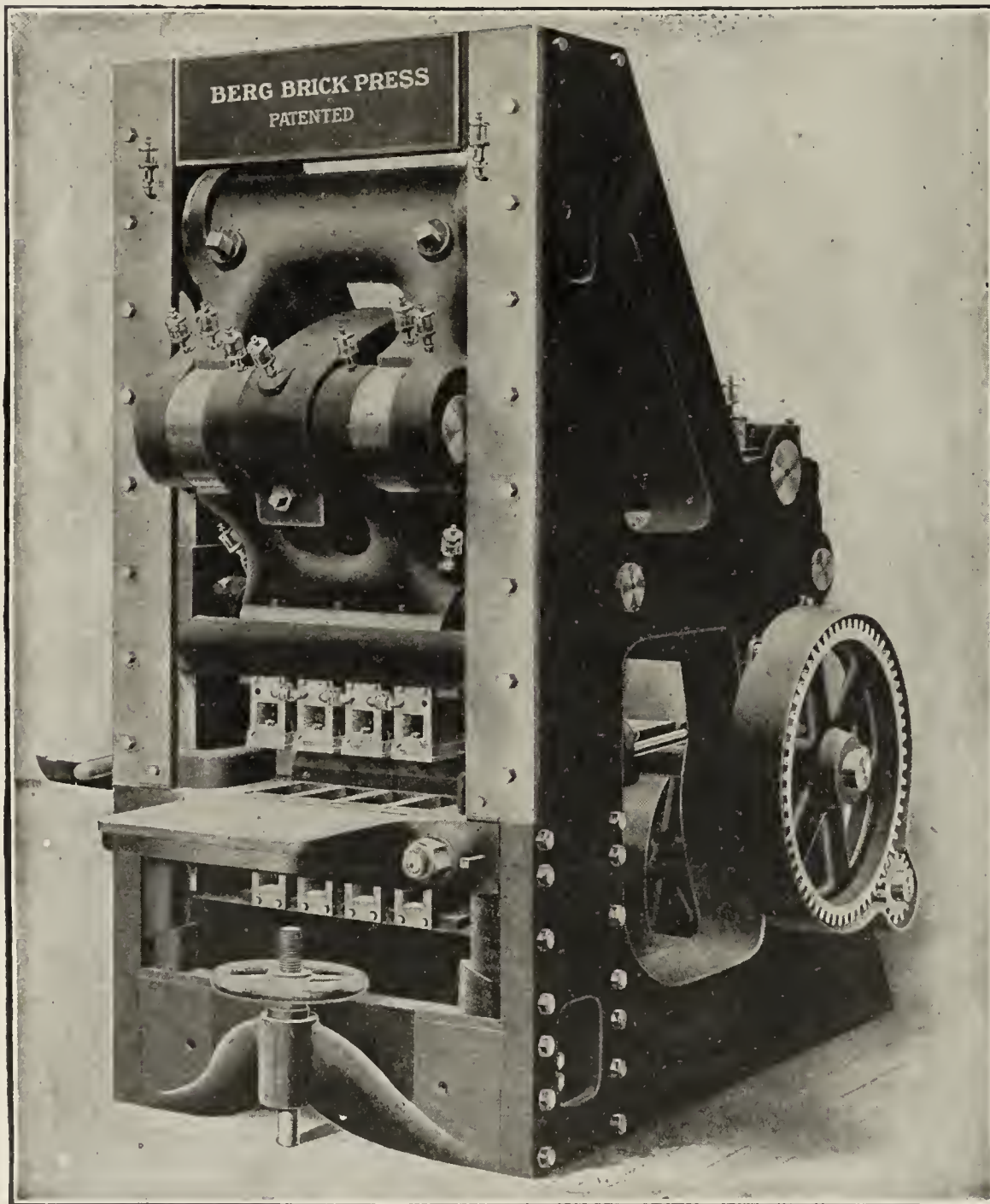
SIMPLICITY
STRENGTH
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ACCESS
TO ALL
PARTS

GREATEST
PRESSURE

BEST
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The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick-
makers, and which many OTHERS
have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship. Fully Guaranteed* as to its *Success*.

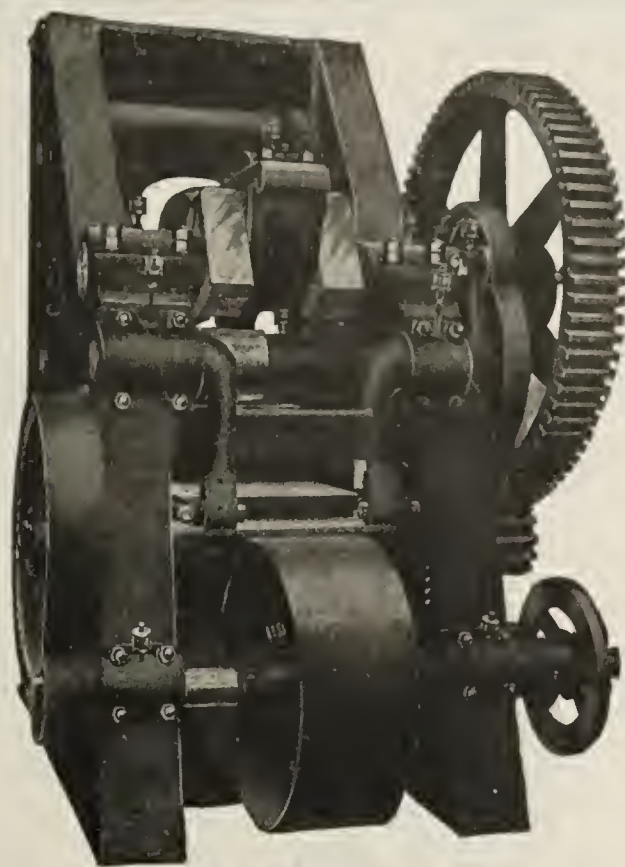
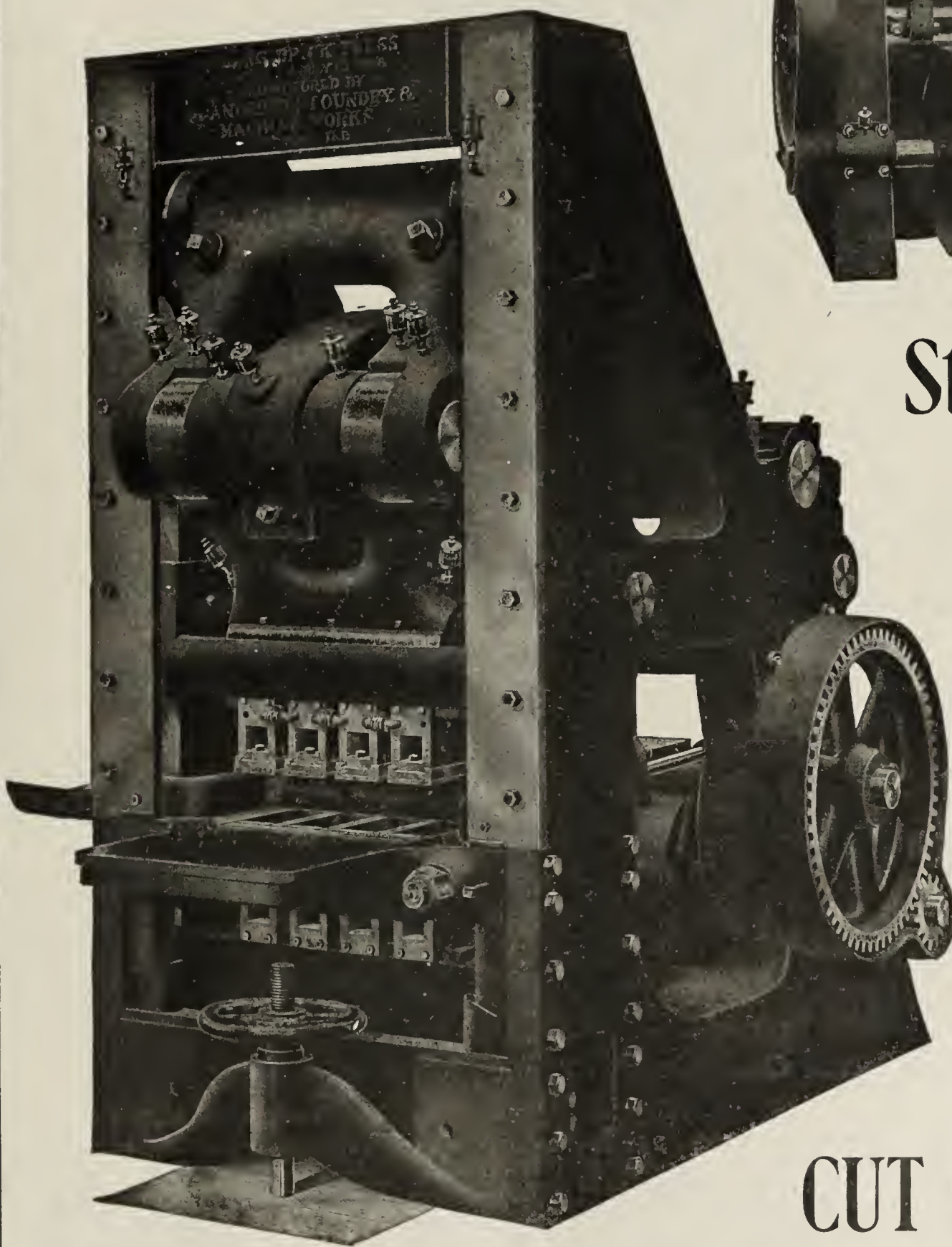
Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make *Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick* and *Fire Brick*. Correspondence solicited.

A. BERG & SONS,

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Manning Chambers, TORONTO, ONT., CAN.

New Model Berg Brick Press



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Still in the
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One Step
Further
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Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

CUT GEARING

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CHICAGO BRICK MACHINERY CO.,
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Manufactured and Sold by

Anderson Foundry & Machine Works,

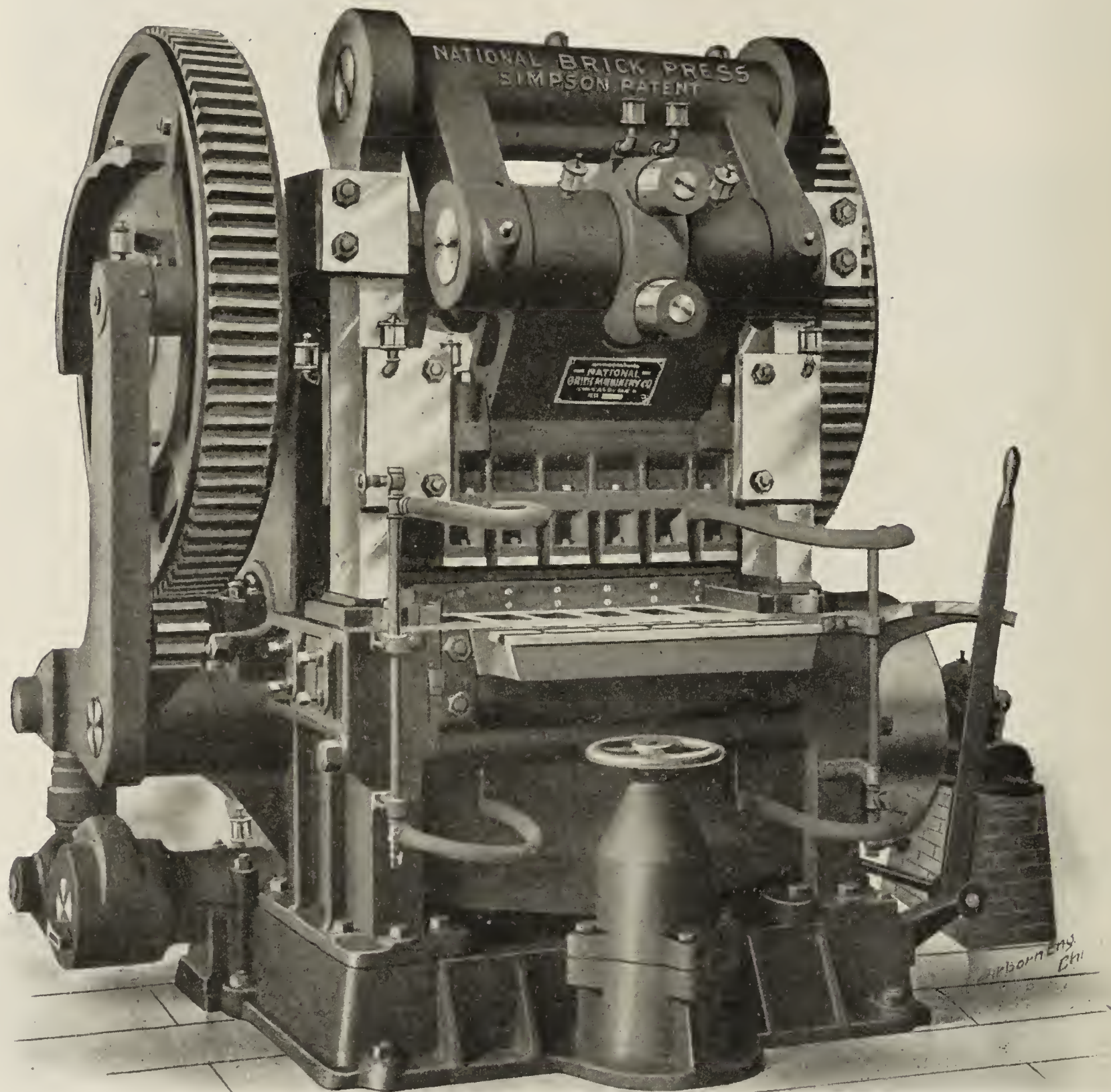
New York Office, No. 39 Cortlandt St.

ANDERSON, IND.

The National Brick Press

Simpson Patent

SIX MOLD.



Read What Our Customers Think of It.

National Brick Machinery Company, Chicago, Ill.:

Rochester, N. Y., July 6, 1907.

Gentlemen—We beg to inform you that the new Six Mold Brick Press, Simpson Patent, which we recently purchased from your company, is turning out a very high grade of brick at the rate of 27,000 per ten hours. We find the press to be smooth running, strong and compact with its parts easily accessible, and in every way it is equal to all of our expectations. It has been installed beside our four Mold Model C Press which we understand was designed by the same inventor and which has been doing very satisfactory work for the past two years. It gives us pleasure to state that we are glad that we decided on a Simpson Press for the increased equipment of our factory.

Very truly yours,
 ROCHESTER COMPOSITE BRICK COMPANY.
 R. W. Holden, Treasurer.

Built in Four, Five and Six Mold Sizes.

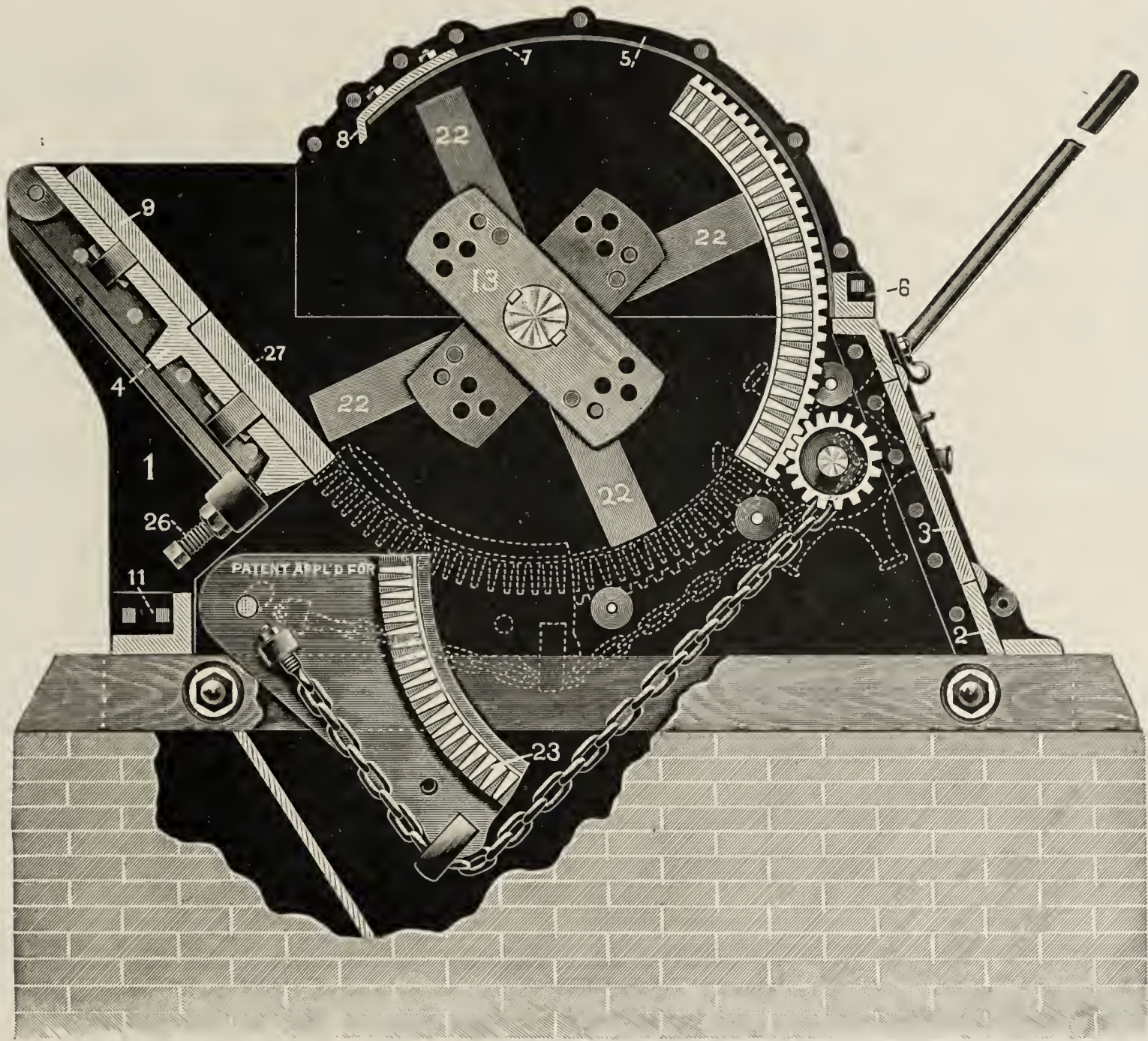
National Brick Machinery Co.,

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The Williams Up to Date Shale Crusher

WITH DROP BOTTOM CAGE.



Williams Patent Crusher and Pulverizer Co.
St. Louis, Mo., U. S. A.

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Vitrified Shale and Fire Clay Paving Bricks and Blocks.

Burned in Yates' Patent Kiln.

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VITRIFIED PAVING BLOCKS, CHOCOLATE-RED
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KUSHEQUA BRICK CO., Kushequa, Pa.

PAVING BUILDING • BRICK AND BLOCK • SIDEWALK FOUNDATION

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**Thurber Vitrified Paving Brick
and Pressed Building Brick of Superior Quality.**

Made of the finest shale, absolutely free from lime.

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T. B. McAvoy, Pres. and Treas. John C. McAvoy, Sec. & Gen. Man.

McAVOY VITRIFIED BRICK CO., Philadelphia, Pa.

Is the largest and best equipped plant in the East for the manufacture of Paving Brick. All brick sold under a guarantee. Correspondence solicited.

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The Danville Brick Company,

Manufacturers of the Unsurpassed

Danville Paving Block.

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LET US QUOTE YOU PRICES.



**The Best
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**SIX FACTORIES
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How to Properly Construct Brick Streets.

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Successors to
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New York Brick & Paving Co.,

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MANUFACTURERS OF ALL SHALE

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Our leading brands are CULVER BLOCKS, WABASH STANDARDS, "SPECIALS," for crossings on macadam streets, GUTTER BLOCKS, COLUMBIAN SIDEWALK BRICK and PIONEER BUILDING BRICK.

Our material has for nearly fifteen years successfully stood the heaviest traffic of Indianapolis, Terre Haute, East St. Louis and dozens of other large cities of Indiana and Illinois. We ask investigation and comparison by those seeking the best paving material. Samples furnished on application.

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Clinton Paving Brick Company,

Manufacturers of the Highest Quality of

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Which are offered to the municipalities of the Central States under positive guarantee as to wearing quality. None better.

Prices and samples sent on application.
Correspondence solicited.

Office and Works: Clinton, Ind.

Do You Want Clay?

WE OWN AND OPERATE EXTENSIVE DE-
POSITS OF THE VERY BEST GRADES.

Fire Clays, Terra Cotta Clays, Kao-
lin, and Fire and Moulding Sands.

Have been in the business for TWENTY-FOUR
years, and are prepared to meet every reasonable demand.
Unsurpassed shipping facilities. Prices and samples free.

The BLOOMFIELD CLAY CO.,

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MANUFACTURERS OF

BESSEMER BLOCK,

An unexcelled repressed shale paver.

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The Purington Paving Brick Co.,

of GALESBURG, ILLINOIS,

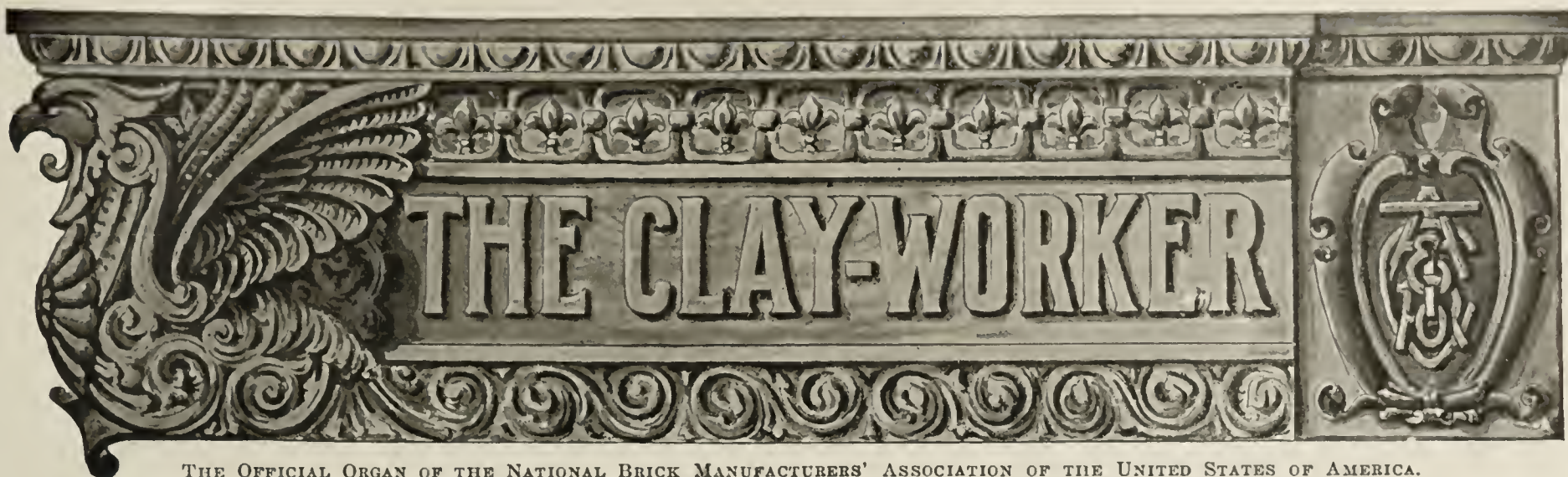
HAS the largest and best equipped plant in the United States for the manufacture of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation second to none, and this Company points with pride to its record for quality of material and its methods of conducting its business.

Correspondence respectfully solicited.



This is the Drier with the new Heating System that is more effective in the utilization of exhaust steam than any other on the market. The Standard Drier is in use throughout the brickmaking world. It has been proven successful in drying all varieties of clays, and is remarkable for simplicity of construction and ease of operation. If you intend to install a new drying equipment, write for the catalogue and list of Standard Drier users.

The Standard Dry Kiln Co., 647 S. Penn. St., Indianapolis, Ind.



THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVIII.

INDIANAPOLIS, IND., SEPTEMBER, 1907.

No. 3.

Written for THE CLAY-WORKER.

THE EVOLUTION OF STREET PAVEMENTS IN KENTUCKY'S METROPOLIS.

Paving Brick Superseding all Other Paving Materials in Louisville.

THERE HAS BEEN an awakening in the South during the past few years with regard to the many advantages of having good and clean streets. From time immemorial the macadam street was the popular and generally accepted form of street construction throughout the southern states, and as a consequence we who lived in this part of the

officials and taxpayers alike, and we were compelled to await the coming of a material that would be both durable and inexpensive, before we could hope for a reform in respect to our streets.

Then came the brick street, a happy medium between the miserable macadam and the more expensive asphalt. It is true that many bricks made in the early days of the change were inferior; rather of the experimental kind, and served to show the defects that had to be overcome before they could reach a practical stage such as would permit them to become generally useful as a street paving material. There were many failures, and Louisville had some experiments and experiences that were of real benefit to her in many ways. And



Market Street, East of Floyd, Louisville, Ky. A Fine Brick Paved Street Subject to Heavy Traffic.

country were treated to more than our share of mud in wet weather, and a like abundance of dust in dry weather; so that life was at times anything but an agreeable existence. It seemed for many years that this would be the only kind of street that would be laid, and the outlook was anything but a fascinating one to consider. The high cost of constructing and keeping in repair the popular kinds of streets then in vogue made it a subject that was met with disfavor by the

still these tests were essential, and proved to many that the brick street would eventually come to be a big factor in street construction.

It was about seventeen years ago that the first brick street was laid in this city; then as an experiment, in order that a number of manufacturers could give a practical demonstration of their commodity. Their bricks were laid on Fifth street from Walnut to Chestnut streets, and at that time

caused no end of comment and attracted the attention of every one interested in the improvement of the streets. At least four kinds of bricks were laid on this square, and it is needless to say that they made a very unique display of the brick-makers art. Some of them proved to be fairly satisfactory, while others did not stand a very severe test, and soon had to be replaced with others of a more substantial make. But these were in the early days of the brick street, and therefore, it is not surprising to find them failing to come up to the expectations of the public or even the manufacturers themselves.

In those days there was little attempt to manufacture vitrified brick, particularly as we know them to-day, and the brick then manufactured could not withstand the heavy traffic that was bound to use such thoroughfares as often had brick streets. In order to give the bricks the most severe test, some streets were selected which were used almost exclusively by the heavy teams, and in many instances the bricks were unable to prove satisfactory. This was necessary, however, and any manufacturer who was unwilling to

the best results. The materials vary with the different manufacturers, some using fire clay alone, others a mixture of fire clay and shale, and still others using shale alone. Much depends upon the burning, and this cannot have too much care. In order to make the vitrified brick a success, it requires the greatest attention, and if it does not prove as satisfactory as it should it is the fault of the manufacturer.

But that is for him to find out; and now to return to the subject of the brick streets in our city. There is not a city anywhere in the country where the vitrified brick street is more popular than Louisville, and the number of streets paved with bricks is increasing each year, in a manner that is satisfactory to everyone. This is not only true of new streets being made, but also includes many of our ancient macadam streets, that have been so famous in the past for mud and dust. We have some brick streets right in the heart of the city, and these have been subjected to the most severe tests, and have proven satisfactory.

Take any of our streets paved with brick within the past ten years, and they compare favorably with our best asphalt



Second Street, North of Brandies. Laid in 1899 and in Excellent Condition Today.

have such a test made had very little faith in his own bricks. The experiments in those days had the desired effect, and the manufacturer who had the grit to go through the ordeal, such as any new commodity is bound to pass before it reaches a successful stage, was well repaid for his time, money and patience. Today the popularity of the brick street in the south is almost phenomenal, and the increasing demand for brick streets, not alone in the large cities, but also in the smaller ones as well, is the most glowing proof that the vitrified brick street of today is the most practical all-around street in the world.

It is true that there are some vitrified bricks that do not come up to the standard that they should, and consequently there is room for complaint. But this is not the fault of the brick so much as the fault of the manufacturer, who, through lack of material, of carelessness in workmanship, fails to get the proper results from his labors. Of course the first consideration is the proper material, and then the plant equipped with the best machinery in the market, these combined with good labor, make a combination that will of necessity bring

streets, and the cost is fully sixty per cent. less than the latter material. On the other hand our streets are subjected to many upheavals; that is, they are almost continually being torn up for one purpose or another, and this naturally has a most deteriorating effect on the material with which they are laid. Another feature here that is in the nature of a drawback to the brick street is the fact that instead of applying a tar seam, there is simply a thin wash made of cement and water, that is spread over the street when completed. This serves as a temporary filling, but cannot have the same effect as the tar.

It is a great mistake to flush a brick street, and yet in some cities this is done, with the idea that by removing the entire covering on a brick street, disease is prevented. The natural accumulations on a brick street can be brushed off, but the idea of flushing them is to say the least very detrimental to their wearing qualities, and naturally hastens their end of service.

Louisville and the entire south has undergone a change, and the beginning is only here. The vitrified street will con-

tinue popular in this section, and all through the south, because the people have come to realize that first of all good streets are essential to their welfare, and further that when a good clean street can be had with a reasonable outlay of money, it is economy to have them, and many of them too. For this reason the brick street has and is proving so generally acceptable in this part of the country. JOSHUA.

CLAY STUDIES IN PENNSYLVANIA.

Among the special studies touching the clays of Pennsylvania announced in the Press Bulletins of the United States Geological Survey, there is one of the white clays of South Mountain by George W. Stose, and one of the clays and shales of Clarion county by Edwin F. Lines. Mr. Stose's paper is known as Economic Bulletin for 1906, No. 315. These deposits were described once before by T. C. Hopkins in an exhaustive report which was published in the annual report of the Pennsylvania State College in 1899-1900. Since that report was made several new mines have been opened up and offered

ized calcium sulphate or barium sulphate. The South Mountain clay possesses distinct advantages over the other substances because of its whiteness, fine grain, absorptiveness, light weight, and its freedom from iron.

Excellent building brick of light color are made from the unrefined clay, a more plastic clay being combined with it to give it body. This clay also has many of the requirements of the potter's mixture for china ware, for although it is more siliceous, less plastic, and higher in potash than the ball clay used in the manufacture of pottery, a proper mixture for this ware can readily be formed by adding to it less silica and feldspar than is generally used. Its plasticity and cohesiveness may also need to be increased by the addition of a small amount of ball clay, as for brick manufacture.

Both clays and shales are abundant in what is known as the Clarion quadrangle described by Mr. Lines in Bulletin No. 315 for 1906. Shales that are probably suitable for the manufacture of brick and tile are scattered over most of the region, and in some places are readily accessible to lines of transportation. The clays include both the flint and plastic



Seventh Street Near South, Louisville, Ky. A Street Subject to Heavy Traffic.

fresh opportunities for study. South Mountain forms a rude arc of a circle from the Potomac river at Weverton northward and eastward to the Susquehanna south of Harrisburg. It is not a unit, but is composed of several parallel ridges and intervening steep sided, longitudinal valleys, and the larger part of the drainage passes westward through rugged water gaps. The mountain ridges are composed largely of hard sandstone or quartette and the longitudinal valleys of shale.

Along the west foot of the outer ridge of the mountain from the Maryland state line to Susquehanna river are deposits of very siliceous white clay associated with beds of sand and colored clays, and with the wash from the mountain slopes above. Nearly everywhere it is accompanied by deposits of iron and manganese ores.

Pure white clay, such as is obtained from the South Mountain deposits, is used chiefly in the manufacture of papers. Wall paper, the cheaper writing papers, and all paper requiring a smooth, absorbent surface for fine printing are made in part of clay or some other material, such as pulver-

varieties, but the latter have been little worked. The workable deposits of flint clays, so far as known, are confined to the northern part of the area. The clay was formerly shipped to a considerable extent as raw material, although it had to be hauled several miles by wagon to the railroad, but it has not been mined for many years, and the old strippings are now largely covered up. There has been recent revivals of interest in the clay, however, as a result of the beginning of construction of a new railroad which will pass near some of the best deposits.

The table of geological formations given in the paper shows that level clay beds are associated with the same number of coal horizons. Two and possibly three of these beds contain flint clay; the other clays are of the plastic variety. At present there are but three clayworking plants in the quadrangle. In the future development of the clays of this area the flint clay associated with the Lower Kittanning coal seems to offer the greatest possibilities. Although this clay is the equal in quality to the best flint clays on the market, it nevertheless makes a good fire brick. It is quite possible, too, that the plastic clay associated with this flint clay, if used on

the spot, could be made to furnish the necessary bond. Coal and natural gas are available in nearly all parts of the region, and afford cheap and efficient fuel.

Written for THE CLAY-WORKER.

THE EFFECT OF HEAT UPON CLAYS.*

BY A. V. BLEININGER.



FINAL VALUE of clay products depends upon the success with which the operation of burning has been carried out. Burning changes the raw clay into a hard, stone like material, useful in many forms. The heat applied in our kilns does work upon the clay just as it does work in converting water into steam to be converted into power in the steam engine. This work is partly chemical and partly physical.

In order that we may be able to study the effect of heat upon clay, it becomes necessary that first of all we examine its make-up, just as it is necessary to know the structure of a machine or apparatus before we can speak intelligently about the operation of the same. Without going into a lengthy geological discussion of the origin of clay with which we meet so often, at almost every convention of clayworkers and in every clay report, we shall now examine briefly the mineral constituents of all clays, for it must be remembered that clays are complex rocks made up of a considerable number of minerals, each of which contributes its share to the total character of a certain material.

An examination of the anatomy of a clay reveals the following constituents:

- | | |
|-----------------------|-----------------------|
| 1. Clay substance. | 7. Sulphur. |
| 2. Quartz. | a. Sulphides. |
| 3. Feldspar. | b. Sulphates. |
| 4. Mica. | 8. Carbon. |
| 5. Iron compounds. | a. Vegetable matter. |
| a. Ferric oxide. | b. Bituminous. |
| b. Ferrous oxide. | c. Fixed carbon. |
| c. Ferrous carbonate. | 9. Gases. |
| d. Ferrous sulphide. | a. Water. |
| e. Ferrous silicate. | b. Carbonic acid gas. |
| 6. Lime compounds. | c. Sulphurous acid. |
| a. Lime carbonate. | d. Sulphuric acid. |
| b. Lime sulphate. | |

1. **Clay Substance.** By this we mean that part of clay which gives it its real plasticity; that is, the ability to be shaped and molded. The purest kind is called kaolinite, which is a white clay, composed practically of 46 per cent. of silica, 39 per cent. of alumina, and 14 per cent. of chemical water; in other words, it is a hydrous silicate of alumina. This substance occurs in many variations, more or less pure and more or less plastic. The purest kind is not usually the most plastic, since pure white kaolins frequently possess but little plasticity, form a weak, dusty body on drying, and burn to a more or less porous mass. On the other hand, the more impure clay substance, called commercially, ball clay, is tough and plastic, becomes hornlike when drying and burns to a dense body at quite low temperatures. The difference between the two kinds of clay substances in regard to color is, however, in favor of the kaolin, which produces a pure white color on burning, while the ball clay assumes more or less of a yellowish shade. This is the reason why potters must have as much kaolin in their clay compositions as possible, consistent with the working quality required.

All clays, whatever they may be used for, contain more or less of this clay substance in various stages of purity. It is

*This is the first of a series of articles written for the CLAY-WORKER by Prof. A. V. Bleininger, of Illinois University Ceramic School.

this part of the clay composition which causes shrinkage in drying and burning, and which sometimes gives trouble in drying. In itself clay substance is very refractory and with-chemical water. It does not evaporate like water ordinarily does, but remains in the clay as part of its solid structure, and only escapes as steam when the temperature of 650 degrees C. is reached.

2. **Quartz.** This mineral occurring in clays as fine or coarse sand consists practically entirely of silica. It is a hard, non-plastic material, quite refractory, but not nearly as much so as pure clay substance. A pure clay fire brick hence excels a silica fire brick as well as bricks made from a silicious clay in fire resisting property.

The quartz may thus be said to constitute a large part of the sandy matter of clays. Owing to its non-plastic quality, it will, when mixed with clay, decrease the drying shrinkage. A certain amount of quartz is useful for not only this purpose, but is also necessary to promote the chemical union between the various constituents of clay in the process of vitrification. It must be understood, however, that for this last purpose it must be quite fine and not excessive in amount; a condition most frequently met with in shales, and less so in the alluvial clays. Coarser sand particles are practically of no value for chemical combination, and again, too large an amount of fine quartz will either result in too glassy and brittle a body or it will cause very serious defects, which are due to a very curious property of quartz. This mineral, when heated up to a red heat, is found to expand in volume in a rather erratic manner; this expansion being quite large in amount as well as irregular. The result is, that if the amount of quartz is large the clay will suffer expansion in place of contraction in the kiln. It is told of one man, not knowing this peculiar property of quartz or sand, used a very sandy clay in making bricks which he set quite high in the kiln. The result was that the arch was actually lifted up by the expansion of the bricks.

Even though this peculiar behavior of quartz is not shown by the apparent expansion of the brick, it may cause the structure of the burnt clay to be "rotten," resulting in ware which does not ring, but sounds dead and has poor strength and wearing quality.

3. **Feldspar.** This mineral also is present in every clay. The chemical composition of a typical feldspar, called orthoclase, is 67.4 per cent. of silica, 18.4 per cent. of alumina, and 16.9 per cent. of potash. This mineral constituent, unlike clay substance and quartz, is not refractory, but melts at about 1,200 degrees C. It is, hence, a flux, and when present in a clay, causes the latter to vitrify and finally to melt at a far lower temperature than applies to clay substance or quartz alone. This is the reason why potters add feldspar to their pottery mixtures in order to obtain vitrified wares. Another rather peculiar fact is, that when feldspar is mixed with quartz, in about the proportion of 75 per cent. feldspar and 25 per cent. quartz, this mixture again vitrifies and melts at a lower temperature than feldspar alone.

One rather beneficial feature of the fluxing of feldspar is that its action is quite slow, and hence it does not cause vitrification to take place so rapidly that trouble may ensue if a kiln happens to be somewhat overfired, as is true of some other fluxes. Feldspar may be considered therefore as a safe flux.

4. **Mica.** This mineral occurs in clay in smaller or larger amounts in the shape of very thin flakes, corresponding to the mica used in stoves. These flakes of mica have the distinctive peculiarity of being capable of splitting up into an infinite number of very thin flakes, just as may be observed in the large sheets of mica used for various purposes. This flakey character of mica in clay makes it difficult to separate it from the light clay substance and also in grinding a clay it is almost impossible to reduce the size of the mica particles, which are very elusive and slip through between the grinding

stands very high temperatures. The water which was observed to be a part of the composition of clay is not ordinary free water, but is in a state of combination and hence is called surfaces without suffering much damage. Mica, like feldspar, is a flux, but is much weaker than the latter in its action, and this is emphasized still more by the fact that only the dust like particles really assist in the fluxing action. The large flakes contribute but little in this respect. Unlike feldspar, mica does not burn to a white color, but results in a dark or reddish color. This explains why some kaolins containing mica, though apparently white in the raw state, will burn to a dark color.

Such kaolins are unfit for pottery making since it is practically impossible to float off the mica plates by washing. The dark color of the mica is due to iron content.

These four minerals thus constitute the main body of many clays, and in burning the resulting burnt body is the product of the joint action of these constituents. The constituents predominating in amount will, of course, impart to the clay its prominent features.

5. **Iron Compounds.** While the pure white burning clays contain but little iron, the amount of this element becomes greater and greater as the clay is found to burn buff or red. It might be said right here that iron in its various forms is a powerful flux. Two prominent forms of iron are its two oxides, ferric and ferrous oxide. In the pure state, ferric oxide, a combination of 112 parts, by weight, of iron and 48 parts, by weight, of oxygen, is of a red color, as is shown by many iron ores, also by red ochre or red clays, both of which contain iron in this combination. It may be prepared artificially by pouring nitric acid over iron filings and dissolving them. On boiling down this acid liquid, crystals will be obtained, and when these are heated to a red heat there will be left behind a red powder which is ferric oxide. Red building bricks contain their iron in the form of this oxide. Though a flux, ferric oxide is not violent in its action, but is rather slow in promoting vitrification, and hence is safe, not being liable to cause vitrification or fusion to take place so rapidly as to do harm.

Ferrous oxide, on the other hand, consists of 112 parts, by weight, of iron, and 32 parts, by weight, of oxygen, containing thus less oxygen than the ferric form by 16 parts. Its typical form is illustrated by blacksmith's scales, which, as we know, are black in color. There is hence a distinct color distinction between the ferric and ferrous oxides. But this is not the only distinction. Ferrous oxide is a violent flux, combining with the silica of clay rapidly and forming a ferrous silicate which is dark in color. This compound is illustrated by the slag of the open hearth furnace, which is quite fusible and black.

Now this difference between the two oxides is brought out very strikingly by red and black bricks. The red brick evidently contains the ferric oxide, the black paving brick ferrous oxide, combined with the silica as ferrous silicate.

We have noted that the difference between the two oxides is only that the ferric form contains more oxygen than the ferrous. This extra oxygen is expelled when the furnace conditions are reducing; that is, when the kiln space is filled with gases which are partially unburnt. These hot combustible gases are very eager for oxygen, and hence deprive the red, ferric oxide of its loose part of oxygen, changing it to the black ferrous oxide. If immediately after this exchange of oxygen we again admit plenty of air into the kiln it is possible to convert the black oxide back to the red. In fact this takes place constantly in our kilns, so that in spite of occasional heavy firing, which corresponds to reduction, we finally finish the burn with resulting red brick. However, on maintaining the reducing fire longer, during the high temperature stage of burning, the resulting ferrous oxide which we know is eager to combine with silica, actually enters into this union, forming a ferrous silicate which no longer oxidizes

readily, and hence stays black. In other words, when this reaction takes place we no longer have the iron in the loose condition, but in a state where it is firmly bound to the silica and hence is not so susceptible to the influence of the oxygen of the air.

The practical result then must be black or at least dark colored brick, and the stronger the reducing action, that is, the heavier we have fired, the darker must this color be, depending, of course, also upon the iron content of the clay, for if there is but little iron present there is evidently but slight chance for reduction. Let us keep the distinction between ferric and ferrous oxide clearly in mind.

Beside the two oxides of iron we may have iron present in other forms, as will be shown presently.

Ferrous Carbonate. This compound may be assumed to be composed of 72 parts, by weight, of ferrous oxide, and 44 parts of carbon dioxide or carbonic acid as this compound is commonly called, which is really gaseous. If we heat ferrous carbonate the gas goes off and leaves ferrous oxide, which behaves as if it had always been this oxide. The driving off of the carbonic acid is exactly the same thing that happens when limestone is burnt. There, as we know, great quantities of carbonic acid are expelled, leaving quicklime, as the chemists call it, calcium oxide.

For all practical purposes, therefore, the ferrous carbonate is not a bit different from ferrous oxide, for the latter is invariably left behind, since the gas escapes.

Ferrous Sulphide. Often on examining a clay we find small crystals or grains of a mineral resembling gold, which goes by the popular name of fool's gold. Its real name is iron pyrites, and it is composed of 56 parts of iron and 64 parts of sulphur; it is ferrous sulphide. These crystals may be so small that we do not catch the glistening, gold-like effect. We see from its composition that ferrous sulphide contains no oxygen in its make-up, and hence we cannot say that ferrous oxide is a part of it. But let us look into the matter and observe what happens to the iron pyrite on heating it in a kiln. We will find that the sulphur burns out and leaves as a gas, sulphur dioxide, and at the same time 16 parts, by weight, of oxygen are taken from the air in the kiln and combine with the 56 parts of iron left behind after getting rid of the sulphur. We have again, then, 56 parts of iron plus 16 parts of oxygen, which is equal to 72 parts of ferrous oxide. Here, too, we finish with having ferrous oxide, which, of course, acts according to its nature.

Ferrous Silicate. Nature furnishes us in clay also some ferrous oxide already combined with silica, but this kind of material is comparatively small in amount. Since in ferrous silicate the iron oxide is already combined, reducing gases do not effect it. In the minerals augite, hornblende and others we have examples of this kind of iron compound. As the clay vitrifies these minerals gradually fuse and merge with the other compounds of the clay which are present in larger quantities.

(To be Continued.)

COLOR SCHEMES FOR HOUSE DECORATION.

A decorator whose services are in great demand says that he seldom puts figured paper on a library wall.

"The library is for quiet reading and reflection," he says, "and anything that tends to distract the eye and thoughts is out of place. In the dining-room the dining table is the center of attraction and the room should set it off to the best advantage. Many persons like a bright red dining-room, yet there is no color harder to suit with table decorations. There are a host of colors that one cannot use with a bright red setting. In fact, green and white are the only possibilities. Dark red, brown or soft tapestry effects combine excellently with everything. A dining-room, too, in Colonial yellow and white is charming.

"When it comes to the hall a rich red wall with white enamel paint is a happy combination.

"The color of a room should depend very largely upon its exposure. For a sunless north cold colors, such as blue and green, should never be employed. The sunny side of the house is the place for blues and greens and sombre effects."

—Exchange.

Written for THE CLAY-WORKER.

NOTABLE BRICK ARCHITECTURE.

Examples of the Most Modern Builders' Art Seen in Chicago.



HAS BEEN less than a decade since Robert Herrick, the young writer of the Midway campus, who came from the esthetic east to have his soul shocked by the crudities of the sordid west, roasted Chicago to a turn for its dirt, its raw pretensions and above all, for the utter lack of art in its buildings, especially the structures of manufacture and commerce.

Since that day Chicago has advanced, and in no particular has she shown more marked improvement than in the character of her downtown architecture, and in the commercial structures lying outside of this district. The general appearance of the loop district has undergone a change almost complete. The old smoke-grimed structures of stone built on lines



Joseph Sturdy Building, 34th and Armour Avenue, Chicago.
Made of No. 6 Colonial Brick.

alleged to be classic—classic if there are standards in architectural ginger-bread—have one after another been torn down, and in place of their five to eight stories of gloom and smelliness, we now have modern structures, sky-scrapers, most of them, light and sweet and wholesome within, and plainly attractive without.

The cause for this marked advance is found in the high class of men who are responsible for the architectural renovation of Chicago, whose minds have grasped with complete sympathy and understanding the problem before them of combining art with the simplicity of outline demanded by stern practicability, and also it is found to a no less degree in the material which these architects have chosen with which to carry out their ideas. And that material has been brick. Brick with the able assistance of terra cotta has done the work.

The Greeks knew the values of stone in architecture, and they builded their graceful temples and houses with columns

and caps and architraves; builded them so well that today they still hold rank as one of the acknowledged architectural standards for purely artistic effects. But they had at their disposal the marbles of Mount Pentelicus and the Isle of Paros, and the Italian architects who followed in their footsteps had the Carrara marble, and both had space to suit their ideas. They built on the hills and in the groves, or if their structures bordered the Agora they still had space to command within generous limitations, and there was no demand that the buildings be carried into the blue ether above the natural line of vision of man's eye. The Cathedral builders of a later period were no less masters in the use of stone. If architectural tradition tells aright they took their patterns from the lofty groves and raised their pointed arches on high. They too, knew no limitations of space, but spread their structures over enormous areas. And as the builders of old had little need to be sparing in space, so they had little need to be sparing of expense, and the lifetime of a man, or even longer, was not too long to wait for some of the great cathedrals.

Now in the world of building, or at least in the metropolitan building world, the precise reverse of this situation exists. Space is at a premium; time is at a premium, and the expense has to be watched narrowly. The demand for space in the modern market place forces the designer to carry his building far into the air. In area he is frequently cramped. He must make up for this by creating volume. He becomes more than ever the master of the third dimension. Gone, however, are the old opportunities for grace and symmetry. The architect's general outline represents that of a huge dry goods box or perhaps better, a cigar box, set on end. For a long time he clung to the old ideals and the use of stone. But ornamental work in stone requires considerable relief, and generally speaking, is completely lost sight of because there is no chance for one to see it from a sufficient distance to comprehend its value in relation to the whole building. Taken for itself, it often seems hard and cold and unattractive. So the architect turned his attention to this point, and finally solved the problem in the opportunity for presenting contrasts in color and shading afforded by the use of modern brick, products of our great clay manufactories. He gave over attempts at the more pretentious line work. He adopted the simple lines best fitted to the practical character of the work in hand, and found relief in shades and colors. His cornices now are in terra cotta and the ornamental work either in that or worked out in brick of special molds.

It has been said that stone has two ages of beauty—the first when it is new and white from the quarry, the last, when it is old and weathered and ivy-grown. A building like the famous Railway Exchange building in Chicago, with walls of white glazed brick, holds its pristine whiteness in spite of the city's grime and smoke, and when it is cleaned the process does not disturb occupants of office buildings in the same block as it did a few weeks ago when the granite walls of the Illinois Trust and Savings Bank were scraped and cleaned, and the dust filled the atmosphere. The Railway Exchange building ranks now as one of the older of Chicago's most modern buildings, having been completed more than three years ago, although it still looks spick and span and will look so doubtless so long as it stands. There are many other newer skyscrapers in the loop district, in which brick and terra cotta have been used—the former either throughout or above the first story or so.

Some of the finest effects in brick work, however, have been obtained in mercantile buildings both downtown and in outlying sections of the city. Among the less pretentious, but exceedingly simple and attractive structures of this type may be mentioned the Parke, Davis & Company building in Franklin street, just north of Randolph street, designed for the use of the wholesale drug and medical concern by Hill & Woltersdorf, architects; and also the building designed for Joseph F.

Sturdy, dealer in decorative artwares, at Thirty-fourth street and Armour avenue. These structures gain in effectiveness by very simplicity of line, and might be considered analogous to the Doric style in the older architecture. The brick for the Parke-Davis building was furnished by the S. S. Kimbell Brick Company. Dark Ohio pavers are used in the first story and the upper stories are laid in the Purington red Continental. This building is attracting especial attention in the city because of the fact that the front brick have been used on the alley side of the building as well as on the Franklin street face. This is a departure which produces a most desirable effect. The cost is a trifle more, but it looks genuine and is genuine. It gives a tone of true elegance to the whole of the unpretentious little building. Something of the same effect is shown in the Sturdy building, which stands on a street corner. The brick used here were the No. 6 Colonial, furnished by Bonner, Marshall & Company.

A more assuming structure is that of the National Biscuit

before the doors is an evidence of this, and still more to the point are the reading and rest rooms, and the employes' club house. This job will be long remembered among brick dealers in Chicago. It was the biggest single order for face brick ever taken in the West. The S. S. Kimbell Company finally secured the contract with the Purington purple Continental. In the neighborhood of 3,000,000 face brick went into this piece of work.

More recently, architects have been using brick for purely ornamental work in interior decoration, and most pleasing results have been obtained. The most recent piece of work of this sort is seen in the office of the new Hebard warehouse. Argyle E. Robinson is the architect, and the scheme he has worked out here has elicited much favorable comment. Jarvis Hunt is the pioneer in the use of brick in interior decorations here, and his combination of red brick and Flemish oak in the Rector building ticket office of the Chicago



The Enormous Mail Order Plant of Sears, Roebuck & Co., Chicago. A Fine Example of Architectural Beauty in the Combination of Brick and Terra Cotta.

Company, at Washington Boulevard and Morgan street. Bonner, Marshall & Company also furnished the No. 6 Colonial for this building, which is large and imposing and demonstrates to splendid advantage the uses to which brick may be put in obtaining desired exterior appearance. The trimmings are in glazed terra cotta.

By far the best example in the whole city of the effects which may be produced in brick, however, is found in the enormous mail order plant of Sears, Roebuck & Company, located far out on the west side. Nimmons & Fellows, the architects, constructed a great number of buildings here in such manner as to fulfill all the practical requirements of the great mail order business, and at the same time to preserve artistic unity in the grouping and construction of the buildings. Health and contentment on the part of their employes was one of the main objects sought by the firm. The park

& Alton railroad, has attracted attention from the time the office was opened, more than a year ago. The brick in both of these jobs was furnished by the Thomas Moulding Company.

SCRIP.

ABSTRACT RATHER THAN CONCRETE.

"I don't want to do any advertising," growls the merchant when the solicitor approaches him.

"But I am sure you will soon see the advantage of having your name and firm mentioned in our paper," argues the solicitor. "Let me show you our last circulation statement, and—"

"Now, look here, young man! Can't you take no for an answer? First thing you know, I'll lose my temper, and—"

"If you do," suggested the courteous solicitor, "try our lost and found column. You're sure to get quick results"—Judge.

Written for THE CLAY-WORKER.

A WANDERER IN IOWA.



OME IOWA TOWNS have adopted the motto, "Our Town Does Things," and so it is with Iowa clayworkers. Your correspondent, in visiting around amongst Iowa plants, discovered a tendency there to "do" tilemaking to the limit.

There can be no questioning the fact that Iowa farms invite a considerable investment in tile and open ditches, but we can see no likelihood of there being much of a tile famine in the state for some time to come. Up Mason City way things are lively, as usual. Perhaps Mason City clays are responsible for the consuming desire for everybody and all their relations entering that field of clayworking endeavor. New plants are born there every little while, more than really come to a head, but there is an activity there which should induce some enterprising machine company to locate a branch to look after local business from the proposed and working plants. Mason City is still keeping up its record of making enough tile each year to convey the waters of Lake Superior to the Gulf of Mexico.

Along to the west Emmetsburg is being developed as a brick and tile center, and to the south Mr. J. A. Galvin is working away at Iowa Falls, putting out in the neighborhood of fifty cars of tile a month, and at Eldora, still a little to the south and close neighbors to Gladbrook and Rheinbeck, we find a marked tile activity. There is Nevada, Des Moines, Madrid, Van Meter, De Soto, Adel and Boone, all bending their efforts tilewards and producing a heap of them. In fact, north, south, east, west and center, Iowa is tile, tile, tile, and the poor builder is crying brick, brick, brick.

Many of the tile plants in Iowa are using straight shale, and some are shipping in shale to mix with common clays.

As Webster county just now shows signs of contributing a large portion of its surface and insides to tilemaking, we turned our steps particularly in that direction and landed in Fort Dodge, as a center from which to journey into the developing field. At Fort Dodge we found particular interest being evidenced in the manufacture of sewer-pipe. Most marked in the field at present is the venture of the Gypsum Company, known as the "Plymouth." This successful company is managed by Mr. Lew Armstrong, who, having achieved a marked success in the plaster field, has turned part of his ability toward the development of the clay field underlying the gypsum bed. Mr. Jno. Cheeney and other prominent Fort Dodge business men are identified with the venture. This company has a fine \$200,000 plant well along toward completion. There are nine 28-foot kilns, and these and the fine large brick buildings to house the machinery and to provide drying room, are approaching completion. This is to be a modern plant, and as it is projected by able business men, backed by ample capital and manned by experienced sewer-pipe men, there seems little chance for failure, through channels within the control of man. Tests of the material show it to be the best for sewer pipe use. The clay is to be mined in a sixty-foot shaft, reaching a twenty-foot deposit of clay, practically unlimited in area. In all probability Fort Dodge has gained a permanent and growing industry which will amply reward its promoters.

We learned that another sewer-pipe plant is projected with Fort Dodge as the business home, and Lehigh, a small mining and clay town, nineteen miles from Fort Dodge, the plant home. We understand that a company has been formed under the title of The Lehigh Sewer Pipe and Tile Company, and that work has already started on construction. It is stated that this will be the largest and most modern plant in the west, and rumor has it that the Red Wing people are interested strongly in the venture. Lehigh bids strong as a rival for Mason City in number of plants.

Particularly noticeable just at present in the Lehigh field

is the new plant of the Overpeck interests of Portland, Indiana. They are constructing a somewhat novel style plant for Iowa, we presume, patterned after their Indiana plant. The plant is particularly novel, as it is following the lines of sewer-pipe construction, of large four or five-story buildings for drying. Though still carrying on construction work, the plant is in operation, turning out drain tile from six to thirty inch double length. Four or five kilns have been completed, and others are in course of construction. Sewer pipe presses are used and stiff mud side cut brick machinery. The material used is a hard shale, suitable for sewer pipe. Eastern coal is used in burning. This company is entering the field in no uncertain manner, having already contracted practically a year's output, to be delivered along county ditches.

We noticed next to this plant a smokeless array of stacks and a quiet which is called the "clayworker's nightmare," surrounding a trim looking plant, which we learned was that of



The Attractive Brick Structure occupied by Parke, Davis & Co., Franklin, North of Randolph, Chicago, Ill.

the Corey Pressed Brick Company, and which had been leased for a term of years to some large face brick concern, which did not see fit to operate it more than one year.

We next visited the plant of the Campbell Brick and Tile Company, and noted the smooth operation of this plant, but saw no evidence of the brick part of the concern. They are turning out tile from four to twenty inches in diameter and keeping eight kilns busy. They dry with waste heat and steam in a twelve track fan dryer, using one large suction fan. We reached Lehigh from Kalo, having been driven over by Mr. George Schnurr in his 40-H. P. Pope Hartford automobile in the pleasing time of thirty minutes, the distance being nine miles.

At Kalo we found the Schnurr Brothers, George and William, contemplating the beauties of their new plant, and after our inspection, we could readily account for the pleasant

expression which has the "Won't come off" brand attached, and for which they are noted. These young men are as good examples of self-made success as can be found in the business, in this section of the country at least. Their plant is, beyond question, one of unusual worth. There are in fact two plants in one, and the combination has been very cleverly worked out. The dryers are waste heat, eighteen tracks in one and sixteen in the other. Tile is the product and the output for this season will approximate 2,000 car loads.

Drying is done over night, it not being necessary to run the dryers during the day time. Some ten years ago this plant sold in the neighborhood of twenty-five cars per year, working up gradually to its present output.

There are two other plants at Kalo, one of which while producing a considerable number of tile, gives its particular attention to hollow block. This is the Johnson Brothers plant. It is a very well managed plant, and is meeting with marked success. There is a new plant just going in which



The Large Imposing Brick Building of the National Biscuit Company, Washington Boulevard and Morgan St., Chicago.

we did not have time to visit. It is safe to say that Kalo will do its part toward supplying Iowa with tile, and we think that Webster county will soon be taken from the ranks of the "wets" and at least be "dry" in one way. Who says there is always "room at the top"? Iowa is at the top of the tile producing states, but it looks a good deal as if the room was pretty well taken up.

A. HAWKEYE.

GOLD IN HOUSE BRICKS.

It has been discovered that the common red clay of which bricks are made contains gold at the rate of nearly a shilling's worth to the ton. In the houses of London there are at least 5,000,000 tons of bricks. Make a little calculation at the rate of one shilling a ton, and it will be found that no less than 250,000 pounds of the precious metal is locked tightly up in the ugly red walls of London alone.—Dundee Advertiser.

Written for THE CLAY-WORKER.

BRICK NEWS OF THE TWIN CITIES AND THE NORTH-WEST.



WILE THE GENERAL building situation for the twin cities for the present season has been one of the largest in the history of this vicinity, the results to the brick industry has been considerably of a disappointment, inasmuch as much of the work carried on has been such as does not require much brick work. The season has not been a failure, by any means, but it has fallen below the record of last year, and prices have been influenced in proportion; clay products, in general, selling at considerably below what were being asked a year ago. Both Minneapolis and St. Paul have made an enviable record in building for the season thus far, as well as for the month of August, and the year's total will undoubtedly be one of the largest ever recorded. Among the larger structures under construction are the five-story Y. M. C. A. building, the First National Bank building, the Majestic theater, the Lindeke-Warner warehouse, and the Cathedral in St. Paul, and the nine-story L. S. Donaldson Company building, the eight-story Palace Clothing Company block, the new Plymouth Congregational church, the West High School and the Handicraft Guild building in Minneapolis. Besides these there are numberless smaller buildings, both for business and residential purposes. In Minneapolis, for example, there were 551 building permits taken out for the month of August, for a total of \$1,250,735, as against 490 permits for \$1,147,695. This proportion will be pretty well carried out for the first eight months of the year in both cities.

One notable feature of the building situation this year is the way building is holding up in the later months of the year. There is usually a slump in operations during the early fall and late summer, which has not yet made its appearance this season and will undoubtedly be later than usual, if there is in fact any let-up at all before the cold weather sets in. This is due in part to the lateness of the season in getting under way, but must be laid more especially to the great prosperity of the northwest. Although the banks report that money is tight and rates of interest are quoted very high, nevertheless there seems to be no inclination to curtail construction operations. It is a noticeable fact that nearly all of the buildings going up are being constructed of the best of materials and the situation bears every evidence of being a substantial growth, rather than the effect of any temporary boom.

One of the features of the Minnesota State Fair this year, the first week in September, was the exhibit from Red Wing, Minn., not the least important of which was its collection of clay products. This enterprising little city reserved every foot of space in the great manufactures building, and utilized it with exhibiting the many important industries. The Red Wing Sewer Pipe Company's sewer pipe and tile exhibit was especially complete and interesting, as was the Red Wing Brick Company's brick display.

Several new clay products companies have been organized in Minneapolis recently. Among these are the Minneapolis Sand-Lime Brick Company, of which E. S. Kahn is a leading stockholder. Its office is in the Globe building, and it plans on having a factory which can turn out 40,000 brick per day.

The Twin City Pottery Manufacturing Company, of Minneapolis, has also incorporated, E. I. Max and S. Levin being among the stockholders. It has a capitalization of \$45,000. Then the new sand-lime brick plant at New Brighton, a suburb of Minneapolis, has been started by the Belt Line Sand Lime Brick Company.

The Twin City Brick Company, of St. Paul, announces that it has secured the agency for the American Enamel Brick and Tile Company, of New York. Its territory will be the entire northwest.

Some exceptionally beautiful terra cotta work is being

done on the L. S. Donaldson Company's new nine-story steel store building at Seventh street and Nicollet avenue, Minneapolis. The building will cost about \$200,000.

A bed of good brickmaking clay is reported to have been uncovered near Aitkin, Minn.

Bullard & Johnson, of Fairmont, Minn., have secured tests of clay near that city, and contemplate forming a local company to manufacture tile, for which it is said to be well adapted.

A. C. Anderson, manager of the Brainerd Brick Company, reports that they are turning out brick at their new yard at Brainerd, Minn.

There is renewed talk of starting a brick yard at the Minneapolis city workhouse, to replace the proverbial stone pile for keeping the prisoners busy.

The Pierre (South Dakota) Brick and Tile Company has commenced the manufacture of brick. The company has incorporated with \$25,000 capital.

A site has been secured at Jackson, Minn., on which it is proposed to start a tile factory. Shearer Brothers, of Cullom,

Written for THE CLAY-WORKER.

THE CORNING BRICK AND TERRA COTTA COMPANY.



THIS DAY AND age brick and terra cotta are the essential building materials. They replace stone, not only for the reason that they are less expensive and more easily and conveniently handled, but also because they are more valuable to the architect in their employment than other building materials, possessing as they do, a much richer tone, and give to the structure far more life and beauty. Cement and concrete cannot give anything but a cold, lifeless appearance, and the employment of these materials incurs more expense with a poorer result, not only in the beauty of the structure, but also the healthfulness and life of the building. The reinforced steel with brick and terra cotta construction is the ideal of the prominent building contractors, architects and owners, as by its use more durable, secure and beautiful buildings are constructed.

We can see on every hand the good results of the employ-



General View of the Corning Brick and Terra Cotta Company, Corning, N. Y.

Illinois, are back of the project and report that tests have given excellent results.

A. Green and associates are planning to start a plant at Chippewa Falls, Wis., for the manufacture of tile and pottery.

Witte & Doersch have commenced active operations at their brick and tile plant near Cleveland, Wis. T. WIN.

Minneapolis, Minn.

CUPID HAS NO SUBSTITUTE.

We have been a little alarmed at times by the grave faults and evils the light of science is disclosing in our institution of marriage as it exists today. May be it's a good thing to scare us up a little and make us careful, too, but really when we come back to earth after some mental wanderings of high research on this subject and study the doings of Cupid we don't know that we would want to change it a great deal. Cupid is not a scientific creature and makes lots of little blunders, but for all that, he brings more brightness to earth and provides more inspiration than any other one thing, and we would not give him up with all his faults for the best scientific substitute that could be offered.

ment of brick and terra cotta in our massive and beautiful business buildings, and our fine palatial residences. The United States is far ahead of any other country in the manufacture of brick and terra cotta, and large plants are to be found in all parts of the country. Without doubt one of the most interesting architectural terra cotta and brick plants in the western part of New York State is that owned and operated by M. E. Gregory, of Corning, who is the first vice president of the National Brick Manufacturers' Association, and who has made a name for himself in that representative body of clayworkers because of his enthusiasm and active services for the general welfare of the craft.

The Corning plant is located on the outskirts of that city and has most excellent railroad facilities. The shale is shipped in on the New York Central tracks from a fine bank, which is located just outside the city limits, while some of the higher grade clays for architectural terra cotta are purchased outside the state. A large quantity of low grade fire clay is procured from Tioga county, Pa., where it is found underlying the coal beds of that region.

The whole factory does not occupy as large a site as one would expect, taking into consideration that there is 42,000

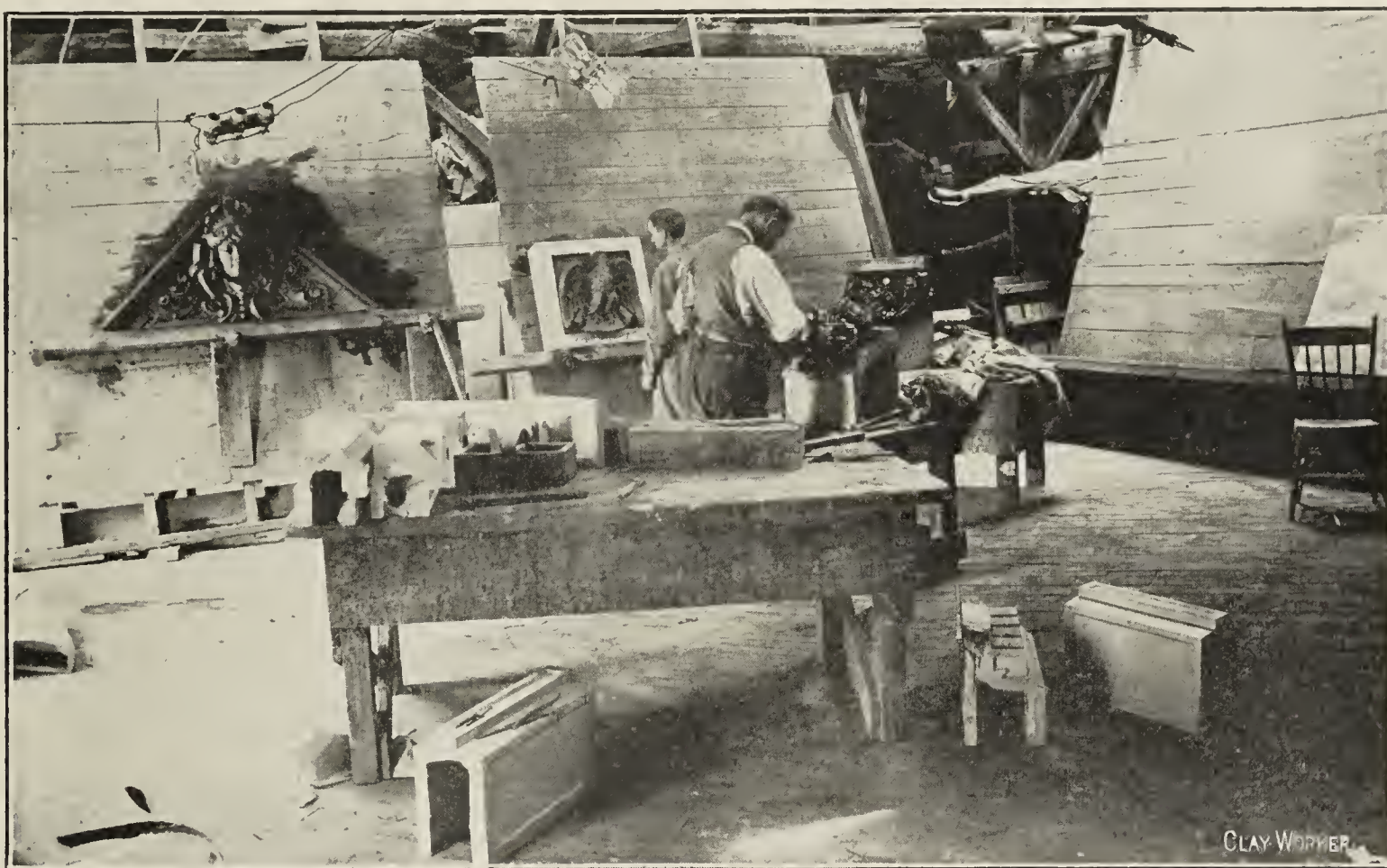
square yards of floor space. Every nook and corner has its special purpose and the work is so systematized that space is economized and the manufacture of the different products goes on uninterrupted by delays or lack of suitable facilities. The clay and shale is shipped into the clay sheds on elevated tracks ready for the journey through the factory, from a raw material to a beautiful finished product. The higher grade clay is taken to a clay dryer with furnace below for the removing of initiatory dampness. The other clays and shale are conveyed by means of belt conveyors to the crusher room, where are located four large dry pans, three of the American Clay Machinery Company and one of the Phillips & McLaren make. Three of the pans are used almost exclusively for the grinding of the material for the brick, while the fourth one is employed for the preparation of the terra cotta clays.

From the dry pans the ground material is elevated to screens, most of which are of the inclined shaking construction. On Pan No. 3 a large umbrella screen is used. This is

built in this manner increases the draft materially. The waste heat from the cooling brick and terra cotta kilns is employed for the drying of the green ware. It is drawn from the kilns to the dryers by means of a 30 h. p. engine and a large 10-foot American Blower fan. The company is now at work doubling their dryer capacity, the old dryer is being remodeled and is to be made absolutely fireproof.

From the dryer the brick are conveyed to seven round down-draft kilns, used entirely for the burning of the brick. These kilns are not of the center stack construction, having the stacks built in the walls of the kiln, which produce very good results. The tops and bottoms of the kilns get equal heat, thus enabling them to get a fine, even grade of ware with little or no loss in the quality of the brick, whether they come from the top or bottom.

The company uses a rattler testing machine in connection with the paving brick department, and the output is carefully watched. The power for the brick machinery is furnished by two 125 h. p. engines and three large boilers,



A Corner of the Modeling Department Where Massive Clay Designs of all Styles and Shapes are Made.

an immense metal circular screen, resembling an inverted umbrella in appearance, and gives very good results. The other screens in point of construction also show the originality of the manager.

From the screens operated in connection with the three large dry pans, the ground and screened material is conveyed to a Freese A special combined pug mill and brick machine, which has a daily capacity of 20,000 pavers. The company has just added another Freese brick machine, which is used exclusively for the manufacture of common building brick.

A Freese automatic cutting table is utilized to good advantage. The brick are repressed on an American Clay Machinery Company repress and an Ohio Ceramic Engineering Company repress, each two mold press. A return belt is used to carry the imperfect brick and refuse back to the pug mill.

The brick are taken into a 24-track tunnel dryer close at hand, which holds 144 cars. The dampness is removed by a large 90-foot, 17 x 10 stack, in which there are two flues. One flue is used in connection with the boilers and the other removes the dampness from the dryer. The chimney being

two of 150 h. p. capacity each, the other being 100 h. p. The machinery used in the manufacture of terra cotta is run independently by a 160 h. p. slide valve engine from the main engine room.

To the right of the boiler room is located the blacksmith and machine and carpenter shops. The power for the machinery here is furnished by a small 12 h. p. engine. These shops are each very complete. The machine shop is equipped with a fine lathe, drill press, shaper, cut-off saw, emery wheels, etc. The carpenter shop has planer, cut-off saw, etc., while the blacksmith shop is complete in every detail. All repairing required and much new work is turned out in these shops. An Imperial air compressor furnishes the compressed air for the whole plant, including the blacksmith shop.

On the other side of the boiler room is a large coal shed, where coal for immediate use is kept. Between the coal shed and the crusher room is an eighty-foot drilled well, which furnishes the plant with excellent water. The fire protection for the plant would seem very complete, but Mr. Gregory informed the writer that they were about to lay another

large water main to connect with the city water supply, which is one of the best in the state.

The Terra Cotta Manufacture.

The raw materials for the terra cotta are ground on an American Clay Machinery Company's dry pan, and after being properly screened, is conveyed to a Freese pug mill, from which it is taken in blocks of clay by elevators to the different terra cotta departments or damp cellars. The principal pressing department is located on the second floor, where there is nearly 26,000 square yards of floor space given to this work. Scores of men are seen pressing the clay into the plaster molds, being careful no holes or cracks appear on the surface of the greenware when the mold is removed. Different groups of men have their appointed tasks, some preparing the molds ready for pressing, others filling them, while the others are finishing the green ware, getting it ready for the dryer. The plaster molds are made on the third floor over the pressing rooms. Here are also located the drafting department and large modeling room. The draftsmen are busily preparing their full size drawings and blue prints, which are made to a scale of thirteen inches to the foot, to give the necessary allowance for the shrinkage of the clay in the burning. The approved blue prints are then sent to the plaster department. This is a very interesting part of a terra cotta plant, for here the architect's designs are worked out in plaster and large molds consisting of several parts, all needing the most careful attention, are made and prepared for the pressing room.

This refers only to the plain models and molds, the ornamental models are made in the modeling department, where the modelers work the design up in clay, taking the measurements from the architect's drawings. Plaster molds are then made over the models, and they are then ready for the pressing department.

The modeling department holds much interest for the visitor, for here massive clay designs of all styles and shapes are made. When only one piece of a special design is required, no mold is made, the piece is built up in clay, and when approved, is cut into several pieces and left to dry and then burned.

After the molds are made and delivered to the pressing department then the actual work in terra cotta is begun. When the clay has been thoroughly pressed and left in the molds for a sufficiently long enough time to enable the molds to absorb part of the water from the clay and leave the piece hard enough to handle conveniently, it is then taken from the molds, finished and taken to the dryers, and when thoroughly dry, it is sprayed and set in the kilns ready for burning.

The spray room is large and well equipped. Mr. Gregory has recently installed a fine laboratory over the slip or spray room, making it a great convenience, as the slips are more easily handled, being conveyed down from the laboratory in pipes. The laboratory is quite complete, having a special 30 h. p. engine to run the machinery. All necessary apparatus is here, including five ball mills, nine slip mills and a small crusher. Large bins are used for the storage of the different materials used in the spraying of the work. Compressed air is utilized for spraying the slips on the green ware.

The ware is burned in ten large muffle kilns, each having a capacity of about 25 tons.

After the kilns have been fired and the ware sufficiently cooled for handling, the finished product is carted to the fitting room, where it is set up in the form in which it is to appear in the building. Great care is employed to see that all measurements are correct and that the different pieces fulfill all the requirements made by the architect.

A large twelve-foot rubbing bed is used for smoothing the rough surfaces or grinding down any pieces over size. For cutting, compressed air chisels are used.

Adjoining the fitting department is the shipping shed. This is an entirely fireproof structure, with graveled roof, holding 20 car loads of terra cotta, or almost 500 tons.

The coal for the plant is dumped near the kilns, from a

high coal trestle, which is a great advantage, saving time and money. Hundreds of tons of coal are left here in huge hills ready for its use.

An amusing feature of this plant is a building which stands alone and unused. This is a monument to the cement block manufacture. Mr. Gregory installed here a cement block machine with all necessary utilities, and can manufacture them to suit the demand. The demand has been so small that this has practically become a graveyard, for not a cement block has been made for over a year. This is a good argument for the use of brick, and whenever a customer is in search of cement block, they invariably turn to clay brick, after a short interview with Mr. Gregory.

There is also a large building for the storage of lumber, wood, lime cement, plaster and roofing material, etc. At the present time there is in construction a 73 by 28-foot shed, for the storage of lime and cement. Mr. Gregory has been in the brick and terra cotta business for sixteen years. After being employed at this plant for five years he bought the plant and became his own manager. The plant has been under his management now for eleven years, and during the time he has built up and extended the business. Architectural terra cotta manufactured in Corning may be found in practically every large city in the east, and among the many larger jobs might be mentioned twenty-eight large school buildings, many large apartment houses, business blocks, etc., in New York City alone. Four U. S. Postoffice buildings and sixteen office buildings in Baltimore; Flatbush Avenue Terminal, Brooklyn; Steam Engineering and Equipment building, U. S. navy yard, Charleston, S. C.; State Agricultural college, Ithaca, N. Y.; thirty public buildings, Patterson, N. J.; Oneida county court house, Utica, N. Y.; War college, Washington, D. C.; St. Mary's Cathedral, Covington, Kentucky.

Paving brick have been made at Corning for about fifteen years, during which time they have been laid in many Eastern cities, and Mr. Gregory has not been called upon to replace a single yard of poor pavement. The paving brick are a dark red color, and possess all the good qualities required for a strictly first-class and durable paving brick.

Mr. Gregory has surrounded himself with a very competent and reliable corps of assistants and superintendents, and under the present management it is safe to predict a bright prospect for the business.

J. E. R.

THE CLAY TURPENTINE CUP.

According to a government bulletin, twenty million turpentine cups are used in the pine forests of the south to catch the flow of resin from the trees, and seven or eight million more are added each year. These simple looking cups, which are not unlike flower pots in size and shape, indicate a rapid and highly important change in the American method of gathering turpentine, due to the need of economy in using all forest products and to the application of science in an old-fashioned industry. The old plan of tapping turpentine trees was both wasteful and destructive to the trees, and the modern cup and gutter was devised to take its place for the sake of economy in both turpentine and timber.

The turpentine cup encountered prejudice, and at first overcame it slowly. The inventor found it necessary, with his associates, to buy a pottery to make the cups. Potters would not undertake the work. The article was new, was not in demand, and no one cared to take the risk of manufacturing it.

A veteran of the wheel and kiln, more venturesome than the others, at one time half way consented to make the cups. He said he could turn out one hundred thousand a year. When told that it was a matter of millions of cups annually, he cut negotiations short, said it was a dream of college men, and that he was there to talk business and not foolishness. That ended it with him.

A pottery was bought near Chattanooga, machines were installed which made eighteen cups a minute each, and the cost per cup has been reduced from 4 cents, the price when hand-made, to 1 6-10 cents.

THE SILICA BRICK PLANT OF THE ROBINSON CLAY PRODUCT COMPANY, AKRON, OHIO.*

THERE HAS RECENTLY been erected in the outskirts of Akron, Ohio, a new plant for the manufacture of silica brick for lining open-hearth and similar furnaces, by the Robinson Clay Product Company, a firm well known in the fire brick world. The brick made at their new plant will stand extremely high temperatures without fusing or spoiling, and preserve their shape under severe treatment. The material from which the brick are made affords the following analysis:

Silica, SiO_2	97.2 per cent
Alumina, Al_2O_3	1.4 per cent
Iron Oxide	1.0 per cent
Lime	trace.

The raw material is obtained from a quarry some eight miles distant and brought to the factory by the Cleveland

Terminal and Valley railroad, alongside of which the plant is located. A side track from this railroad leads to a trestle extending along the face of the grinding and molding room and the power house. It will be



Fig. 1. General View of the Silica Brick Plant of the Robinson Clay Product Company, Akron, Ohio.

noted that this raw material consists very nearly of pure silica. In the manufacture of the brick a small proportion of lime is added to the silica in grinding in order to act as a binder to the completed brick, which consists of little more than the silica, this latter fact accounting for its highly refractory qualities and good wear in hard service.

The operation followed in the manufacture of the brick consists of grinding the material to the requisite fineness in two 9-foot Stevenson grinding pans, located as shown in the ground plan, Fig. 2. The material is discharged from the trestle into chutes, which deliver it to two measuring boxes situated directly back of the pans, from which boxes it is dumped into them. The necessary amount of water is added

in order to facilitate grinding, as owing to the nature of the material, it would be almost impossible to grind it dry. The illustration, Fig. 3, shows the interior of the grinding and molding room, and gives a clear idea of the shape and construction of the pans.

After the material has been ground in conjunction with water and a slight amount of lime, added with the water, for about 15 minutes, it is discharged into chutes which convey it either to the molding space on the floor, or else to an elevator which delivers the material to a belt conveyor, which transfers it to the dry floor located on the second floor of a two story building directly behind the molding building. On this dry floor, bricks of special shape are manufactured, as will be discussed later.

For the manufacture of the regular brick, a mold, in which ten brick can be set up at once, is used. This mold is placed on a bottom board, and the material is shoveled into it in comparatively small quantities by a laborer, while a second laborer manipulates a pneumatic rammer to ram up the ground silica to the proper density. As soon as the mold is filled, the bottom board is lifted together with the molded brick and placed in a stripper, shown in Fig. 4. Across the two ends of the mold are two bolts, over which hooks depending from the levers of the stripper are fastened. The workmen then manipulate the handles, as shown in the illustration, raising the mold vertically upwards from the brick, leaving ten perfectly formed and correctly sized brick on the bottom board. The boards are then placed upon cars shown in the foreground of the illustration, Fig. 3, which are run into the tunnels underneath the dry floor for their preliminary drying. The cars are constructed of angle sections and hold 480

bricks each. Each car, as it is filled, is pushed on to a transfer table extending across the face of the tunnels, enabling it to be put in any tunnel desired. These tunnels, 12 in number, each holding 14 cars, are heated by steam coils and hot air from the kilns and maintained at such a temperature as to drive off all the free moisture in the brick before the latter are placed in the burning kilns.

It requires about three days for a car of brick to make the passage from one end of a tunnel to the other. After its removal from the tunnel, the car of brick is allowed to stand in the cooling room at the rear of the tunnel for such a period as is necessary for the brick to cool sufficiently to be handled by the men. When they have reached this stage, the cars are moved by means of the transfer track extending through the cooling room to a point opposite the door of one of the six

*By courtesy of the Iron Trade Review, Cleveland, Ohio.

kilns shown in the plan, Fig. 2. These kilns are 28 feet 6 inches by 53 feet 8 inches, exterior measurements, holding about 100,000 brick, and when filled are maintained at a high temperature for nine days, or until the brick are thoroughly burned.

An interior view of the kilns is shown in Fig. 7, while an exterior view is given in Fig. 6. The kilns are lined with silica brick and are constructed in arch form as shown. The unburned brick are piled up, the method being clearly indicated in the photograph, Fig. 7. Each kiln is provided with six double furnaces on either side, which may be fired with coal or gas fuel. In piling the brick on the inside, a wall is built up facing the flues from the furnaces at some distance from the wall of the kiln and rising to the spring of the arch. Other unburned brick are then piled checker fashion between these inner walls. The gases from the furnaces necessarily pass up between the wall of the kiln and the wall of unburned brick, and then over and down through the piled brick in the body of the kiln. The floor is in the form of a grating built of silica brick, and flues lead from under this floor to 16 chim-

for shipping, or else stored in the warehouse pending shipment.

The kilns are of necessity heavily buckstayed in order to resist the great expansion which occurs at the high temperature required to burn the brick. The use of silica brick as a lining for the kilns permits the attainment of unusually high temperatures in this process. In the illustration, Fig. 7, the dark patches noted on the walls below the arch are due to the use of ordinary fire clay brick. Details of the condition of these brick are not plainly visible in the photograph, but actually they are badly broken down and fused, while the silica brick is in almost perfect condition.

Special brick are manufactured on the dry floor principally by hand labor. Fig. 5 shows this dry floor with a large number of special shaped brick arranged for preliminary drying. A number of individual benches are situated along one side of the wall, to which material is brought by the belt conveyor heretofore mentioned, and the brick are molded in special molds by a workman at each bench. After drying for the required time, these bricks are removed by an elevator situated at one corner of the building to the kilns for burning.

Power is provided by two 150 h. p. horizontal tubular boilers, supplying steam to a 200 h. p. Bates Corliss engine. This machinery is located in the boiler and engine room adjoining the molding room, as shown in the plan. The power is transmitted by means of line shafting and belts to the grinding pans, elevator and conveyor. A pair of bevel gears on the main shaft transmits motion at right angles to such little machinery as is needed on the dry floor.

The plant was designed and constructed under the supervision of H. B. Sperry, manager of the fire brick department of the Robinson Clay Product Company. He is also the inventor and patentee of the stripping machine shown in Fig. 4.

The capacity of the plant is about 700,000 brick per month.

BRICK VERSUS STONE.

We often hear the statement that all bricks are alike, and that almost any brick is fit to use in a building if properly laid. It is, however, never safe to assume that a brick is enduring and suitable for building operations unless we know its composition. The most potent factor which must be guarded against is the presence of salts of magnesia. It is only a question of time when bricks in which these salts are present in any appreciable quantity will be badly influenced by the weather, and we have seen bricks, which, when fresh from the kiln, gave every mechanical evidence of being of best quality so shattered and disintegrated by the combined effect of moisture, frost, and the chemical action of the magnesia, that a knife could be thrust straight into them with very little effort. Fortunately, there is so much good clay in this country, and so many thoroughly reliable brick manufacturers, that there is really no excuse for bad bricks ever being used, but any brick is not necessarily a good brick, and as much care and intelligent discretion must be used in the employment of this material as in connection with any building medium. There is a common conception that granite is one of the most enduring stones, but as a matter of fact most granites would be outlived by thoroughly first quality hard burned brick. A pure syenite, free from iron or mica, constitutes the most enduring of the granites. A granite quarry may have good stone in some portions of the deposit and be utterly worthless in others, and as a general rule it is not safe to use a granite unless the architect knows absolutely its composition and the part of the quarry from which it is taken. Sandstone is really a bad building material. The cementing material in sandstone has a very slight value, and it is probably the poorest material extensively used, as far as resisting the action of frost is concerned, while the presence of iron constitutes an almost fatal defect. It may be said also that very little sandstone is free from iron.—Exchange.

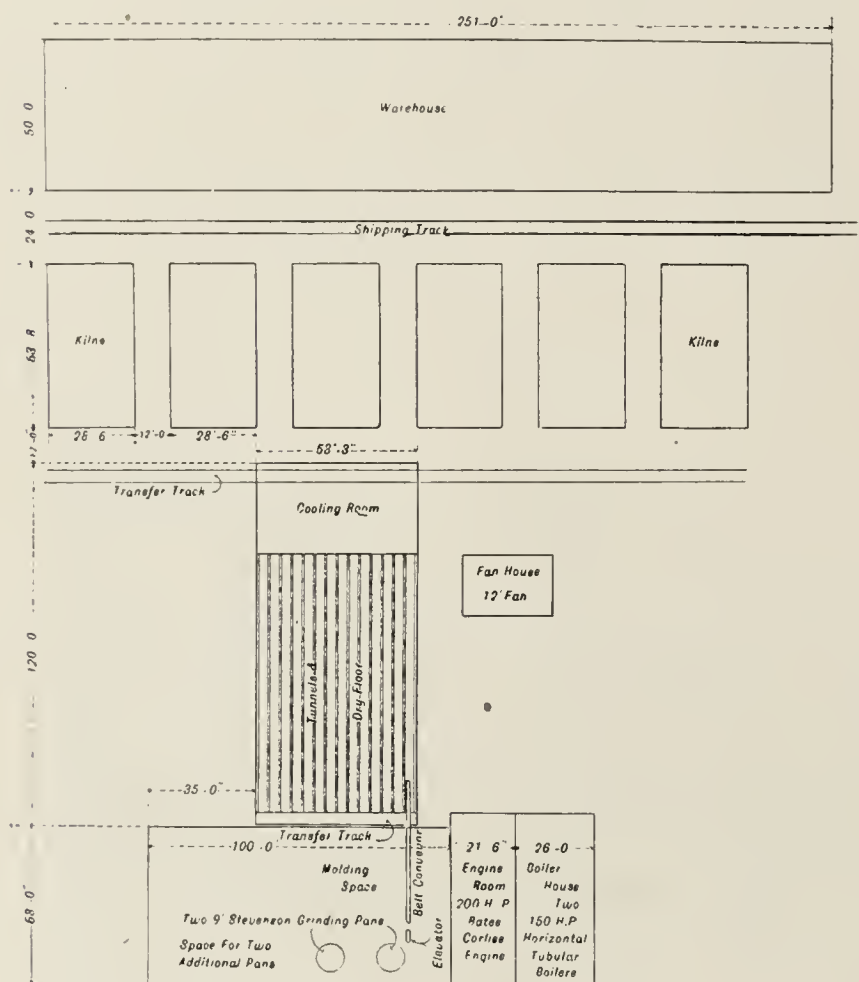
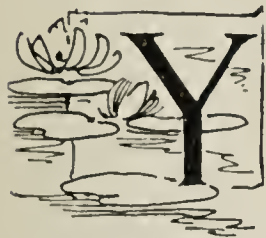


Fig. 2. Plan of Silica Brick Plant of the Robinson Clay Product Company.

neys along the exterior walls of each kiln. The arrangement is such that every brick is completely surrounded by the hot gases in their passage from the furnace to the chimney.

The brick are piled in the kiln by laying a temporary track into it and running the cars directly into the kiln. The sections of track are removed as the kiln is filled up, and finally, the doors at each end are walled up and the fires started. The burning continues for a period of about nine days, and the fires are then withdrawn and the kilns cooled. This latter operation is facilitated by drawing air over the brick by means of a 12-foot fan, installed in the fan house shown in the plan, Fig. 2, which is connected to a flue extending across all the kilns and joined to each one. Suitable dampers control the passage of air through any specific kiln. About seven days are required to cool the brick so that they can be handled. A shipping track extends between the kilns and the warehouse, being located in a pit, so that the floor of the cars will be on a level with the floor of the warehouse and kilns. After the brick are cooled, the doors in the kiln facing the warehouse are broken open, and the brick are placed directly on the cars

THE MANUFACTURE OF COMMON BRICK IN COOK COUNTY.*

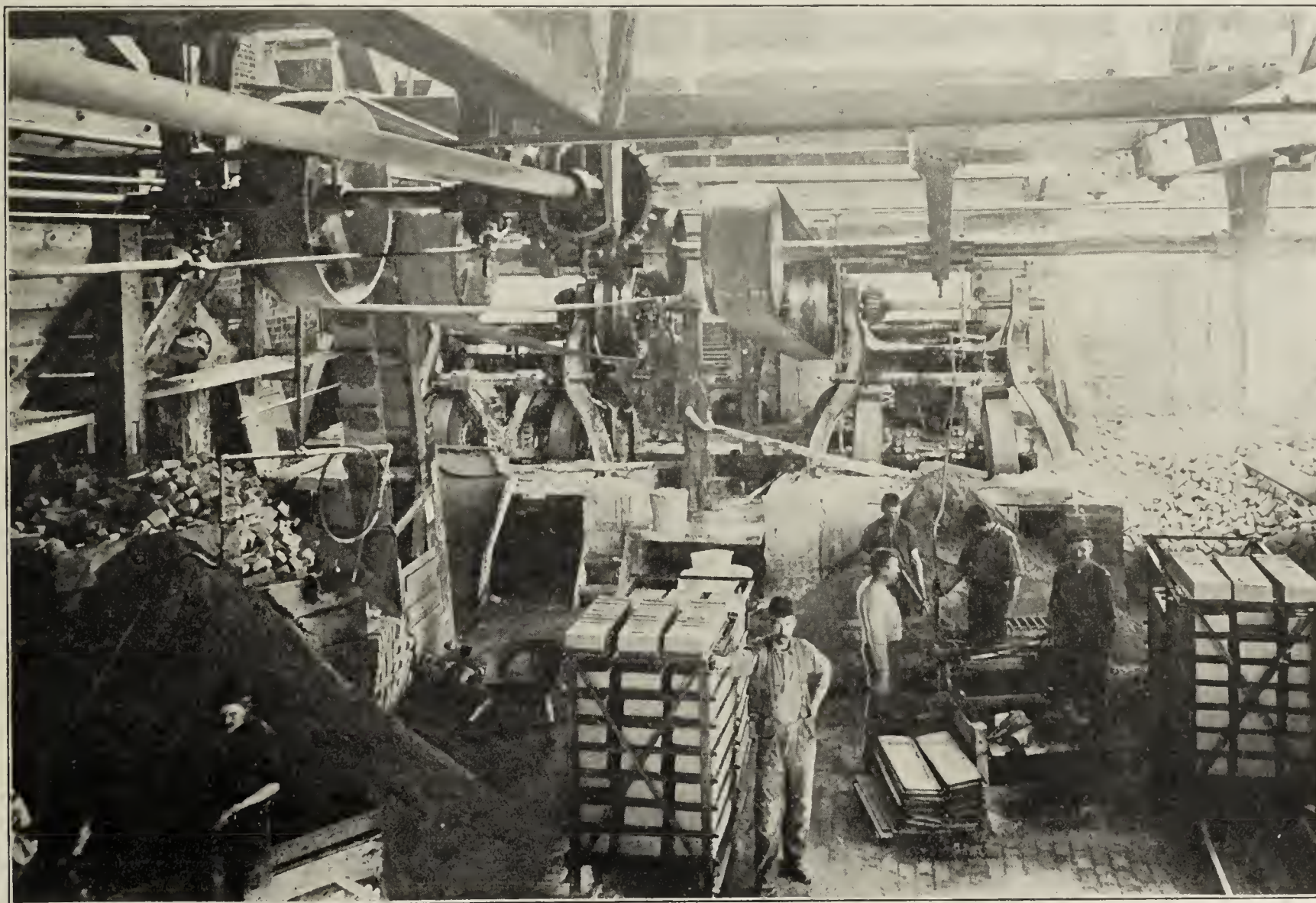


YOU HAVE, no doubt, all heard the story of the man who came home to the bad on bad whiskey. Not being able to find the key hole he was compelled to awaken his better half. She did not like being disturbed and summed up a good lecture with "How dare you come here in this condition." In reply, John told his story in one sentence. "Why, damn it all, Mary, I live here." "Well, why don't you come on in the house and behave." "O," says he, "I'll come in all right if you'll just throw down the key hole."

On the common brick proposition they are a good many of us looking for the key hole; and the first part of the story tells us why we should take a livelier interest in, and

yards differ in texture and formation. From Shermerville and Glenview on the north to Blue Island and Chicago Heights on the south, there is a difference of nearly fifty miles. It is folly to assume that the clay is precisely alike over this range of territory. The production, however, varies only with the mechanical equipment and the management of the yards.

Practically all the yards have a steam shovel, giving a maximum of clay at a minimum expense, and putting the clay supply into the hands of fewer men, and those a little more intelligent than the average shoveler. The tracks are of heavy rail, well laid and kept in order. The cars are substantial, generally two yards, and most important of all, to secure an ample supply of clay the number is always in excess of actual requirements. In other words, on the successful yards will be found from twenty minutes to half an hour's supply on the cars at the end of the tail rope. No one



The Silica Brick Plant—Fig. 3. Interior of Grinding and Molding Room.

have a better knowledge of, the progress that has been made in the rate of production and consequent lowering of cost of manufacture. We live here and should take pride in the fact that, by the application of sound engineering practice, good business methods, and a careful attention to small details, Cook County holds the world's record for high production and low cost, in spite of the fact that all fuel is shipped in and she is paying the highest brickyard wages known.

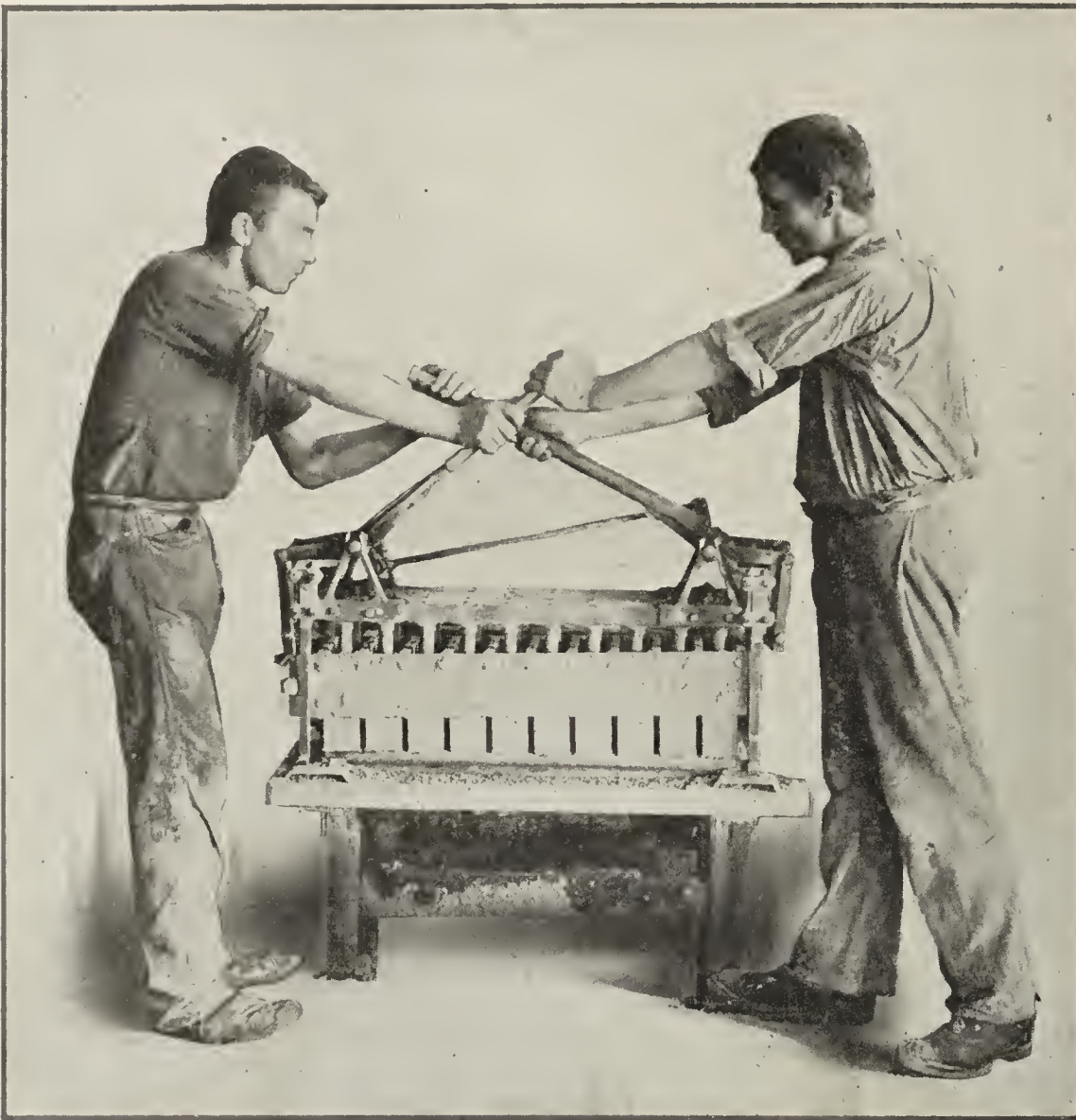
To point out in a general way how such production is possible, how the brick can be sold at the price they are and to persuade some one to throw down the key hole, is the purpose of the present paper.

In the first place, I wish to state that it is not as, popularly supposed, all in the clay. The clays of the various

method of hauling from shovel to incline is used exclusively. Horses, electricity and dinky engines, all being in use, with the preference to the latter. A time saving is effected by hauling two cars at a time, practically adding one-third to the capacity of a single track incline.

The machine equipment usually consists of a granulator, rolls, pug mill and brick machine. The construction of the granulator hopper illustrates the careful attention paid to small details. When properly constructed, it is inclined only on the side from which the knives turn. The other side is straight. The knives lift the clay on the up side and cut it off against the straight back on the other side. This arrangement prevents the clay from bridging, makes punching unnecessary and maintains a regular feed. Corrugated conical rolls are used for separating the rock in preference to a high speed disintegrator. They are satisfactory and can be run for months with little repair. The same can scarcely be said of the disintegrator. A car on a tram track is pro-

*A paper read by M. W. Blair at the twenty-ninth annual meeting of the Illinois Clayworkers' Association, held at Champaign, Ill., January 22, 23 and 24, 1907.



The Silica Brick Plant—Fig. 4. Machine for Stripping Mold from Silica Brick.

vided to dispose of the rock from the rolls. The man tending them loads the rock direct. This prevents an unsightly accumulation and saves the cost of occasional hauling away with cart or team.

It must not be supposed that a high capacity plant is run with the same steam that is used to make 40 or 50 brick a minute. The boilers are of ample capacity, the coal is unloaded direct to the boilers. Often you will find the man who unloads the cars is also firing the boiler.

The engines are economical, the feed water heated with exhaust steam.

Passing to the brick machine, we find a competent man in charge, a man who is paid a decent wage and who takes pride in getting all out of the machine there is in it. He keeps the machine in constant repair and does not allow the output to lag on account of a slipping belt or a set of knives worn short. If the morning's run is not up to standard, the knives are set ahead at noon, an advantage which the adjustable knife machine has over the other type. The result of this careful attention is the enormous output. Repairs are kept in stock, patterns of various machine parts are owned, and instead of paying the machine man ten cents a pound for cast iron, it is bought right at home for two and a half.

Expense in construction is weighed against a saving in labor or an increased output. That which shows a profit is done without hesitation. While compari-

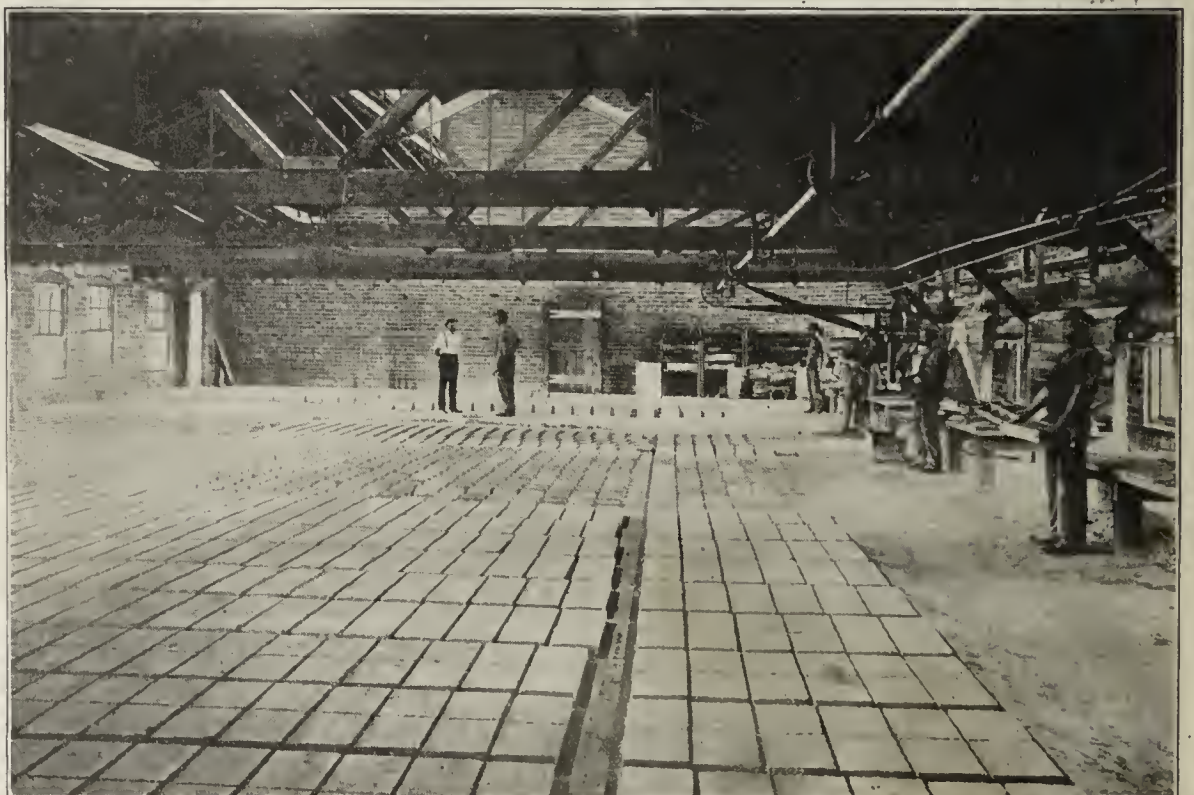
sons are odious, I know of a company over in Indiana which hauls its coal at a cost of twenty-five to thirty cents a ton. The installation of a tram road would show a profit of nearly 100 per cent. on and investment of \$3,000. They talk about it, but do not act. In Cook County it would be like the darky who explained that if you walked from Brazil to Center Point it was forty miles, if you went in a wagon it was twenty miles, but if you get on the cars and goes, you's dar now.

If a location demands a special machine to render it efficient, the machine is built. The location is not ruined and the output of a plant crippled, simply because John Jones has only one set of patterns for the brick machine he wants to sell. In fact, John Jones does not seem inclined to build the kind of a machine, pug mill, or granulator, which is powerful and efficient. He prefers to sell repair parts instead of putting the weight of ten years' repairs into the machine in the first place.

I stood alongside a machine in Chicago recently with the president of the National Association, who was one of the skeptical ones last winter, when I told that body about making 500 brick per minute. Together we timed the cutter and found it was running at a 518 a minute clip. I have seen a published statement that the production upon that yard was 52,551,400 in 2,083 working hours, an average of 25,228 per hour during 1906.

I have been told that in 1892 the makers of that same cutter wrote one of their erection engineers that any man who talked of guaranteeing a machine to cut 60,000 brick in ten hours was a fool (1892, within the memory of all of us), and today the output of that same plant is 175,000 to 200,000 in eight hours; the clay has not changed, but the machine has been speeded up, equipped with cut steel gearing and the little faults practically eliminated.

I wish to insist upon cut steel gearing, not only for the



The Silica Brick Plant—Fig. 5. The Dry Floor.

brick machine but throughout the plant, and while my position upon this point has been subject to dispute by one of our prominent members, and cut steel condemned as a needless expense, another year's observation has simply strengthened my opinion. One plant in Cook County has been in operation nearly two years, making 35,000 to 40,000 brick per day, and in that time they have not replaced a single gear. I leave it to your own judgment and ask if you would not be willing to spend \$150 or \$200 not to break a single gear for two years.

The gentleman to whom I refer, and his associates, less than ten years ago operated a yard in Cook County with six machines. Today on the same yard they are making more than one-half as many brick with one machine. The gearing did it, and I believe the majority of us would prefer to see the present yards throughout the state make three times as many brick than to see three times as many plants in operation. The off bearing belts are of sufficient length to accommodate from twelve to fifteen cars, giving ample time to take away loaded cars and both time and space to catch the brick before they go over the end. The transfer tracks at the machine end are put in level, of heavy rail and wide gauge, avoiding the use of stops and latches, which are time killers at best, and reducing likelihood of wrecks in the dryer to a minimum.

The dryer cars are strong, many being in use having 2-inch axles and capable of carrying a thousand brick. The dryer tracks are securely set, generally in concrete. The doors are semi-automatic, which will open ahead of a runaway car. All these features reduce the annoyance and expense of wrecks in the dryers. The cost of drying runs about ten cents per 1,000, the products of combustion from the boilers, supplemented with an auxiliary furnace, being the source of heat. The expense of operating an exhaust fan is obviated by use of large capacity stacks.

The burning is done in scove kilns and both the amount of fuel and the time required are remarkably small. An arch of brick, containing 36,000 brick, is generally burned in 90



The Silica Brick Plant—Fig. 6. One of the Kilns, Robinson Clay Product Co.

hours, with four tons of coal and one cord of wood. The cost of oil burning has proved a little more than wood and coal, owing to a necessity of using steam with the former.

While the kilns are not permanent, the sheds are constructed in a substantial manner, are high enough to be fairly safe from fire, wide enough to give stability and long enough to store several millions for the spring trade. The loading tracks are generally several in number and it is possible to set in loading position as many cars as the railroad will give. While the loading itself is piece work, the possibility of getting out a large order in quick time is a trade advantage not to be overlooked.

You say the hurry up method produces rough brick, that they have black cores, that the ends are not square. You ridicule the man who uses them in your own town. Admit every criticism you offer and the fact remains that they are going into the finest buildings the world has ever seen, and of still more importance to you, they are underselling you in your own market.

The question is, What are you going to do about it?

The only logical resource is to apply the same or better methods to your own business.

Standing back, crying rebate, is no cure, and I can convince any one of you in one day's time spent in the Cook County yards, that they do not need a rebate to deliver brick to any point in Illinois, at from \$5 to \$6 per 1,000.

Cheap brick is the ultimate solution of the building material problem. The brickmaker throughout the country must get into the fight and raise the efficiency of his plant to such a point as to defy competition. They must educate their trade to take a brick which can be made twice as fast and sold for 25 per cent. less money.

It is surprising how good a brick becomes to look when one knows that his machine is making them at the rate of 500 per minute. It does not take much of a stretch of the imagination to believe they will last as long in the wall as those made at a 30,000 a day rate.

Give sufficient discount to the con-



The Silica Brick Plant—Fig. 7. Interior of Kiln, Robinson Clay Product Co.

tractor to make it worth while to walk into your office and lay down the cash and the time now spent in chasing slow accounts for money to meet the pay roll can be spent in raising the efficiency of the plant. Take advantage of the information which is being put on record by our universities and technical schools. Employ their graduates and seek the assistance of the best engineering ability obtainable; men who have spent their time in solving the problem involved and who are practical and trained in correcting faults, men whose integrity is such, that for a reasonable fee, you can entrust the spending of your money with the knowledge that they will spend it well and spend it but once.

When it is your plant that is selling brick at less than your neighbor's cost price, and still making a nice profit, you will forget the time when you thought that Cook County was selling below cost in order to put you out of business.

Written for THE CLAY-WORKER.

CAPITAL FACTS AND FIGURES.

Washington Progress.



THE CAPITAL CITY of the United States has the unenviable reputation of not being a manufacturing place, and this non-productive idea includes the whole District of Columbia. But notwithstanding this, we have factories here, and these have contributed much to the progress of the beautiful city. And among these working places the brick factories can be placed at the top of the list.

In the city, the District and very close to the latter, there are fifteen brick factories, the combined daily output capacity of which is about 750,000 bricks of various kinds. There is clay here and nearby in quantity. In the District of Columbia large areas have been stripped of a thin layer of loam for brickmaking. The upper loam is suitable for brick over the greater part of the wide later Columbian terraces adjoining the Potomac river. On the smaller areas along creeks and on terraces adjoining the greater part of Anacostia river the deposit is usually too sandy for working. The chief workings in Columbia loams are on the west side of the Potomac river. Here near the west end of the long bridge—which spans the Potomac from Washington to Virginia—we have five brick factories, the aggregate daily capacity of which is about 300,000.

But Washington is benefitted by the clay industries in and near it not only in the brick product, but in sewer-pipe, wire-duct, partition wall and under-floor material, and some other things.

The sewer pipe industry of the District of Columbia has long found a fair market here; for much of this and sewer brick have found place in and near the city. During the last fiscal year 31,051 linear feet of main sewers, and 52,072 linear feet of pipe sewers were constructed here. The total length of sewers now here is 484.35 miles, and the total cost of the sewer system at the close of the last fiscal year was \$14,827,248.34.

In the matter of building operations, Washington has been moving onward, but not so rapidly of late as usual, owing to strikes. The building permits issued during the last fiscal year gave the value of projected work thus concerned, \$12,101,876. So the Capital City is evidently increasing in structural growth. Many new residences and business buildings are now in process of erection, and land is bringing good prices. However, according to District of Columbia Commissioner West, some people here are trying to take advantage of the District's need of sites for play-grounds, school buildings and other purposes, by charging exorbitant prices for land. In many instances, it is said, the price asked the District was not in accordance with assessed value. One offer to the District of Columbia was a piece of property, for

which \$14,000 was asked, while the assessed value was \$5,651.

There is a huge difference in the Washington of the present and that of long ago, when John Randolph spoke of Pennsylvania avenue as the Serbonian bog. "Serbonian" was not so high in value in the old days, and in many of the now popular parts of the city, property was cheap indeed. Where splendid buildings now stand land once went a-begging at from five to twelve cents per foot; now when land is bought in this city's fine localities, the square foot value is reckoned in dollars, not cents.

And brick per thousand, of course, are reckoned in dollars—\$6.00, \$7.00 and \$8.00, as quality may be. Possibly this idea as well as general cost of building a new house, may have caused former Representative John J. Hemphill to have his brick residence moved bodily from its old site to a new one nearby. This was done recently, the first performance of the kind in Washington. Another reason for this house-moving was that Mr. Hemphill wanted more light, and so moved to it. The house is solidly built, has a frontage of 26 feet, is 60 feet deep, and was moved without injury a distance of 25 feet.

Really good brick seem able to stand almost any kind of test-strain, durability, fire, wind and water.

The municipal office reports that about \$220,000 was spent last year in laying sidewalks and paving alleys. The sidewalks constructed were of cement. Alley pavements were paved with asphalt blocks or vitrified blocks. The latter costing less and being less destructible. It is in general use in narrow alleys which are liable to much wetness.

The cost of constructing municipal buildings in the District has also increased. We are told by the District of Columbia office that the average cost for this work is about 13 cents a cubic foot, nearly double the cost of such work a few years back, which was about 7 cents a cubic foot. The increase is due to advance in prices of material, increased cost of labor, the use of better plumbing and heating systems, and better architectural treatment of building exteriors. Increase in the cost of structures is also shown in the fact that last year the rise in the price of lumber necessitated an additional appropriation of \$5,000 each for two school buildings in course of erection, which had been previously appropriated for. But, whether the cost of building here be large or small, work will go on, and the brickmaker will continue to put clay into house building material shape.

An increase in the number of building inspectors for the District of Columbia is much needed. The eight assistant inspectors made, the last fiscal year, 63,010 visits to new and old buildings, and visits of miscellaneous character, which shows considerable activity, but suggests the fact that more men, having ample time to do their inspecting, could assure more safety in structural matters.

One thing needed in Washington and in many other cities, is the fireproof structure, in residences, and particularly in large halls and theatres where great crowds assemble. Out of six theatre buildings here two are said to be fire-proof, but it is said that the older buildings for this purpose are, with one exception, more safely provided with ample exits than will be found in any other city. This city has a number of fireproof structures, but it certainly possesses thousands of residences, and other buildings that have little claim to such protection, and some of these are big and high. More brick and less wood are needed, inside and outside.

As to the height of District of Columbia structures. The law, as originally drafted, placed the limit of height on residence streets for fireproof buildings at 90 feet, but Congress reduced the height to 80 feet for fireproof buildings, and left the height for combustible buildings at 60 feet. The former height will not allow more than seven stories in fireproof construction, while the latter height will admit of five stories in combustible construction. This has brought a type of building consisting of brick outer walls only with much floor area, sub-divided with stud and lath partitions, and no interior walls.

NICODEMUS.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



BUILDING OPERATIONS for August were quite lively in this city, a few small strikes marred the general outlook, but they were on the big steel buildings of the business part of the city, and the trouble was confined to single buildings. The demand for brick continues to be good and strong, and the Kansas gas

burned brick is in especially good demand. This continually specifying gas burned brick, by a number of the architects, has evidently attracted the attention of local brick manufacturers, as they have decided to use gas in burning their brick just as soon as the gas company will let them have the gas.

The estimated cost of buildings in August, according to the permits issued during the month, amounted to \$971,155, as compared with \$811,640 the corresponding month of last year, or an increase of \$159,915. The fact that the ground covered by these buildings was 1,119 front feet less this year than last, indicates that the value of the buildings was greater, and the fact that a large percentage of the work was brick, there being \$599,300 worth of it brick last month, also indicates the larger work.

There has been a large business in cottages for a number of years, but larger houses are now being made and a good deal more attention is being paid to business houses. The fact that business houses in the main part of the city are renting for such exorbitant prices makes a demand for property on near-by streets, and a good many of the property owners are taking notice of this demand and are getting their share of the rent and at the same time making openings for new business firms.

The postoffice department of Kansas City, Kansas, has just completed its census of new houses, and it appears that during the past six months there has been 1,322 new houses built in that city, and nearly all of them have been homes, for that is a city of homes.

Kansas City, Kan., is preparing to be up-to-date in the matter of city government and adopt the commission system of government, doing away with the city council. This method of governing municipalities has been pretty thoroughly tried in some of the cities of the south, especially Texas cities, and has proved to be a decided success. The city business is there transacted like the business of a corporation, for instance, in Paris, Texas, where they have been paving with brick since the commission governs, the brick companies who sold the brick for paving, submitted their samples, made terms with the commissioners, telling exactly what discount for cash, etc., and received their contract in short order, and the cash discount was taken. It is hoped by the brick manufacturers that more of the cities of the West will adopt this plan, as it does away with the slowness of the average city council, and also the petty grafts of one kind or another, and gives everyone a chance to do business and do it in a business-like manner.

There is some talk of trying to have Kansas City, Mo., adopt some such a plan, but the prospects are not considered good for such a move just now, as the powers-that-be are not in favor of laying off any of the power they now hold from behind the throne. One thing appears very certain, the city is going to be forced to change its paving to something else besides asphalt, as the asphalt companies have absolutely reduced the quality of their product until it is hardly possible to make use of it. Strange as it may seem, the only kind of paving there has been a demand for, has been asphalt, and there is much surprise expressed among brickmakers that the asphalt companies did not hold up the quality of their product and do the necessary work to make their guarantees good, rather than take a chance on having other kinds of paving ma-

terial considered, for a comparison of both cost and wearing guarantee will not look very good for asphalt.

The city engineer is said to be thoroughly disgusted with the quality of the asphalt paving being put down of late and the exorbitant price asked and received for it, as well as the failure of the asphalt companies to keep up repairs, and now suggests creosote blocks or sandstone blocks. He seemingly forgets that there are even better blocks in the shape of vitrified brick, which will make a paving to be proud of and which will last from 20 to 50 years, and that paving blocks of this kind can be easily and cheaply replaced whenever it becomes necessary and there is no reason why specifications cannot be prepared to guarantee that nothing but strictly high-grade paving brick be used. It seems strange that this man is so prejudiced against brick as a pavement while it has the two great points in its favor, longer wear and less cost. The only objection that can be offered to it is the noise, and with the large blocks the noise is nothing to mention. One brick man was talking with the city engineer the other day and he admitted to him that there probably was no better paving material than a good brick block, laid with an asphalt filler to help deaden the sound, and on a good foundation. If he feels that this is the case, why not also include such a paving in those he is willing to recommend to the people when complaining about asphalt.

This is a very good time for the brickmakers who wish to sell paving brick in Kansas City to get together and see that their material has a good showing. The city has used comparatively little brick in the past, and the only thing to prevent a much larger use in the future, now that it seems likely that asphalt will go, is the fact that so many of the makers of the best grades of paving brick are so loaded down with orders to go to other sections of the country, that they do not care whether Kansas City paves with brick or saw-dust, for they could not furnish any of the material in either case.

The steamboat line which it was so hard to establish early in this year, has proved to be such a success that two big steel boats are to be added to the fleet next spring. A saving of a third of the freight is showing the merchants where the line is coming in handy to them, for on a single cargo the saving in freight to the consignees is about \$600.

The Gloyd Lumber Company which has already begun the construction of a twelve-story concrete office building, has sent out circulars asking for bids to furnish brick needed in the building. They ask for a half million face brick and a million common brick.

Claude Fuller, for the past six years superintendent of the Diamond brick yard of the Kansas City Hydraulic Pressed Brick Company, has resigned to accept a similar position with the Standard Brick Company, of Coffeyville, Kan. He is stated to be one of the best qualified men for his line of work in this section of the country, being a good electrician, civil engineer and besides has an all-round knowledge of the brick business.

The Lyle Brick Company, the Flanagan Bros. Brick Company, and the Kempfe Shale Brick Company, have all made contracts with the gas company for gas to operate their plants next spring and thereafter. There will be an additional pipe line from the gas fields by that time and the supply will be adequate.

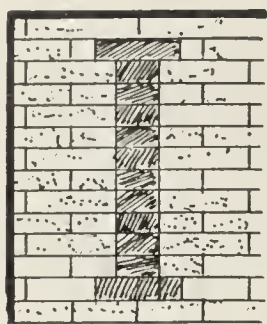
T. C. Jacoby, superintendent of the No. 2 yard of the Kansas City Hydraulic Pressed Brick Company, has been transferred to a plant of the Hydraulic company in Minnesota, having been given complete charge of a new paving brick plant the company has just started near Minneapolis. A Mr. Emery, from Omaha, has been transferred here to take his place.

The Eadie Building Supply Company reports being crowded with orders and state that they are filling them regularly at the rate of a half-million per week, on the average.

K. A. W.

Written for THE CLAY-WORKER.

THE BRAZIL BRANCH OF THE HYDRAULIC PRESSED BRICK COMPANY.



INDIANA, WHILE RICH in many resources, has a world-wide reputation for its three principal industries.

The literary industry may be said to have the lead, with Riley, Ade, McCutcheon, Majors, et al., working overtime to supply the market with their wares, which are quoted at so much per ream alongside of Brazil block and clay goods in car load lots.

Brazil is rich in the latter industries and has been rightly termed the "clay coal-mining center" of the Middle West." While the coal industry may be considered to have "seen its best days," the clay industry has scarcely reached the May-day of its existence.

Brazil clays have properties indigenous to that locality and make brick of a kind, color and quality, not to be found elsewhere.

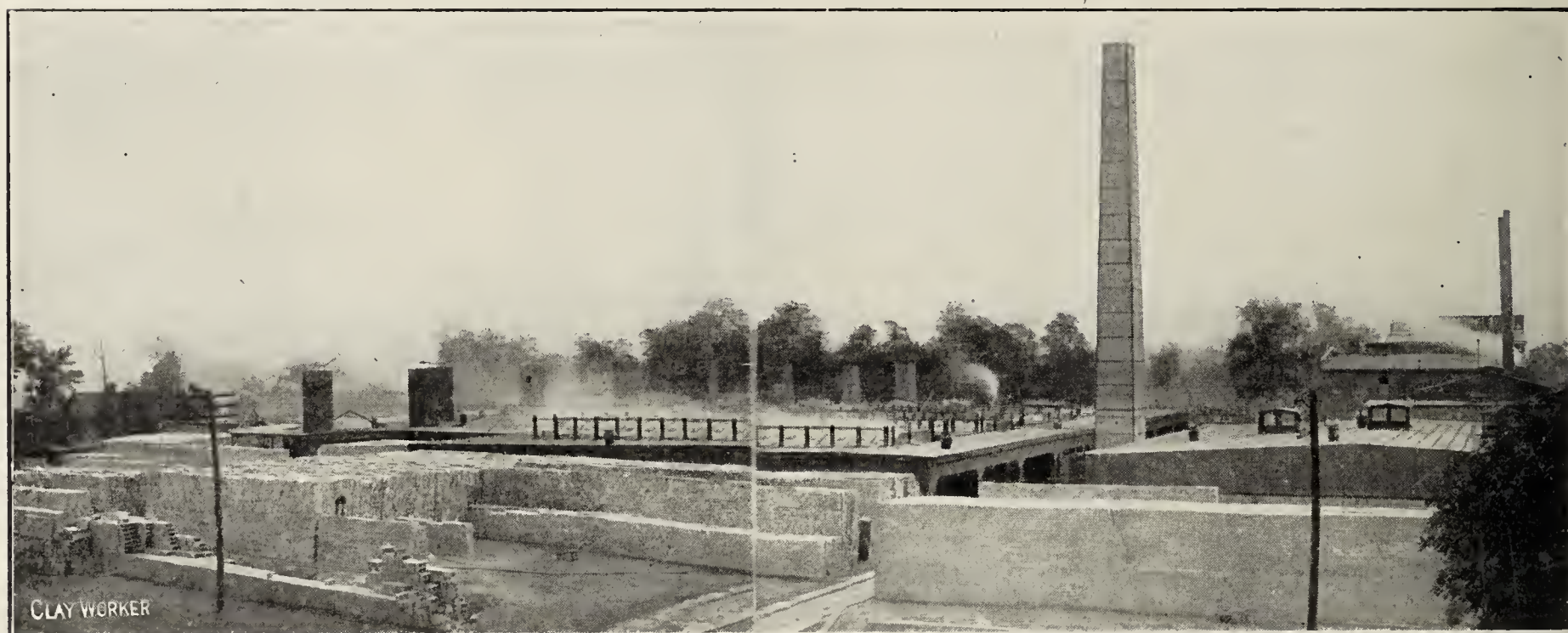
Recognizing these qualities, the Hydraulic Pressed Brick

spot bricks. Adjoining this room is the sample room where samples are kept boxed ready for shipment.

The main building is large and roomy, built entirely of brick and containing boiler and engine rooms, carpenter shop and pattern room, as well as machine room where bricks are manufactured. In the boiler room three immense boilers furnish steam for a 225 h. p. engine, also for smaller engine which runs the motor for the electric light plant of the company and which also runs the fan in the mine shaft located 1,000 feet distant. All the water for the plant is furnished from a 625-foot artesian well. This water has excellent curative and medicinal properties as a drink and is largely used by the residents of Brazil as a table water; it is soft and free from lime and scale and is specially well adapted for boiler use.

The clay is mined at a depth of eighty to eighty-five feet and is hauled up a tramway, dumped into crushers, then conveyed to a dry pan (of which there are three 9-foot patterns), and after being ground and put through the usual wire screen, goes to the pug mill. The manufacturing equipment consists of two large machines and side wire cutters are used. One of the machines is equipped with two represses with a capacity of over 20,000 bricks per day each.

The waste heat system is used in the dry tunnels, the



Panoramic View of the Brazil Hydraulic Pressed Brick Company's Plant, Brazil, Ind.

Company, the largest manufacturers and distributors of faced brick in the United States, purchased the Ayer-McCarrel plant at Brazil in the spring of 1906. Since that time they have spent \$100,000 in improving and enlarging what was already considered a new, model and up-to-date plant. One has only to drive into the grounds of the plant to catch the enthusiasm and "go" which seem to abound at that institution. One sees the vast advantages of system and one can easily believe the saying that "it takes money to make money." Everybody seems to have their special work and everything goes like clock work with no round pegs in square holes—even the cart horses pull with all their might and look as though they enjoyed it.

The plant is located within a mile north of the city limits. The office, an attractive building, constructed of hollow building blocks, is removed about one hundred feet from the plant. This office is finished in hard wood and fitted with all modern conveniences. Just across the road are the buildings of the plant proper. The first building contains the office of the general superintendent as well as the shipping department. In this office there is a display room where a fine line of samples are shown. These samples represent different shades of gray, gray-mottled, buff, buff-mottled, golden-glaze and iron-

waste heat from the kilns burned off being forced through the tunnels by means of exhaust fans. The plant is also equipped with twelve modern round kilns with a capacity of approximately 75,000 bricks each and four rectangular kilns of the usual hydraulic type, with a capacity of 150,000 each. One stack rising to a height of 110 feet, takes care of these four kilns.

On each side of the kiln battery are constructed large stock sheds for the storage of the finished product. Each of these stock sheds is provided with loading tracks so that twenty cars may be conveniently loaded at the same time.

All of the clay used in the manufacture of the product is mined on the property of the company, and coal, of which some 12,000 to 15,000 tons per month is used, is procured in the immediate locality, which is rich in the high character of block coal which has made the name "Brazil" famous. The slack which is used in the boilers is unloaded by means of a belt conveyor direct from the cars to the boiler room.

The daily capacity of this plant is 80,000 bricks. A feature of this plant, distinguishing it from the general rule of brick plants, is the protection of the workmen from weather conditions, the whole plant being practically roofed over, including the kilns.

A complete fire apparatus has been installed, consisting of

a 25 h. p. gasoline engine, removed 500 feet from the main buildings of the plant, with a complete equipment of hydrants, hose, and fire alarm stations scattered throughout the buildings and plant. It is possible to reach any point of the plant with a two-inch stream with a 50-foot hose, so conveniently are the hydrants located. Power for fire protection can be furnished either from the regular engine equipment or from the special gasoline engine which was installed for this special purpose. A large pond is located on the company property which provides an inexhaustible supply of water for fire protection.

This branch of the Hydraulic Press Brick Company employs about 175 men the year round.

As is probably known to the readers of the CLAY-WORKER, this is one of the branches of the Hydraulic Press Brick Company, whose headquarters are located at St. Louis. The company operates about thirty large plants, which are mainly devoted to the manufacture of high class face bricks, although the St. Louis yards manufacture all kinds of brick, including common pavers as well as high class enamel bricks. The annual capacity of these thirty plants is in excess of 500,000,000 per year. Other branches of the Hydraulic Press Brick

ed of Brazil bricks and will require, when complete, approximately 350,000.

BRANDEN.

CLAYS AND SHALES IN CLARION COUNTY, PA.

The clays and shales of Clarion County, Pa., form the subject of a paper by Edwin F. Lines, in the United States Geological Survey's "Contributions to Economic Geology, 1906" (Bulletin 315). The area considered in the report is that known to the Survey as the Clarion quadrangle, the geology of which has been studied for publication as a folio of the Geologic Atlas of the United States.

Both clays and shales are abundant within the quadrangle. Shales that are probably suitable for the manufacture of brick and tile are scattered over most of the region, and in some places are readily accessible to lines of transportation. The clays include both the flint and plastic varieties, but the latter have been little worked. The workable deposits of flint clays, so far as known, are confined to the northern part of the area. The clay was formerly shipped to a considerable extent as raw material, although it had to be hauled several miles by wagon to the railroad, but it has not been mined



Engineer and Fireman at Engine Room of Hydraulic Plant.

Large Rectangular Kilns and Stack in Course of Construction at Brazil Hydraulic Pressed Brick Plant.

Company embracing these different plants are located at Philadelphia, Pa.; Washington, D. C.; Cleveland, Ohio; Chicago, Ill.; Minneapolis, Minn.; Zanesville, Findlay and Toledo, Ohio; Menomonie, Wis.; Collinsville, Ill.; Kansas City, Mo., and Omaha, Neb. The officers of the Brazil plant are Mr. H. A. Walters, manager, who was for a number of years general manager of the Washington, D. C. plant; Mr. H. R. Ireland, assistant secretary and treasurer; Mr. H. H. Pohl, general superintendent, and Mr. J. C. Hutchinson, assistant superintendent.

The Brazil branch has reasons to be proud of the extensive recognition which the merit of its product has received throughout the country. Among the operations served during the last year is the new Hotel Washington at Seattle, Wash., which job used over 300,000 gray-mottled bricks; the Pierce building at St. Louis, Mo., used approximately 700,000; Hotel Bentley, at Alexandria, La., 250,000. Other large jobs have been constructed of these vitrified impervious bricks at Chattanooga, Memphis and Nashville, Tenn.; Opelika, Ala.; Cincinnati, Ohio; Milwaukee, Wis., and Omaha, Neb. The new railroad station at San Antonio, Texas, is to be construct-

ed for many years and the old strippings are now largely covered up. There has been recent revival of interest in the clay, however, as a result of the beginning of construction of a new railroad which will pass near some of the best deposits.

The table of geological formations given in the paper shows that eleven clay beds are associated with the same number of coal horizons. Two and possibly three of these beds contain flint clay; the other clays are of the plastic variety. At present there are but three clayworking plants in the quadrangle. In the future development of the clays of this area the flint clay associated with the Lower Kittanning coal seems to offer the greatest possibilities. Although this clay is not equal in quality to the best flint clays on the market, it nevertheless makes a good fire brick. It is quite possible, too, that the plastic clay associated with this flint clay, if used on the spot, could be made to furnish the necessary bond. Coal and natural gas are available in nearly all parts of the region, and afford cheap and efficient fuel.

A daily paper headline says, "97,000,000 lobsters released by Uncle Sam." Humph, we know of a few that have not even been arrested.



Coal Shortage.—If we think that we Americans have the only trouble with coal shortage the following item will show that the Germans are just as bad off in that respect. The big terra cotta works of Villeroy & Boch, at Merzig, have shut down completely through the lack of coal; 700 employes are affected. The coal is obtained of the German Government mines at Saargruben, and shows clearly that even the government is not always in position to fill orders promptly.

* * *

The Royal Ceramic School at Bunzlau.—According to the published report, this school enjoys a large attendance. It had all through the year 44 day students and 45 evening scholars. The faculty consists of Director Dr. Pukall, three foremen and four professors. Products of the school were exhibited at Dresden, and also in Christiania, Norway. The students of the school took several trips around the pottery districts, and visited also iron works, lime kilns and glass factories.—Sprechsaal No. 21, 1907.

* * *

A Mammoth Tile Painting.—The Royal Porcelain Manufactory at Meissen, Saxony, has just executed one of the largest tile paintings in the world. The painting measures 300 feet long and is 30 feet high. It is now being set up on the outside walls of the Castle at Dresden. The subject of the painting is the princely procession of the House Wettin. There are 25,000 tiles in this painting. They were burned in 50 porcelain kilns. The size of the tile is 210 millimeters square (about $8\frac{1}{4} \times 8\frac{1}{4}$ inches). The tiles were made by the dry press process, first biscuit, then painted, and burned the second time at the regular porcelain heat. It took two years to manufacture the work, and the same was executed under the personal supervision of Prof. Sturm for the first year, and later under supervision of the artist Grust.—Deut. Topf. & Z. Z. No. 47, 1907.

* * *

Prize Competition for Horse Power Measuring Instrument.—The German Association of Clay, Cement and Lime Manufacturers has made arrangements for a prize competition for an instrument which will measure the power used on different machines in use in the clay industry. It desired to obtain a machine on which the working man can easily read the power which each machine takes for operation, and should be preferable indicated on a dial. Following are the condition of the competition:

1. The construction of the instrument must be as simple as possible.
2. The instrument must be easy to be attached to the operating machine.
3. Instruments which can be easily moved from one machine to another will be given preference. This condition will, however, not be an essential point.
4. The instrument should indicate exactly, when and at what point the power operation is changed.
5. It is not absolutely necessary that the amount of power used should be indicated by m-kg (h. p.). Instruments which will indicate a certain amount of power used in comparison will be allowed in the competition.
6. The instrument shall be essentially a machine which will be a help to the workingman, which will inform him when the power is less or more than necessary, so that he can regulate the tempering of the clay, when the same runs too stiff or too soft to the brick machine.

The competition closes January 1, 1908, and are to be sent

to the office of the association, Tonindustrie Zeitung, Berlin, NW. 21, Dreyer, No. 4. The prizes are as follows: First prize, 1,000 marks; second prize, 500 marks, and third prize, 250 marks.—Tonind. Z. No. 68, 1907.

* * *

Colored Glazes for Tiles.—For glazes which can be used on tiles the fritted glazes are mostly preferred. It is customary to have one frit and glaze formula as a standard, to which are added the coloring oxides for the making of the colored glazes. The following formulas have been in use with success:

- 127 parts sand.
 - 62 parts kaolin.
 - 59 parts red lead.
 - 23 parts borax.
 - 18 parts whiting.
 - n parts coloring oxide.
- N represents the following colors:
- 42.2 parts oxide of cobalt.
 - 38.1 parts oxide of chrome.
 - 39.8 parts oxide of copper.
 - 40.0 parts oxide of iron.
 - 38.2 parts oxide of manganese.
 - 34.4 parts oxide of nickel.
 - 70.3 parts oxide of uranium.

These frits are usually put in saggars and fritted in the glaze kiln. They are strong in color and should be diluted with the white glaze in order to give the different shades required. For matt glazes the amount of kaolin is increased until the glaze has a matt appearance. A good crystal glaze which matures at cone 1 is made as follows:

- 91 parts sand.
- 61 parts saltpetre.
- 53 parts oxide of zinc.
- 28 parts of feldspar.
- 25 parts of boracic acid.

These materials are also fritted and applied to the ware. They can be colored by small amounts of coloring oxides. The firing should be entirely oxydizing, and the cooling should be very slow from the start.—Keram. Rundschau, No. 25, 1907.

* * *

Is Steam in Fireboxes Beneficial.—Dr. A. Moye, of Berlin, has given this question some attention and according to his idea there is not much benefit to be derived from using steam in connection with fire boxes. The question is asked often, and usually the idea prevails, that steam furnishes by this reaction, free hydrogen by the formation of water gas. In reality, however, to effect this reaction much heat is taken by the steam from the coal. It is generally known that the decomposed steam furnishes ingredients which will burn in the fire boxes, but it is not generally known that this decomposition of steam requires a great deal of heat. There is just as much heat used in the decomposition of steam as there is furnished later, theoretically, by the burning of the hydrogen which was obtained by this decomposition, and consequently the heat which was first used for the decomposition is again recovered. These facts can be easily proven by figures, because it is positively known how many heat units are formed and required for this process. These heat units are usually called greater calories, and designate the amount of heat necessary to raise the temperature of a kilogram of water one degree centigrade. The amount of heat units which are obtained and also used in this process, are figured according to the exact formulas. In this way we obtain so-called heat comparison tests, in which the atom and molecular weights correspond to as many kilograms.

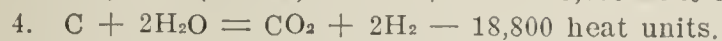
By the burning of carbon of the coal with the oxygen, we observe the following two processes:

1. $C + O_2 = CO_2 + 97,600$ heat units.
12 kilos. 44 kilos.
2. $CO_2 + C = 2CO - 38,800$ heat units.

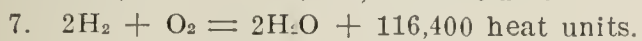
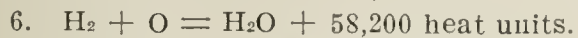
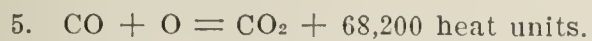
Carbonic acid gas is formed first and not carbonic oxide, because there is always an excess of oxygen where the air first

strikes the burning coal. Carbonic oxide is only formed according to the second formula.

When steam is used, the formulas 3 and 4 give an idea of the formations:



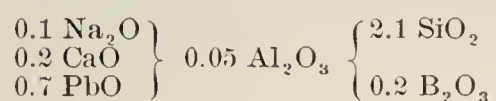
Formula 3 shows the formation of water gas. In formula 4 an excess of steam is present. A loss of heat has taken place in both cases. In formula 4 the loss is smaller, while the burning of the carbon has proceeded to the point where carbonic acid gas has been formed. These two reactions furnish also hydrogen which will give much heat and burn, and the process according to formula 3 furnishes also carbonic oxide. Formulas 5, 6 and 7 will show how many heat units these ingredients will furnish by their burning in presence of oxygen from the air:



With the assistance of these heat comparisons it can be easily figured that the use of steam in fire boxes does not bring an increase in heat. When we take the formula 3 and the use of the weights, 12 kilos of carbon will use 28,800 heat units. In addition, we get a gain of heat units by the burning of the carbonic oxide and hydrogen according to formulas 5 and 6 of $68,200 + 58,200$, which equals 126,400 heat units, taken off the heat units used in the first burning, gives $126,400 - 28,800$, or 97,600 heat units for 12 kilos of carbon. This is just the amount of heat units which 12 kilos of carbon furnishes, according to formula 2. In the same way we get an excess of steam of formulas 4 and 7, $116,400 - 18,800 = 97,600$ heat units.—Tonind. Z. No. 72, 1907.

* * *

Crystal Glazes.—Experiments with crystal glazes must be specially adapted to the kilns in which they are to be burned. The ingredients which produce crystalization in glazes are, first, an excess of oxide of iron, chromium or manganese; second, an excess of titanium, and third an excess of oxide of zinc. The composition of the main glaze, the duration of the burning, the process of cooling are all essential to produce the right crystals. The best method to introduce the excess of the oxide in question is to mix same in excess already in frits. A good glaze for this purpose is

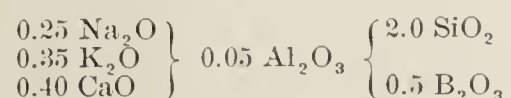


The mixture consists of the following ingredients:

Powdered borax	38.2 parts
Whiting	10.0 parts
Red Lead	70.0 parts
Flint	120.0 parts
Coloring oxide	x parts

X represents either 40 parts of oxide of iron, 40 parts of oxide of manganese, 40 parts of oxide of chromium. For glaze proper 250 parts of frit and 13 parts of kaolin should be ground together. This mixture is then mixed with from 2 to 10 per cent. of the crystalizing oxide, and burnt between cone 09 and 2 to its proper temperature.

For crystal glazes with rutil, the following main glaze is used:



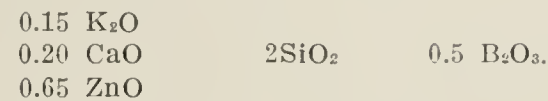
The mixture is made as follows:

Powdered borax	95.5 parts
Whiting	40 parts
Saltpetre	70.7 parts
Flint	114 parts

For the glazed frit 100 parts and kaolin 13 parts are used.

This glaze mixture is now saturated with from 2 to 25 per cent. of rutil, or, from 0.5 to 2 per cent. oxide of chromium, cobalt, or copper; or from 5 to 10 per cent. oxides of iron, manganese, uranium or nickel. The temperature at which these glazes mature ranges from cone 08 to cone 4.

Now we still have the zinc crystals. Such glazes are usually also a soft glaze. Zinc does not crystalize like the coloring oxide as oxides, but as silicates. A good glaze for this purpose is



which is mixed and fritted as follows:

Saltpetre	30.3 parts
Whiting	20.0 parts
Oxide of zinc	53.0 parts
Flint	120.0 parts
Boracic acid	62.0 parts

The alkali-zinc-silicate which is used for the crystalization is composed as follows:



and fritted as the mixture:

Saltpetre	30.3 parts
Oxide of zinc	69.0 parts
Flint	150.0 parts
Boracic acid	49.0 parts

This frit is not ground very fine, and should be mixed with the glaze in coarse ground state. The temperature at which it can be burned is from cone 06 to cone 6.—Sprechsaal No. 24, 1907.

DRY PRESS BRICK.

IN THE June issue of THE CLAY-WORKER, on page 907, there is a translation of an article published in Baukeramik, No. 10, 1907, entitled, "Austrian Opinion of American Dry Pressed Brick," which gives the views of a certain Mr. Schmelzer. In making reply thereto the writer will take up the translation by paragraphs or statement, as they appear in THE CLAY-WORKER. Mr. Schmelzer is certainly following business tactics, being a mud brick machine manufacturer, in condemning dry clay brick machines and process. It is not to be doubted that all bricks made at all yards by all the various types of dry clay presses are not perfect, but neither is it so when it comes to mud machinery brick, but when dry clay press brick are used successfully throughout in the construction of our 18 to 22-story sky-scrapers in the United States, such fact must necessarily be a recommendation for a dry clay press brick, correctly made and properly burnt.

Bricks standing such a test should certainly meet the requirements of any building laws of any country. There is a difference in the dry clay and semi-dry clay process, as the percentage of moisture necessary to make a good brick depends upon the character of the clay used as well as the type of machine in operation. In using mud brick machinery, differing amounts of water are necessary for pugging the various kinds of clays, nor will one kind of auger work all types of clays successfully, thus showing that both factors are found in the two types of clayworking machinery, and in that way placing them on equal footing. But that large, excessive amounts of water are not necessary in making dry clay brick is evidenced by the following analysis:

St. Louis—2.18 moisture, 3.08 combined water.

Kansas City—6.42, both moisture and water of combination.

Mr. Schmelzer says that American are only ordinary knee presses, which are entirely unsuited for our materials. The statement reminds one of the stupid boy who could not see the woods because there were too many trees around. It is

admitted that ordinary toggle presses cannot exert pressure high enough economically to work all kinds of clay, simply because oil in the journals can not be controlled beyond certain limits, but if he would have investigated the most successful brick concerns in the United States, as far as the writer knows, he would have found that this concern uses presses where the pressure can be and is controlled up to 4,000 pounds per square inch.

That brick are not all successfully burnt in the kilns now in use is evidenced by the patent records of any country, for why should invention be necessary if absolute success is already at hand? Neither in the United States nor in Austria can or will be all brick burnt in any type of kiln to perfection, consequently the brickmakers will have the same troubles as to soft burnt brick.

The gentleman states that we do not find brick as hard burnt in America as is demanded here. Below you will find a statement of a test made by a state university located in a different state from where the brick were manufactured.

Test of Specimen No. 505.

Kind of test—Compression.

Material—From Sibley Menge Press Brick Company, Birmingham, Ala.

Machine used—Rieble testing machine.

Date—November 20, 1906.

Report.—Exceeded capacity of machine. First signs of



Method of Handling Sand at the Houston Plant.

rupture at 99,000 pounds (per square inch), when small crack appeared about one-half inch from edge. Sample gave way suddenly somewhere beyond the registering capacity of the machine, which is 100,000 pounds, and the fracture showed two pyramidal fracture forms, the balance of the material breaking out similar to stone. While writing the above the thoughts are: Will the building commissioner in Austria accept a hard burnt brick like the above?

Poor old Philadelphia comes in for a rub, too. I cannot understand why it is that all representative dry press brick concerns have agencies in Philadelphia. Not business surely; just for fun, that is all. Our American brick makers are built on that plan. Well, I guess not. If the dry clay press brick men could not do any business in Philadelphia they would shut up shop.

Then poor old St. Louis. The place where they use poor (?) dry press brick. Yet in that city is the home of a stock company that makes dry press brick—about one million (1,000,000) a day. Could they sell all of them if the product was not fit to go into walls?

Of course it is admitted that a hard burnt brick is better than a soft burnt one, but that would be the case no matter on what machine or by what process they were made. Now as to the life of St. Louis dry press brick, let me state the St. Louis tunnel connecting the Eads bridge with the then

union station, was built some thirty years ago, and took millions of dry clay brick.

The Belcher Sugar Refinery, using over 10,000,000 dry clay brick, was built over twenty-four years ago.

The writer lived in a dry clay press brick house built over twenty years. When the writer was in the strictly dry clay press brick business in St. Louis he shipped such brick as far north as Winnipeg, Manitoba; as far east as Dover, New Hampshire; as far west as Salt Lake City, Utah, and Tucson, Arizona, and as far south as the United States of Columbia, South America. It certainly is reasonable to suppose that dry clay press brick must have some merit to them to enable them to carry such freight charges.

Furthermore, when buildings 150 to 250 feet high are successfully built out of dry clay brick, it is surely not bad. And when stacks 165 to 185 feet high are built of dry clay press brick, such fact is assuredly not a bad recommendation for such a class of brick. Subjoined is a statement of an important test made on brick (dry clay) made in St. Louis territory:

Test of Specimen No. 503.

Kind of test—Compression.

Material—Brick from St. Louis territory.

Machine used—Rieble testing machine.

Date—November 20, 1906.

Time of test—Four minutes.

Capacity of machine—100,000 pounds.

Report—Crushed completely—First sign of rupture at



General View of Houston White Brick Company's Plant.

71,000 pounds, when corners began to crumble. Ultimate compressional strength reached at 73,000. Sample crushed slowly, breaking into a sandy mass.

Would such brick pass German building law inspection?

The writer was special correspondent for THE CLAY-WORKER at St. Louis World's Fair, and the verdict of visiting architects and brickmakers is, as a rule, an acknowledgment as to color, die art, outline and durability of the dry clay press brick. In some cases even architects, claiming to be representative men of their particular section of country, not alone acknowledged the superiority of the dry clay brick, but lamented the incapacity of the German mud brickmakers in that brick were furnished that were unevenly burnt, had uneven and imperfect corners and edges whitewashed. More than once has the writer heard the following: "Ach, haetten wir solche Ziegel in Deutschland daun koenute man schon etwas tuechtiges leisten."

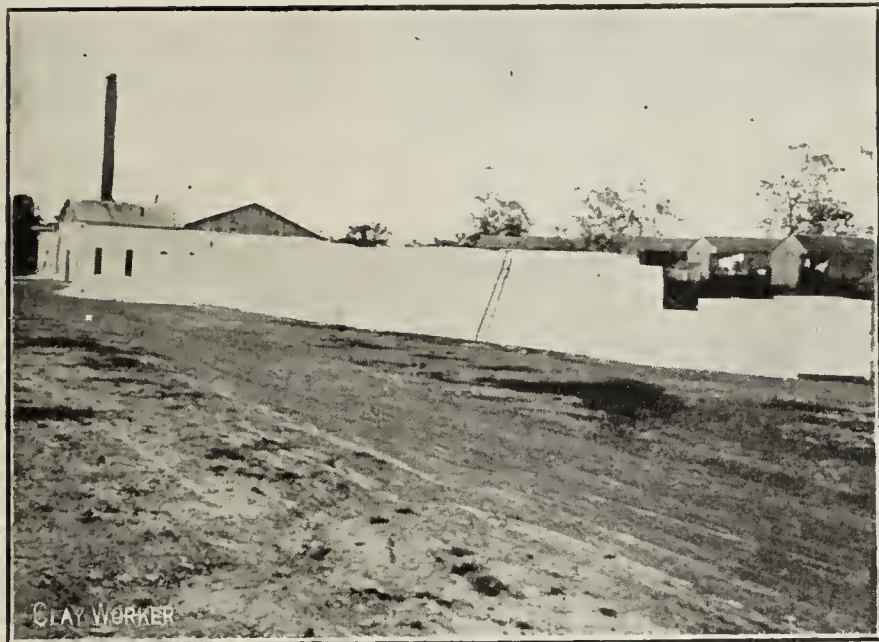
Now, as to Mr. Hoffman. A great many years ago Hoffmann Berlin (continuous kiln man) tried to make dry clay press brick on a "Mitzcaff" hydraulic press, and after making a failure of it, one of the employes of a St. Louis concern, using hydraulic presses, was induced to come to Berlin to obtain results. After about one year's absence he returned to St. Louis and thus stated that the Berlin brickmakers

know it all, and no one could teach them anything. But one failure does not prove anything. There are failures in either class of brickmaking process, but when the more successful brickmakers of building brick in the United States use the dry clay process then surely there must be something in it.

There are any number of dry clay presses in the United States whose operation have been a failure, but was it on account of the machinery or management? If there are failures in the United States, why should there not be in Europe? There are other things, besides the press part, necessary to operate a dry press plant successfully, and the manager or proprietor will run up against them in running his plant. The hardest man to teach the dry clay press brick business in the United States is the successful mud brickmaker, simply because he thinks he knows it all. Presumably, the same thing holds good in Austria and Germany because human nature is the same thing all over the world.

There certainly must be a fascination about a dry clay press for Mr. Schmelzer to devote ten years of his time to the development of such a machine, but the statement, "If one could be designed," is a limitation clause governing inventive faculty, in time the inventor's capacity. Presses are being built in the United States that meet all possible requirements is evidenced by the fact that they are used on loess, surface, shale, fire pottery, marl and china clays in over twenty (20) different locations in the United States, and running successfully at that.

Now Mr. Eckhart, of Cologne, is a little more liberal in his judgment about dry clay presses. He admits that they



Stock of Sand-lime Brick, Houston White Brick Company.

do make brick that can be used in buildings, even if only for backing up. The writer is at present engaged with a concern which is using the by-product clay from the coal mines, and for purity of color, sharp corners and edges, are equal to any made in the United States. The durability is attested by sub-joined statement of test made at the mechanical laboratory of the Tulane University of Louisiana:

Test of Specimen No. 400.

Kind of test—Compression.

Material—From Sibley-Menge Press Brick Company, Birmingham, Ala.

Machine used—Rieble testing machine.

Date—November 20, 1906.

Time of test—Six minutes.

Capacity of machine—100,000 pounds per square inch.

Exceeded capacity of machine without signs of rupture at any point. This sample could not be crushed in the machine.

Apparently Mr. Schmelzer is still interested in dry clay press brick, and upon a future visit to the United States, it might be well for him not only to investigate brick machines, but also all the other necessary steps or *modus operandi* to manufacture dry clay press brick successfully and economically.

DRY PRESS.

Written for THE CLAY-WORKER.

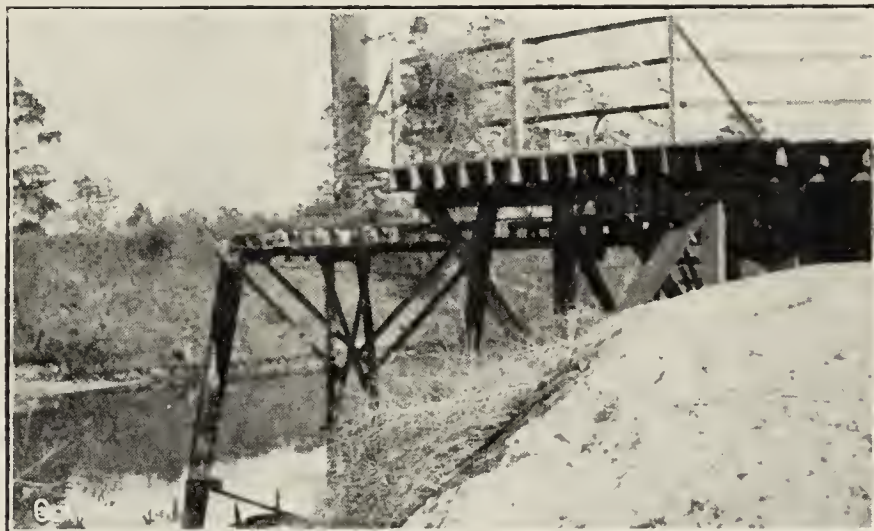
HOUSTON WHITE BRICK COMPANY.

ON THE BANKS of Buffalo Bayou, about in the centre of the city of Houston, is situated a plant for the manufacture of sand-lime brick. It is the property of the Houston White Brick Company, whose directors are prominent business men of Houston, Galveston and Dallas. The officers and directors consist of the following: Ben Dolson, Jr., Galveston, president; Fred A. Jones, Houston, vice president and manager; Frank C. Jones, secretary and treasurer, Houston; D. A. Templeton, Dallas; Fred Fleming, Dallas; Edgar Watkins, Houston; McClure Kelly, Houston.

The plant has been in operation since April 1, 1905, and has a capacity of 40,000 brick per ten hours. It was designed by Fred A. Jones for the Steger Sand-Lime Brick Company, of Bonham, Texas, whose president, Ed. D. Steger, is interested in the Houston company.

This plant is unique in that it is not located at a sand bank, but is located in the centre of its market on the bank of a navigable stream, so that its raw material may be delivered in barges and at the same time so that it may have railroad facilities and short wagon deliveries and easy access to labor.

At first, coarse sand from the San Jacinto river was transported by barge about 25 miles and delivered at a cost of about 25 cents per yard. This made very good brick, but it was found that bank sand could be obtained about one mile below the plant which made a brick that was superior to the San Jacinto sand brick. Prof. W. H. Von Steerwitz analyzed



Sand Beds of Houston White Brick Company, Houston, Texas.

this fine bank sand and it is shown to be an indurated silicious quartz sand, the largest grains not exceeding 0.55MM, most of it being a nearly impalpable powder. Practically 98 per cent. is silica, the balance aluminum, magnesium, iron, sulphates of sodium and potassium and lime.

It will be recalled by the readers of the CLAY-WORKER that in the August number (1905) of this periodical, it was stated that Prof. Glasenapp, of Germany, had found by experiments that the finer the sand used in sand-lime brick manufacture, the stronger the brick would be, owing to the more perfect combination of the lime and the silica, so that he recommended a 3 per cent. admixture of fine sand with the coarse sand ordinarily used. The experience of this company seems to show that it is best to use the very finest sand alone, so they have by this means reduced the absorption from 14 per cent. to 9 per cent.

The Houston White Brick Company is arranging to double its output and is now shipping their brick all over the state of Texas.

Mr. Jones states that never in his experience as an engineer has he met with so many difficulties to be overcome and problems to be solved, in order to make a dividend paying manufacturing plant, as in this case of building and managing the Houston White Brick Company. It is his opinion that a great many plants have been sold without looking far ahead to the every day operation of them, protecting against breakdowns, etc.

E. H.



THE N. B. M. A. MEET AT JAMESTOWN.

A Few Things to be Seen Around the Exposition.



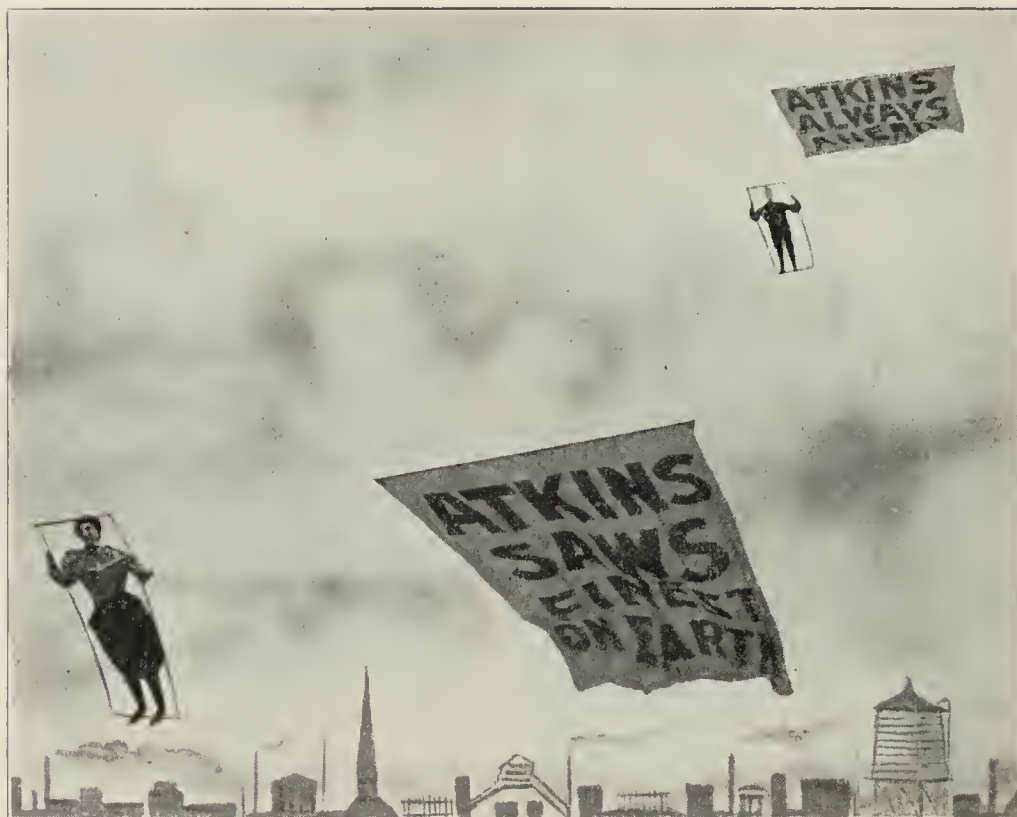
NO DOUBT many members of the N. B. M. A. have visited in the vicinity of the Jamestown Exposition before, and taken in the points of interest; to those who have not, it will be interesting to them to visit the many interesting places within a few miles of the exposition. Directly across Hampton Roads is Fortress Monroe, one of the largest forts in the world. It is worth a trip

View, one of the most beautiful and refined seaside resorts in the south, and the fishing and bathing is unsurpassed. Perhaps some of the "mud grinders" would like to visit some of the Virginia brick yards. To start with, I would say we have no particular section for our brick plants, as they have on the Hudson. The plants here are scattered in every direction for fifty miles. Some of the largest and most modern plants are located in and near Norfolk. The plant of E. W. Face & Son, Norfolk, Va., can be reached by taking a Huntersville and Atlantic City car, getting off at the head of North street, two blocks from the plant. The Norfolk Brick Company's plant is located at Munden Point and can be reached by taking a Virginia Beach car. They have a capacity of 100,000 brick per day, with an eighteen track dryer. At Cape Henry we have a new sand-lime brick plant with a capacity of 20,000 brick per day. This plant has only been in operation two months. It can be reached by taking a Cape Henry car. It is only a few minutes trolley ride from Cape Henry to Virginia Beach, another seaside resort.

A great many of the brick plants are located along the different rivers, as far up as fifty miles, and are very hard to reach; some taking two days to go and return.

At Portsmouth, just across the river from Norfolk, is the

**N. B. M. A.
Meet
Jamestown
Exposition,
September
17-19.
Headquarters
Hotel Warwick,
Newport News.**



**Side Trip to
Atlantic City.
Meet me
on the
Board Walk
September
20-22.
Headquarters
Hotel Rudolf.**

Novel Aerial Advertisement of the E. C. Atkins Co., of Indianapolis, at the Jamestown Exposition.

to the fort to see the dress parade, which takes place every morning at 10 o'clock. From the Fort you can take a trolley to the National Soldiers' Home, only a few minutes ride. This is said to be the largest and most beautiful soldiers' home in America. From the Soldiers' Home it is only a few minutes trolley ride to the large normal school at Hampton, where hundreds of negroes and Indians are educated. They take pride in showing visitors through this school. From the normal school it is only a few minutes ride to Newport News, where the great ship yard and dry dock of the Newport News Ship Building and Dry Dock Company is located, which cost over \$15,000,000, and now has over \$12,000,000 worth of work on hand. It is about three hours sail up the James river to Jamestown Island, where the old church tower now stands. There are a number of boats running to the island and back every day. From Newport News to the exposition, by boat, is about thirty minutes ride. From Newport News to Norfolk, by boat, one hour. There are numerous boat lines from the Exposition to Norfolk and two trolley lines. Two miles from the Exposition, by trolley, is Ocean

U. S. Navy Yard, which is well worth the time to visit. At this yard the "Texas" and "Raleigh" were built. About one mile north of the navy yard is the U. S. Naval Hospital. One of the leading attractions at Norfolk, at this time, is the great hippodrome, Kiralfy's Pocahontas, with their 2,000 gorgeous costumes and 400 pretty chorus girls. The stage is larger than that of the New York Theatre, New York City, with artificial lakes for the Indian canoes, etc. This presentation has drawn theatrical people from all over this country, and these well posted critics say it is the greatest production ever presented on the American stage. It can easily be reached by an Ocean View car.

I would like to say to the members of the N. B. M. A., get patriotic; come one, come all, and help celebrate the birth of our great nation. The more the merrier; have a good time and wash off the brick dust of this summer in the cool salt waters where our forefathers fought the Indians with the old flintlock musket.

H. L. JACOBS.

Suffolk, Va.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Wants to Know How to Prevent Brick Sticking in Kilns.

Editor THE CLAY-WORKER:

Do you know of any way to prevent brick from sticking together in kiln burning. We make a smooth, red building brick on an auger machine and where they are burned harder than salmon they stick together so they have to be tapped with a hammer to get them apart. Any information you can give us through the CLAY-WORKER, or otherwise, will be appreciated.

B. H. REED & BROS.

UNANSWERABLE ARGUMENT

Anent the N. B. M. A. Meet at Jamestown Exposition.

DEAR RANDALL:

I ought to have known how futile it was for me to attempt to be facetious with so sharp a fellow as you. The cute play you made upon the word sweetheart is a credit to your inventive genius, and proves you to be the superb diplomat I claimed.

In baseball parlance, you worked the "squeeze" play and "stole home" in safety, putting the laugh on me. All of which reminds us that there is something in a name after all, and you are worthy to be classed along with the other big "Teddy Bear" at Washington, for I don't know which is more adept in getting out of a tight place and putting the other fellow in the nine hole.

When I wrote that last letter there was fresh in my memory the toast you offered at Titcomb's "social seance" during the Philadelphia convention: "Here's to our wives and sweethearts; may they never meet," and I thought it was a case of "out of the abundance of the full heart the mouth speaketh." Speaking of being full—but I guess we will let it pass, as I might get you into deep water. If there is any way to suppress the last CLAY-WORKER, or keep it from circulation in New Jersey, where "my wife and sweetheart" are riding the surging billows, please do so; or I may find a warpath at Atlantic City as well as at Jamestown.

Yours sincerely,

August 28, 1907.

JNO. W. SIBLEY.

Proper Pavement for Country Roads.

DEAR RANDALL:

I have clipped the following paragraph from the Scientific American of July 6:

"The Massachusetts automobile traffic is so heavy that it has caused marked wear on the state highways, and the commission having charge of these roads states in its last annual report that the destructive effect is "extraordinary." Practically all the main roads are thus affected. It has been noticed that the binder is swept from the road, and the stone from one-half to one and one-half inches in size has been disturbed, in some cases standing on the surface and in other cases being left in windrows along the roadside. The effect of wear of this sort is such that the commission is satisfied a material change in the methods of maintaining stone roads must be made. The report indicates that the commission believes some kind of treatment with tar will probably be successful."

Perhaps the above has come to your notice. From personal investigation, talks with "Good Roads" men, and with road commissioners, I am satisfied vitrified bricks or blocks, are the only material that will, so far as now known, make a satisfactory road. The item above gives one reason why macadam

does not meet the requirements. Another very important reason is matter of repairs when road becomes worn in places—and they will wear soon so as to need these repairs. Road commissioners tell me the average town or district road supervisor lacks the experience to properly repair macadam roads, such as are now being built under state supervision and with state funds. Again, if he has the experience necessary, he has neither material, tools, nor money available for the purpose of repairs.

A well constructed road, made from good quality of vitrified paving bricks or blocks, will last a generation without repairs of any kind.

HENRY HASBROUCK.

Brick Drying Problems.

Editor THE CLAY-WORKER:

We all use water to moisten our clay; some use hot water, which is an improvement over cold water, but in my plan I use live steam until the clay is either moist enough or it is as hot as it can be handled.

Clay, as usually dug from the pit, contains from 5 to 15 per cent. of water. I have no table of the specific heat at hand showing the specific heat of clay, but assuming that the specific heat of ground clay is .2, which is approximately correct, and that to each 100 pounds of clay at 65 degrees it is necessary to add 10 pounds of water at 200 degrees, we find by applying the formula for mixing two substances having different temperatures and different specific heats:

$$\frac{100 \times .2 \times 65 + 10 \times 1 \times 200}{100 \times .2 + 10 \times 1} = 110^{\circ}.$$

which will be the temperature of the pugged clay, but if steam is used to heat the clay the result will surprise you.

Steam at atmospheric pressure has a temperature of 212 degrees, but there is something in it called latent heat. The total heat in steam at atmospheric pressure is nearly $5\frac{1}{2}$ times the sensible heat, that is, the total heat is 1,178 degrees and the sensible heat is 212 degrees. The latent heat becomes sensible when the steam is condensed. To any one who does not understand this clearly, the following may serve as a brief explanation of what is called latent heat:

If a quantity of pounded ice at the temperature of 32 degrees be put in a vessel and held over a flame, the heat passes rapidly into the ice and melts it, but a thermometer held in the water and ice in the vessel still show a temperature of 32 degrees, and will continue to do so until the ice is melted. What has become of all the heat supplied to the ice? This phenomenon was investigated by Dr. Black, of Edinburgh, as early as 1760, and the heat which has disappeared is called latent heat of fusion.

But the latent heat in which we are interested is different and is called the latent heat of vaporization. According to the present theory of heat, the heat necessary to change body from a liquid state to a gaseous one, is used in overcoming the forces of cohesion and always reappears when the body returns to its original state.

A pound of steam, by weight, not gauge, contains 1,178 units of heat, of which 212 are indicated by the thermometer and 966 are latent. One pound of water at 32 degrees contains 32 units of heat. If this one pound of steam were mixed with 5.37 pounds of water at 32 degrees, the temperature of the water would reach 212 degrees, the same as the steam before mixing. In other words, one pound of steam will raise one pound of water from 32 degrees to 212 degrees without losing any of its own sensible heat.

Another illustration: If we place in a vessel on a delicate pair of scales, 5.37 pounds of water at 32 degrees, and by means of a tube into the water admit steam at atmospheric pressure at the same time the water reaches 212 degrees by the thermometer, the scale will indicate 6.37 pounds, a gain of 180 degrees in temperature of the water, and only a gain of one pound in weight and without the loss of any sensible heat in the steam.

Using steam to temper the clay, we find by using the same formula as when using water, that the pugged clay would have a temperature of 436 degrees. But this is impossible as the clay would not condense the steam at this temperature, and in any event it could not be hotter than the sensible heat of the steam, that is 212 degrees. So that it will be necessary to use some steam and some water, which can be easily done.

Theoretically, we can use 5 pounds of water and 5 pounds of steam, by weight, which will give us a temperature of 212 degrees in our pugged clay. But practically, we can only have our pugged clay about 180 degrees, as that is as hot as it can be handled. You can all see that these hot bricks will dry much quicker than the cold or lukewarm ones will.

This is quite an advantage in preventing small hair cracks on the surface which has come in contact with the steam lubricated die. It is also quite an advantage in drying tender clay. The brick should be thoroughly heated in a saturated atmosphere, then gradually advanced into an atmosphere which has an ever increasing ability to absorb moisture, but dryers, as built commercially, do not always do this. Brick in a commercial dryer, are placed in, and at once commence to dry as well as get warm. The drying process is a shrinking one, while the warming is an expanding one; that is, the surface is shrinking while the center is expanding. This counter action is the cause of the cracked brick in the dryer, but if our brick are already expanded in the center they would have less tendency to crack when they commence to dry.

No doubt you are all interested in knowing how I succeeded in mixing the steam and the clay. Near the incoming end of the pug mill, at the bottom, I drilled three holes for $\frac{3}{8}$ -inch pipe and made the pipe dirt tight in the hole by using a lock nut inside and outside the pug. I connected these pipes to a pipe from the steam dome on the boiler. Each pipe has a small valve in it for the convenience of the pug mill tender in regulating the temper and temperature of the clay. Provision for draining these pipes should be made. It is necessary to have boiler pressure so that the steam will keep the clay out of the pipes. After the stream of clay has been started into the pug mill, turn on the steam—one, two or three pipes, as may be necessary to get all the temperature the hackers can stand. It is essential to have plenty of clay in the pug so that the steam is held down, as it were, by the clay.

S. P. BAIRD,

President The Standard Brick Co., Charleston, W. Va.

Mem. Amer. Soc. C. E.

Written for THE CLAY-WORKER.

AMONG THE POTTERS.



WITH MUNICIPAL improvements almost over for the year, there does not appear to be any let-up in the manufacture of brick at this season of the year. Money has been tight in some sections of the country and manufacturers of brick and sewer pipe assert that this has held back considerable business. The brick market has been very brisk. Prices are a little in advance over quotations of a year ago. However, the demand has kept up very well, all things considered.

The starting of the east end plant of the American Sewer Pipe Company, at East Liverpool, did not take any business away from other similar plants in the upper Ohio valley. There appears to be sufficient business for all. The car shortage has not been causing any great alarm, although some manufacturers anticipate trouble along this score ere another month passes.

Conditions with pottery manufacturers are at present equal to those at any time during the year. A shortage of small help, due to the opening of schools, has caused some annoyance in the clay shops. This is felt more this fall than ever before, due to the starting of the Newell plant of the Homer Laughlin China Company. This big plant takes a host of small help, while in other years local manufacturers were able to divide their forces. It is thought, however, that forces will be filled within a month.

Business continues good with all manufacturers. Prices are being maintained to a degree—a condition that will result in profits being shown at the end of the year. Orders are coming in heavy by mail, while business sent in by traveling salesmen is a little above the average. The very best goods have the call this year, while the cheaper grades of porcelain are not selling as well as in past years.

Manufacturers are giving some thought to the annual meet-

ing of the United States Potters' Association, which will be held again this year at Washington, D. C., at the Hotel Raleigh. Sessions will start a day or so after Congress convenes. The session last year at Washington and that at the Ft. Pitt Hotel, Pittsburg, in January, were two of the most profitable sessions ever held by the association. Closer ties have resulted throughout the United States.

Two new kilns have been erected by the Junction City (Ohio) Sewer Pipe Company. The plant is in full operation in all departments.

Orris Frank McKinney, one of the heavy stockholders of the Crooksville (Ohio) China Company, died recently at his home in Zanesville. He was identified with many business enterprises in that locality, and a resident of Zanesville for nineteen years.

Paving to be done by the East Liverpool Traction and Light Company and the Steubenville Railway and Light Company, which jointly is constructing an extension from Steubenville to Wellsville, Ohio, will prove the biggest job of the kind to be undertaken in the Ohio Valley this year. The company will spend over \$100,000 in this improvement.

With a capital stock of \$5,000 the Columbus Clay Manufacturing Company has been formed by Harry, Edward and J. E. Landrum and Henry and Fred J. Schmilk, all of Columbus. Sewer pipe, chimney tops and flue linings will be manufactured and possibly other clay products.

It is reported that three additional kilns will be built by the Continental Pottery Company, of East Palestine, Ohio. An addition to the clay cellar of this plant has been completed.

A new brushing machine, which has been in use in English potteries, is to be tested in American potteries at an early date. The machine has many points of advantage, as that of labor saving devices.

John McNicol, who has been associated with his brother, D. E. McNicol, in the operation of the D. E. McNicol Pottery Company, at East Liverpool, for many years, died suddenly—being ill less than three hours.

It is possible that the plant of the Worthington Pottery Company, at Columbus, Ohio, will be rebuilt. It is estimated that \$20,000 will be needed to place the property in operation.

The Ford City Pottery, at Ford City, Pa., has commenced operations with three bisque and four glost kilns. It will take several months before the entire plant is operating fully.

The new plant of the O'Connor Sagger Company has been purchased by the D. E. McNicol Pottery Company and will be converted into a yellow ware plant. Several new kilns will be added, increasing the yellow ware production of this firm nearly 200 per cent.

With a capital stock of \$50,000, the Keystone Pottery Company, of Crooksville, Ohio, has been incorporated by W. N., Z. W., W. L. and John G. Burley and Wilson Winter. China, sewer pipe and tile will be manufactured.

John W. Young, of Zanesville, has asked the Federal courts at Columbus, Ohio, for an injunction to restrain the Keystone Pottery Company from using certain and useful methods in decorating pottery.

The capital stock of the Canal Winchester Brick and Tile Company, which has just been formed, is placed at \$30,000. A plant which has been operated by William D. Boyer will be taken over. Incorporators are Lee Kramer, Edgar C. Chaney, Charles L. and William D. Boyer.

It is reported that all plans for a merger of stoneware interests in the Muskingum Valley are off for the present at least. The starting of the Acme Pottery for stoneware goods under the name of the Climax Pottery Company, which is controlled by the A. E. Hull interests, is said to have been the cause for negotiations falling through.

Now that conferences between committees representing the National Brotherhood of Operative Potters and the United States Potters' Association, have ended amicably, workmen received but one demand, although nearly thirty were presented for discussion. Other demands of a minor nature were agreed to by the manufacturers, but it was agreed to make these demands general in all potteries, i. e., workmen wanted good conditions in one plant adopted in another. The only new demand granted was that of a small advance in the making of teas and coffees and rolled edge plates. OMEGA.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



JUST AT PRESENT there is a noticeable slump in the building and building material market, which appears to be something more than the slackness ordinarily to be attributed to the latter days of the season. It follows the regular and healthy reaction from the normal mid-summer dullness.

Just the cause for this slump and the interpretation which is to be placed upon it, is a matter of some discussion here, and there are varying opinions. Things have by no means come to a standstill. There is still activity in construction work, and every day brings its sales, but they are not of the frequency nor size that the dealers have been accustomed to in the past three years or so, and in the yards there are brick stacked up as they are not normally. Of course this would follow a let-up in trade of no very pronounced proportions, inasmuch as the brickmakers have had their plants going at top capacity all season in anticipation that the demand would last at least as long as open weather. The unexpected break in the demand, therefore, would soon show evidences of over-production.

Joseph Downey, the building commissioner of the new city administration, proves the pessimist of the occasion. He insists that the building business has fallen off 35 per cent. within the past three months and that rents—already more than high—will soar still higher as a direct result.

"This falling off in the building business is due partly to the tight condition of the money market and partly to the high price of material and labor," averred the Commissioner of Buildings. "The market and the building material is controlled by a trust, and the price of all material has risen. Three years ago lumber could be purchased for \$18 a thousand feet, while it now costs more than \$30 a thousand. Steel has gone up more than 25 per cent. in cost, and figures show that the price of lime has been raised from sixty to eighty-five cents a barrel. As a result, building now costs from 35 to 40 per cent. more than it did formerly. In this it must be remembered that wages and the cost of labor have also gone up materially."

The commissioner is no doubt correct in assuming that the tightness of the money market is one of the reasons for the present slackness. There is a tendency on the part of certain monied interests to "fake" a panicky feeling for its political effect, in the hope of driving Teddy off his perch and of deterring any future aspirant from hopping onto the same bough. This would cause enough stringency to make a lot of prudent men begin to turn everything possible into cash, lest they be caught unaware in some high financial gale. Real estate, even improved real estate, is not readily convertible in Chicago. Easily 50 per cent. of the transactions in the local market are in part barter. It would come about naturally enough, therefore, that any stringency, however slight and however short of duration, should show itself first in the building market. The fact that it is cheaper to buy here than to build, also enters into the problem.

The suggestion of the commissioner's, however, that the high price of material and labor is responsible for this more or less sporadic slow-down in a really remarkable season, might seem to be somewhat illy conceived. The high prices show prosperity. High prices do not maintain in periods of depression. Moreover, in the very next breath, Mr. Downey goes on to mention high wages and high price of labor. These very fellows who receive the high wages, yes, and the well paid laborers, too, if they are thrifty, are the fellows who are responsible for the more modest building which constitutes a mighty large per cent. of the best season's prosperity. If Mr. Downey wants to see low prices and cheap labor in opera-

tion he should take a twenty-four hours trip into Eastern Canada—to Toronto, Montreal and Quebec. There he will find common builders—good enough to be used as front brick for much of the work one sees, too—selling at prices which would bring tears to the eyes of the heads of the Illinois and National brick companies here. Even the prices at which common brick were selling during the common brick war a year ago, would look like robbery to a Canuck who thinks he is paying a good price when he gives up \$3.50 a thousand. There, also, he would find bricklayers doing good work for money at which common labor would sneeze scornfully in this country. The last thing he would find would be any disturbance which he, coming from Chicago even in a slacker spell than the present, would recognize as "building activity," and he would have to wait a long time to find that. There may be a few gentlemanly "tightwads" who are hanging onto their money waiting—like kites or harpies—for hard times and days of cheaper material and cheaper labor, in order that they may fatten at the other fellow's expense, but they are very few indeed, it is safe to assert.

As I pointed out in last month's letter, there has been a considerable falling off in speculative building in the apartment house line; because of the movement toward the individual dwelling in the suburbs, and many of the new apartment buildings that have gone up have been in the outskirts of the city. While the house has been the chief object of activity in the spring and summer planning and building, however, there is a natural reaction again toward the apartment house. Architects are already getting busy with work cut out for next year, and with factory encroachments spoiling one good residence district after another, and with improvement of transportation facilities on the South Side, the tendency is to carry these structures farther and farther from the heart of the city. The reason for this is doubtless found in the fact that there is a certain regular and regularly increasing demand for apartment dwellings, which during the summer of activity less than usual in these lines, has filled up the supply on hand pretty well, and showed opportunities for more construction work in this direction.

There are also evidences of life in industrial and smaller mercantile buildings. Downtown, a number of good buildings are nearing completion and the Corn Exchange National Bank's building, the season's best, will soon begin to rear its frame. The Samuel Cupples Woodenware Company and the Samuel Cupples Envelope Company, both of St. Louis, will put up a brick building of mill construction and equipped with a sprinkler system, on a site 100 x 125 feet, which they have leased at the northwest corner of Illinois and St. Clair streets. The building will be six stories and basement and will cost about \$100,000.

A parochial school for Polish children is to be erected by the Roman Catholic Parish of SS. Peter and Paul, at Thirty-seventh and Paulina streets. The building will be finished in pressed brick and stone. The cost will be in the neighborhood of \$85,000. R. C. Berlin is the architect.

Work on the fine new armory of the Seventh Regiment, I. N. G., will be begun in October. This building will occupy the block bounded by Wentworth avenue and LaSalle street and by Thirty-fifth and Thirty-third streets. It will be one story in height, covering an area of 160 by 258 feet, and will cost \$150,000.

The Hydraulic Pressed Brick Company reports a busy season with its plant at Porter, Ind., running top capacity all the time practically. They have recently installed a new Chambers machine—the No. 10 Special.

If the new charter is adopted here on the 17th of this month there is every likelihood that the promised great works of municipal improvement will prove a good thing for the material men here. It is sincerely to be hoped that brick pavements in place of the unsightly and uneven granite blocks, and the yielding, costly asphalt or the temporary macadam, will be one of the first municipal improvements undertaken. Chicago could do well to take a few lessons from her little sisters "downstate."

It is an acknowledged fact that brick pavements invariably promote the growth of smaller cities by improving the appearance and usefulness of the streets and inciting the property owners to improve the appearance of their houses, lawns and walks. It has also been shown that the same tendency

exists in great cities like Chicago. That brick will also stand the wear and tear of heavy traffic is demonstrated by the brick pavement in LaSalle street in Chicago. The chief business streets of Peoria, Ill., Joliet, Ill., and Springfield, Ill., all thriving cities where wheelwear is not light, are paved with brick. Paris, Ill., a small city with only 6,500 inhabitants, is spending in the neighborhood of \$200,000 in paving its streets with brick and the calculation is made that the pavements now being laid there, allowing for growth of the town, will last a score of years at least without repairs. All these facts are being collated and it is expected that the Board of Local Improvements, in looking about for opportunities to outshine past boards, will take proper notice and give the citizens an economical pavement. The comparatively few miles of brick paved streets in Chicago bear eloquent witness to the worth of this material, and put the other streets to shame.

SCRIP.

Written for THE CLAY-WORKER.

AMONG PHILADELPHIA BRICK YARDS.



BUSINESS IS rather quiet now out at John Sullivan's yard, Union avenue, Lansdowne. They have been hustling up until three weeks ago—finishing off the old work—and have had a good season, although they state there will be no further boom this season. They have finished their contract with S. C. Michaelson, for 166 two-story houses at Sixtieth and Arch streets. This required 4,500,000 bricks. They have been serving bricks for the Cobb Creek intercepting sewer and will finish the job in about a year's time. Aside from these they have had many small operations.

F. Leitter's Sons, at G street and Nicetown Lane, are exceedingly busy and will be so for the next three months. They are at present supplying thirty-four houses for John E. Roferts, Memphis and Allegheny avenue; thirty-four for Joseph Noerling, Edgement and Orthoden streets; thirteen for John Janke, Cedar and Allegheny; nine for McBain & Jenkins, East Westmoreland street; thirteen for P. Boyce, Belgradetown; also a factory at Hancock and Westmoreland streets for Dorsey & Smith. The last named factory requires, alone, about 2,500,000 bricks. They have besides, many small jobs of two and three houses; also forty two-story houses at Memphis and Allegheny avenue and are serving bricks for a sewer over in that direction. Since the death of Fred S. Leitter the plant has been in the full charge of Girard Leitter, who is ever hustling for the interest of the firm. It is through his efforts and ability that the firm can account for its present active business.

The Aldan Brick Company, Providence Road, Aldan, Pa., have been busy since the first of the year and will be so for some time to come. The plant has recently been increased by the purchase of six acres of ground. The new land averages ten feet of clay. This, with the original land, which was running shallow, will last them until the expiration of the lease—eight years hence. This is always a busy yard, Mr. Ream sticking so close to the management that he has only had about one day's vacation during the year. We cannot say, though, that he shows any ill effects of the same, and are forced to the problem, "if he looks so well and hearty with but one day's vacation, how well would he look with an ordinary week's vacation?" This yard has supplied Mr. Michaelson with bricks for 200 houses—two and three-story—at Fifty-eighth and Havreford avenue, besides smaller operations in and around Philadelphia.

The Holmes Brick Works, Holmes, Pa., have supplied bricks for many houses this past year in Darby and Media, and have just about finished brick for forty houses and have also served bricks for the Hotel Folsom. The plant has had a complete overhauling and been practically renewed. The Martin machine has been improved, new boilers have been added, a large steam dryer, also a new kiln. The plant turns

out 15,000 bricks per day. The men—negroes and white, with but one Italian, give good service—some of them having been at the yard since it first started. We are glad to state that Mr. M. J. Smith who owns the plant, has almost recovered his normal health, after being a patient sufferer for many years.

M. E. LOCKINGTON.

OHIO RIVER BRICK MANUFACTURERS ORGANIZE.

The brick manufacturers of Western Pennsylvania, Ohio and West Virginia, held a meeting at the Tamaqua Club, at Beaver Falls, Pa., on August 28, and effected a permanent organization of the brick manufacturers of this section of the country, which will henceforth be known as the Ohio River Brick Manufacturers' Association. After organizing, the association elected the following officers, who will serve for the first year: Archie Stewart, Beaver, Pa., president; Paul S. McMichael, Beaver Falls, Pa., secretary, and R. R. Hice, of Beaver Falls, Pa., on August 28, and effected a permanent or was appointed chairman of the committee to draft a constitution and by-laws for the new association. The organization is the direct result of the freight rate increase as announced by the railroads on brick and which has been so aggressively fought by the manufacturers. As was announced in our last issue, suits had been entered against the railroad companies making these advances in rates, and the result was that the railroad companies compromised the matter by agreeing not to make any increase until January 1, 1908, which was the date asked for in the petition of the Brick Manufacturers' Association to the court. To date, as the matter stands, it is a victory for the manufacturers and the assistance of the Interstate Commerce Commission will be earnestly solicited, an appeal to this body having already been made. The manufacturers are determined to win the fight, which, from the present indications promises to be long drawn out and bitterly fought by both sides. The railroads held a meeting in Chicago on August 30th, at which time the matter was discussed in detail and the traffic men then sent out the reports from this meeting that they had come to the decision, after going thoroughly over the entire matter, that the proposed new rates would stand, and that the Interstate Commerce Commission will, in all probability, so decide. This is disputed by the brick interests, however, and these interests claim that they will oppose every move toward that end.

The manufacturers claim that they have excellent grounds for offense in the fact that heretofore the rate of 20 cents per ton on paving brick having been profitable for the railroads, the rate should also be just as profitable on all classes of brick. On the other hand, the traffic officials of the railroads claim that if the brick manufacturers cannot afford to sell brick at the old prices under the proposed new classification, it is up to the manufacturer to raise his prices. It would be difficult to do this, however, in the face of the small profits in the business at this time and the unusually keen competition between manufacturers.

Don't See Ahead.

Why is it that some tilemakers never seem to see far enough ahead to have a stock of tile sufficient for the demand?

"I give it up. Don't know."

There is a tilemaker in my neighborhood who makes tile every summer—a few—and by the time the winter sets in, he is out of tile, except a few small tile. He don't make enough to pay expenses. I have to send away to a large factory to get what I want and have them shipped to me and pay the freight. A year or so ago I told my neighbor tilemaker that I would need so many tile of certain sizes, and wrote the order plainly for him, thinking that he would fill it, but he did not. Why is it?

"He don't see ahead."

Other trades and callings look out for every possible opportunity to increase their trade. But common tilemakers pretty generally expect trade to come to them some way without any special effort on their part.

"Don't see ahead."



A LOSING COMPETITION.

IN THE manufacture of drain tile it is often true that a competitor will deal unkindly blows to a neighbor manufacturer in many ways, and in doing so add nothing to his own success, but rather injure the trade. Tile sold at less than cost of manufacture is a damaging business all around. To the manufacturer of the tile it is a direct loss, to his competitor it is not neighborly, nor business-like, and it is discouraging to future trade. The farmer who buys tile for less than it is worth, is misled in his idea as to the actual cost of making tile. He concludes that the manufacturer of drain tile is not fool enough to sell below the cost of making them and that the price at which they are sold is too high—that he will wait until the price lowers before he will undertake the needed drainage of his land and by so much the work of drainage is hindered.

All in all, it is a losing business to sell tile below cost—don't do it.

"BUSINESS IS BUSINESS."

"Frank, are they giving you trouble on the price of tile?"

"Yes, and the farmers, many of them, will buy cheap tile, it matters not how mean they are."

"Which, Frank, the farmers or the tile, are mean?"

"Oh, the tile, of course."

"You stick to your business, pile up the best tile you can. You'll sell them by and by. Business is business."

LITTLE DANGER OF FROST.

That drain tile will freeze and be damaged in the drain if laid too shallow, is believed by many who have had some experience in tile drainage. In fact, we are advised frequently that tile should be laid deep enough not to be injuriously affected by frost. It is important that drain tile should, ordinarily, be laid deep, it will add to the depth of the soil and protect against damage from heavy falls of rain and from injury to growing crops by drouths; but drain tile should be hard enough to resist the effects of hard freezing when laid in the ground, even if laid shallow. It is true, that if the tile were filled with water and frozen hard, they would probably burst, but such a condition is hardly possible. The water passing down through the earth would be frozen first, and the water supply mostly cut off, so that the drain would be practically empty, unless the water supply came up from underlying water. Then the temperature of the water would be increased so that there would be no danger of freezing. In shallow drainage, the earth surrounding the tile would first freeze and cut off the water and the drain having a regular fall would run low before freezing the water in the tile so as to injure it.

Tile that are well burned may lie upon the earth's surface, exposed to the rains and frosts of severe winter weather for years without injury from frost. Where the work of laying a drain is well done and the drain has a sufficient outlet, it is hardly possible to damage, by freezing, a hard burned tile. Further, we have yet to learn that drains have been greatly injured by freezing where the tiles were only of medium hardness and the drains properly constructed.

Much of the tile draining that has been done in the past

is very shallow—so shallow, that in extreme cold weather the tile have been surrounded with frozen earth, and yet there is little or no complaint of drains failing on account of soft tile being damaged by frost. In selecting tile, we advise that tile should be hard enough to give off a clear metallic ring when struck together; they will handle better, have less loss from breakage and form a smoother conduit for the water, other conditions being equal.

There is, we think, little danger of injury to well laid drains from frost, even if the tile are not burned to regulation hardness.

SWAMP LANDS.

We have in the United States, according to Professor Shaler's estimate, more than 100,000 square miles of swamp lands, lying east of the 100th meridian; and these, when reclaimed by drainage, are destined to become the most productive lands we have.

Our wide experience in the past in reclaiming small areas of swamp lands, assures us that these lands when drained are destined to become the most fertile for crop production.

Drainage systems have been planned under state laws embracing large areas of land. These, in many instances, are so flat that it is difficult to obtain sufficient fall or suitable outlets for drains when laid. The citizens, by combining their efforts and digging broad, deep, open ditches, sometimes miles in length, are able to secure suitable outlets for under or tile drains.

That our readers may get a clearer idea of the advantages of such work, we refer to one such system in Mason and Tazewell counties, Illinois, reported by Professor I. O. Baker: This system was begun in 1881 and completed in 1884, which embraced about 12,000 acres, and its effect upon the total yield of grains of all kinds is stated by Professor Baker, as follows:

Total yield of grain in 1881.....	26,057 bu.
Total yield of grain in 1882.....	58,647 bu.
Total yield of grain in 1883.....	92,360 bu.
Total yield of grain in 1884.....	113,660 bu.
Total yield of grain in 1885.....	122,160 bu.
Total yield of grain in 1886.....	202,000 bu.

In the year 1885 a waterspout destroyed about 400 acres of corn, which lessened the total for that year. Again it must be taken into account, that before this land was drained there was much of it too wet to cultivate at all. But the total gain of 458,542 bushels in the five years cropping after draining following the crop of 1881, is an object lesson that ought to call our attention sharply to the advantages of draining of wet or swamp lands.

The ratio of increase each added year after drainage is proof that the benefits of drainage are more effective each added year for several years after the land is drained. This is true of all farm lands that need underdrainage, the benefits increase from year to year in increased yield of products and better soil conditions—requiring less labor to prepare the seed bed and less labor in the cultivation of the crop when cultivation is required. There are millions of acres of farm lands now in cultivation, which, if well tile drained, would double their past average production of crops with a great saving of labor.

The foregoing points very plainly to the fact, that by the drainage of 100,000 square miles of swamp lands, millions of dollars would be added to the aggregate wealth of this country.

That our swamp lands are destined to become rich agricultural fields, must be evident. We quote from Professor King's book, entitled "The Soil," as follows: "During the forty-four years following 1833, the country of Holland added to itself lands exceeding in square miles the combined area of the states of Rhode Island and Delaware, by systems of dikes and methods of drainage so difficult as the removing

of surplus water over the sea barriers with pumps. And so fertile are these reclaimed swamp lands, that twenty years ago there lived on the 12,731 square miles a population averaging for each square mile, 302 people, 20 horses, 118 cows, 70 sheep, 12 goats and 27 hogs; and, side by side with this population, there were raised 2,907 square miles of field crops, exclusive of pastures and hay, and the average yearly product of these fields between 1871 and 1875 is placed at \$45.36 per acre."

There rises before us a vision of what must soon be—the reclaiming of the millions of acres of low lands along the Mississippi and other rivers in this country by systems of levees, dikes and drains, and the millions of population that will occupy these fertile lands promises much for the future prosperity of this country.

Written for THE CLAY-WORKER.

PITTSBURG AND WESTERN PENNSYLVANIA BRICK AND BUILDING NOTES.



AUGUST WAS another excellent month in the entire Pittsburg district for the many manufacturers of fire, paving and building brick. Some fine large orders were placed and in many instances the difficulty is to be able to get a sufficient number of brick burned to fill the contracts on hand, without taking care of the small current orders. A large proportion of the local plants are running to capacity and will continue to do so for the remainder of the year at least. Stocks in the sheds are badly depleted and after the fall rush is over, it will take several months of steady running to fill up the stock sheds with the reserve that is usually carried on hand. It has been impossible this summer and fall to keep this stock in the proper shape, and as a result of the many forced shipments, the works are out of all of the burns most used.

The demand for fire and other refractory brick continues and as the large steel companies are still planning more repairs and relinings for the blast furnaces, stoves and open hearth furnaces, there will be some good orders for this kind of brick placed shortly, as it is the practice of all of these concerns to always keep a complete lining in reserve.

At the present time, among the steel companies, the Carnegie and the Jones & Laughlin interests are the heaviest users, and are consuming large quantities of clay and silica brick. The construction of the immense new plant of the latter company, at Aliquippa, Pa., a short distance below Pittsburg, where ten blast furnaces will be erected, is requiring an immense quantity of high grade refractory brick, and the several concerns that are supplying it are kept busy on these orders alone. The announcement of the awards for this material was made in our last issue.

The hollow tile fireproofing business in this immediate vicinity has shown considerable falling off during the past month, but there is very little change in the total of the business, as that received from distant cities has about balanced the local loss.

Sewer pipe manufacturers are running very busy, and there is a far larger demand for vitrified sewer and soil pipe now than there was at the same time last year, and it also compares favorably with the earlier months of the present year. The use of this kind of pipe throughout this portion of the state is gradually increasing with the construction of the many sewage disposal systems in even the small towns.

Paving brick is not so strong as it was a month ago and will, in all probability, continue to fall off for the remainder of this year, as the street paving season is rapidly drawing to a close. There has been more street paving with fire brick in Allegheny, Westmoreland, Armstrong, Green, Beaver, Fayette and Washington counties this summer than ever before, and the style of paving has proven most satisfactory in all cases.

Building brick, particularly the common and red pressed,

continues in excellent demand on account of the increased amount of building that was the feature of the past month. The records of the Department of Building Inspection of the city of Pittsburg show that there was an increase during the month of August of over \$1,000,000 in the value of building permits over the figures for July, and about the same amount over August, 1906. The indications are that September will show a similar increase, as there is still a large amount of work to be started and gotten well under way this fall and winter.

George J. Hibner, for many years in the employ of the Savage Fire Brick Company in various positions and at the various plants in Western Pennsylvania, has left that concern and is now in charge of the brick works of the W. J. Rainey Coke Company, of Fayette County. This company owns 6,000 coke ovens in the Connellsville and Uniontown fields and is the consumer of a large number of fire and silica brick. As a result of the difficulty in obtaining the brick as required, the company built a plant of its own, which at the present time has a daily capacity of about 18,000 9-inch equivalent, which includes silica and fire brick for coke oven construction, vitrified paving brick and common building brick, all of which kinds are now being manufactured. The company announces that it proposes to increase this capacity immediately to 30,000 per day in order to keep up with the demand.

The new plant of the National Glass Brick Company, at Connellsville, Pa., was placed in operation for the first time the latter part of last month, and is now turning out its unique product at a very satisfactory rate, considering that both the process and the plant are new. This is the first plant of this kind that has been erected in this part of the country and manufactures an opaque brick which closely resembles an enameled brick. It is of the same size as the ordinary brick and can be made in any color desired. There is already a good demand for the new brick, but its use is being confined to ornamental decorative work as a rule, and it is not thought that it will ever replace to any noticeable extent the enameled clay brick, which has stood the valuable tests of time. C. H. Lawson is president and general manager of the new concern.

At Hawthorne, Clarion County, Pa., a fine grade of clay and shale suitable for the manufacture of high grade building and paving brick has been found, and the Board of Trade of that place will offer special inducements for prospective brick manufacturers to locate a modern plant there. The clay is on the main line of the Buffalo & Allegheny division of the Pennsylvania railroad and has the finest shipping advantages. There is also an abundance of both gas and coal.

The plant of the West Branch Fire Brick Company, located at Drury's Run, a short distance west of Renovo, Pa., has been seized by the sheriff and unless a number of large claims are satisfied, will be sold out this month. The plant has not been in steady operation for some time and it is reported in that vicinity that it has been a losing proposition only on account of dissension among the owners and the management. The plant is well equipped, and with but a few minor exceptions, is modern in every way. The property consists of the plant, a stock of about 200,000 brick, 38 mine cars, carts, wagons, tools, horses and the clay mines.

The red building brick works of the Gratztown Brick Company at Gratztown, Pa., have changed management, having been sold last month to Cyrus Echard, of Connellsville, Pa. The sale included the entire property and the new owner has placed the plant in full operation, it having been idle since last spring. The company has just been awarded a contract for a large shipment of common red building brick for several large buildings that are being built in the vicinity by the Bollinger-Andrews Construction Company, of Pittsburg, and has a number of other large orders in prospect. It is the intention of the new owner to run the plant all winter.

The Union Specialty Manufacturing Company, of Pittsburg, which was recently incorporated, announces that it will manufacture a newly patented improved brick handler, for which the concern has acquired the rights. Charles A. Tyler, Oscar F. Grant and John G. McDowell are at the head of the company, which operates a plant near Pittsburg.

The Savage Fire Brick Company, which operates plants for the manufacture of high grade silica and fire brick in Clinton County, Pa., has added another department, which will

now include open hearth fire brick and shapes to the output. The company has also discontinued the use of mules for hauling the clay from the mines to the works, and has installed a narrow gauge locomotive, as well as larger cars.

Some fine orders for coke oven brick have recently been awarded to the Harbison-Walker Refractories Company, Farmers' Bank Building, Pittsburg, which will be shipped from the various silica plants in the Pittsburg district. Among these orders is one for several million high grade brick that will be required for the 278 new coke ovens that are to be built at Ernest, Indiana County, Pa., for the Jefferson and Clearfield Coal and Iron Company, and an order for the brick for 250 ovens being built at Ellsworth, Pa., for the Ellsworth Coal Company's plant, which is owned by the Lackawanna Steel Company; 200 new ovens at the Herbert Works, New Salem, Pa., for the Connellsville Central Coke Company, for which plant silica and clay brick will be furnished. The Pittsburg Coal Company has also awarded this firm the order for furnishing the silica and clay brick for the new coking plant of 350 ovens at the Grindstone No. 2 plant, an order amounting to approximately 3,000,000 9-inch equivalent. The plants of this corporation are very busy and the firm has a large number of heavy orders on the books for execution during the fall and coming winter.

At a test of vitrified paving brick made by the United States Engineers, at Washington, D. C., the brick submitted by the C. P. Mayer Brick Company, of Bridgeville, ten miles below Pittsburg, won three out of the four tests, and accordingly the Government placed an order for over \$30,000 worth of these brick with the C. P. Mayer Brick Company. The test showed that the brick were the hardest submitted and at the same time were not brittle enough to chip off too easily.

The discovery of a large vein of clay and shale of excellent quality for the manufacture of building brick has prompted a number of capitalists of Ebensburg, Pa., to take options on the property and a movement has been started toward the formation of a new company which will be known as the Ebensburg Brick Company. Several of the leading attorneys of the town are the prime movers in the project.

E. R. Dudley, of Bradford, Pa., who for the past year has been operating the plant of the Bradford Pressed Brick Company under lease, has discontinued this arrangement with the officials of the concern and will engage in another line of business. The company reports having closed a contract with John T. Boyle, also of Bradford, who will operate the plant under contract for the next year. The plant is located at Lewis Run, and is one of the most successful plants in the northern part of the state.

The Calder Brick Company, of Emporium, Pa., has been awarded the contract for furnishing several hundred thousand vitrified fire brick to be used this fall in the paving of a number of the streets at Lock Haven, Pa.

The City Council of Lock Haven, Pa., has awarded the contract for the brick for paving East Church street to the Penn Vitrified Brick Company, of Cameron, Pa. There was considerable surprise occasioned by this award in view of the large number of local paving and fire brick manufacturers.

The Mt. Jewett Fire Brick Company, of Mt. Jewett, Pa., has been incorporated under the laws of the State of Delaware, with an authorized capital stock of \$200,000. The company manufactures fire brick of all grades for all refractory purposes. The incorporators of the company are Thomas E. Moulton, J. G. Ansler and John G. Gray, all of Mt. Jewett.

The plant of the Hutchinson-Barnes Brick Company, on Maple avenue, Fairmont, W. Va., narrowly escaped destruction by fire the latter part of last month. Fire was discovered in the roof of one of the main buildings and was started by sparks from one of the kilns. The fire department soon put the fire out, however, and the roof of the one building was the only portion of the plant to suffer. No delay was occasioned at the plant.

F. A. C.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



THE BUILDING situation in San Francisco continues in a highly satisfactory condition considering the stringency in the money market. A large number of high class buildings have been started during the month and satisfactory progress has been made in those which were started earlier in the year. The building permits for the month of August show a total of \$2,971,000. This shows a considerable drop as compared with the months preceeding, but as far as building within the fire limits is concerned, builders are agreed that more is going on now than for several months past. The falling off in the aggregate of the building permits issued, seems to be due to the dropping off of frame work in the temporary retail districts and in the outlying apartment houses and residence sections. Brick men are fairly busy, though the demand for common building brick is still below the combined capacity of the brick yards about San Francisco bay. Face brick, terra cotta tiling and structural terra cotta are in good demand. Structural terra cotta is being used largely in fine work, having won back the popularity which it lost a year ago. Few sheet metal cornices and trimmings are now in evidence.

The Carquinez Brick and Tile Company, with offices in this city and works near Martinez, Cal., has secured one of the largest contracts ever let in California. This calls for over 6,000,000 bricks to be supplied for rebuilding of the Palace hotel on the old site, at Market and New Montgomery streets. A heavy landslide recently did considerable damage at the company's plant, but the trouble has been overcome and work is progressing as rapidly as ever.

The Home Pressed Brick and Tile Company has been incorporated at Oakland, Cal., with a capital stock of \$100,000, of which \$27,400 has been subscribed. The directors of the company are W. S. Cook, William A. Johnson, Frank L. Dennis, Edwin Ingram and J. W. Burnett.

The Bay View Brick Company, of San Francisco, has levied an assessment of 5 cents per share on its capital stock.

The Great Western Brick Company, with works at Richmond on the east side of San Francisco bay, reports contracts on hand for over 3,000,000 brick for reconstruction work in San Francisco. The company's first kiln of 300,000 brick has been burned and is now ready for shipment.

At the last meeting of the Board of Directors of the Hyfire Brick and Tile Company, of Vallejo, Cal., it was decided to expend \$1,000,000 in the enlargement of the company's business.

The Pacific Coast Pottery Company, of San Jose, Cal., reports the arrival of the structural material for its building at the corner of Fourth and Keyes streets. This building will be 84x150 feet, three stories high, of corrugated iron, and will cost about \$14,000. Terra cotta ornaments, flower pots, tile and conduits, will be the chief output of the new plant.

N. W. Evans, of Mayfield, Cal., reports the discovery of an extensive deposit of good brick clay about two miles south of that town. He is now arranging to put in a brick making plant.

J. H. Hornby of the Black Diamond Brick Company, of Black Diamond, Cal., states that work will commence at once on the construction of the company's brick works.

A report from San Bernardino, Cal., that interests allied with the Pacific Coast Borax Company is preparing to manufacture brick from borax tailings at Daggett, in the desert section of San Bernardino County, is attracting considerable attention from local brick men.

H. H. Peterson, of Holtville, Cal., is preparing to substitute machinery for hand work in the manufacture of brick. Machinery costing between \$5,000 and \$6,000 has been ordered.

There has been another overturning of affairs in the management of the Granite Pressed Brick and Crushed Stone

Company, of Los Angeles. The old directors have been deposed and the following have been elected: H. B. Gerhard, Lafayette Todd, W. Windheim and L. Ernst. Mr. Gerhard has been elected president and Mr. Todd, secretary. A. C. King has been made manager.

Niebel, Colson & Williams are planning to put in a brick plant with a capacity of 20,000 brick per day, at Kennewick, Wash. Deposits of clay have been found in that locality and it is planned to make use of these.

The Tonque Pressed Brick, Tile and Improvement Company has been organized at Albuquerque, New Mexico, with a capital stock of \$300,000. The plans of the company call for a plant with a capacity of 20,000 pressed brick per day.

Advices from Portland, Ore., report that the brick market there is very firm, with prices tending upward, partly on account of the demand and partly on account of the increase in the cost of manufacture. Common brick is now selling in Portland at \$10 and face brick at \$42. The following estimate of the daily capacity of the various important plants now turning out common brick for the Portland market is given: A. N. Willis, 40,000; St. John's Brick Company, 15,000 to 20,000; Western Clay Manufacturing Company, 33,000; L. E. Kern, 40,000; James Anderson, 32,000; Peter Hobkirk, 20,000; Theodore Jensen, 20,000; Henry Heerdt, 20,000; A. Hoomisson 15,000; McMahon Bros., 25,000; Hoover Company, 20,000; Kalk & Son, 22,000; Estacada Brick and Tile Company, 15,000; Randels & Kinsey, 30,000; Close Brick Company, 32,000, and Freiburg Bros. (now building), 40,000.

The Pacific Face Brick Company, formerly the Newberg Brick Company, of Newberg and Portland, Ore., is proceeding with its plans for the erection of a factory at Willamina, at a cost of \$150,000. A railroad is now being built from the town of Sheridan to the company's clay bed at Willamina. The output of the new plant is to be 40,000 per day of dry and stiff clay face brick.

Mrs. Jean B. Stewart, of Aberdeen, Wash., has disposed of the extensive brick plant started in that place by the late Mr. Stewart to her son, who will organize a company to operate the plant.

The Garvanza Brick Company, one of the recent incorporations at Los Angeles, Cal., reports a contract for 2,000,000 brick for the new Y. M. C. A. building in that city. The company will add new machinery to the value of \$15,000 and is now selling additional stock to raise the necessary funds for the work.

J. W. Utter has completed a brick plant at Marshfield, Oregon.

The Zimmer Fuel Company, of Coeur d'Alene, Idaho, has bought out the plant and business of the Washington Brick and Lime Company of the same place.

The Los Angeles, Cal., Board of Public Works reports the receipt of a number of letters from eastern paving brick men who are interested in the movement of Los Angeles to try brick paving on a number of its thoroughfares. The cost of paving brick in Los Angeles is now 33 cents per foot and this price will, it is thought, induce a number of eastern houses to begin manufacturing at or near Los Angeles.

The Los Angeles, Cal., City Engineer reports that by December 1st of this year the city will be able to make a showing of 125 miles of sewers laid during the year ending on that date. This will be three times as much as in any previous year. Bids are now being received for a considerable mileage of new sewers.

SUNSET.

San Francisco, Cal., September 5.

A BAD DEBT.

"Mike," said Plodding Pete, "did you hear dat stump speaker say de world owes us a livin'?" "Yes. But dere's no harder job on eart' dan collectin' bad debts."—Washington Star.

Written for THE CLAY-WORKER.

WITH THE BRICK MANUFACTURERS OF DETROIT.



ALTHOUGH THE month of August showed a gain in the value of building permits issued in the city of Detroit, the brick business in general has fallen off slightly. Not that the Detroit brickmakers and dealers are idle or have trouble in looking for customers. The rush of business for the past three or four months has been heavier than ever before in Detroit and many brick manufacturers are now filling orders taken some time ago. At present, however, orders are not coming in as fast as they did and instead of being disappointed, brick men are glad of an opportunity for a breathing spell and for a chance to catch up with orders.

Brick prices in Detroit have been well maintained all summer and it is probable that no changes will be made at this time. The prices now are \$6.50 and \$7.00, the latter figures being obtained wherever unusually long hauls are necessary.

Notwithstanding the fact that business in general showed a marked falling-off everywhere during the month of August, the building permits issued from the fire marshal's office in the city of Detroit showed a gain over the same month in 1906. This is considered a remarkable showing here, because everywhere else building operations suffered a loss rather than a gain. The figures for August, 1907, are \$1,055,600, as compared to \$1,042,950 a year ago, a gain of \$12,650. About 12 per cent. of this amount is for additions, the balance representing entirely new buildings.

These figures give the total for the year a good lead over the total last year. Including August, total figures this year are \$9,945,405, as against \$8,394,350 last year, which is a gain of \$1,551,055. Interesting figures have also been compiled by R. L. Polk & Company, publishers of the Detroit city directory. This directory, just out, gives Detroit a population of 449,000 and places the city seventh in the extent of its building operations, although it is only ninth in population.

Among new buildings planned here and on which work was begun during August, are the following: Factory for the American Electric Heater Company, \$50,000; concrete block apartment house for Mrs. H. E. Baker, \$10,000; Christ English Lutheran Church, \$60,000; addition to Gordon & Pagel Bread Company factory, \$7,000; E. H. Dunham, apartment house, \$15,000; Donald J. Healy, store and office building, \$50,000; terrace for Champlain Improvement Company, \$35,000; J. L. Hudson, residence, \$50,000; addition to Eckhardt & Becker brewery, \$50,000.

Pressed brick will play an important part in nearly all of the above buildings. Concrete, it will be seen, will be used in the construction of a number of large new buildings in Detroit, but, in general, brick is the prevailing building material.

Since the department of public works has investigated the asphalt paving situation here, it has decided to do its own work. The cost for asphalt will be \$2.65 per square yard, while under the bids from the asphalt companies the city would have paid more than \$3.50 per yard. A saving of approximately \$1 per yard is shown.

Concrete construction is being used in Detroit at present by two of the largest automobile manufacturers in this country: the Packard Motor Car Company and the E. R. Thomas Motor Company. The former company is enlarging its plant and has just about completed one of the largest factory buildings, of reinforced concrete, in Detroit. The Thomas plant is of reinforced concrete, with concrete block curtain walls.

Considerable anxiety was felt in Detroit, when it was announced about the middle of August, that Detroit bricklayers would go out on strike. Later communication, however, with the international secretary brought out the fact that the re-

port that Detroit bricklayers would be called out, was a mistake. Local walking delegates stated also that as Detroit is a strictly closed shop, the men here are all satisfied, they have no grievances and that they would be rather indignant if called out at this time.

What is considered a striking feature in building operations has lately been brought out in Detroit. At present, two big buildings are being erected on Woodward avenue, one of reinforced concrete for Grinnell Bros., and the other of brick and steel for Tuomey Bros., the latter directly opposite the reinforced building. On the building of reinforced concrete is a large sign: "This building is being erected entirely of reinforced concrete by the ——— system of construction." On the other building is also a large sign: "This building is being erected by ——— and is entirely of brick, stone and steel construction." Such a sign as the latter is not often seen, as brick and steel construction ought to be too well known to need such an advertisement.

WOLVERINE.

NO. 85 "DOUBLE EAGLE" BRICK REPRESS.

TO MEET the demand for a heavier repress, with a wider range in size of material that can be pressed, The American Clay Machinery Company, of Bucyrus, Ohio, has designed the No. 85 "Double Eagle" press. In designing this machine, The American Clay Machinery Company retains the well recognized "Built Right, Run Right" principles of the standard Eagle repress, but has embodied a number of new features in the No. 85 which increases its range and usefulness. A photograph of the front view of this press is presented herewith.

The No. 85 repress is designed with a substantial base, built up to receive the main shaft bearings. A canal is cast around the lower flange of the base to catch the surplus oil and conduct it to a pipe which connects with a tank under the floor. From this tank a simple rotary pump takes the oil and forces it through pipes in such quantity as is required, the surplus returning to the tank. This small feature is an important one because it saves one of the little leaks that go to increase the cost of the output.

The vertical guides are bolted to the base and by removing the front guide the table can be removed and both upper and lower cross heads and cam shaft can be taken out. This is another advantageous feature. The table can be removed by unscrewing four small bolts, or the off-bearing table can be detached so that molds can be removed from either side of the press. This construction makes all wearing parts of the press very accessible. The guides are broad and are faced with steel where the cross heads slide on them. This facing can be removed and renewed when found necessary. At the same time the guides can be adjusted to take up the lost motion caused by wear. All bolt holes are reinforced to add strength.

This press is provided with gears and pinions on each side, equalizing the strain. The driving shaft is provided with a well designed pedestal outer bearing. The gears and pinions are covered by neat cast iron covers to prevent the clay from falling into the teeth. Shields, both front and back, are provided (not shown in cut) to prevent the clay falling into the cam and the cam roller. The base is inclined between the bearings so that the surplus clay slides to the

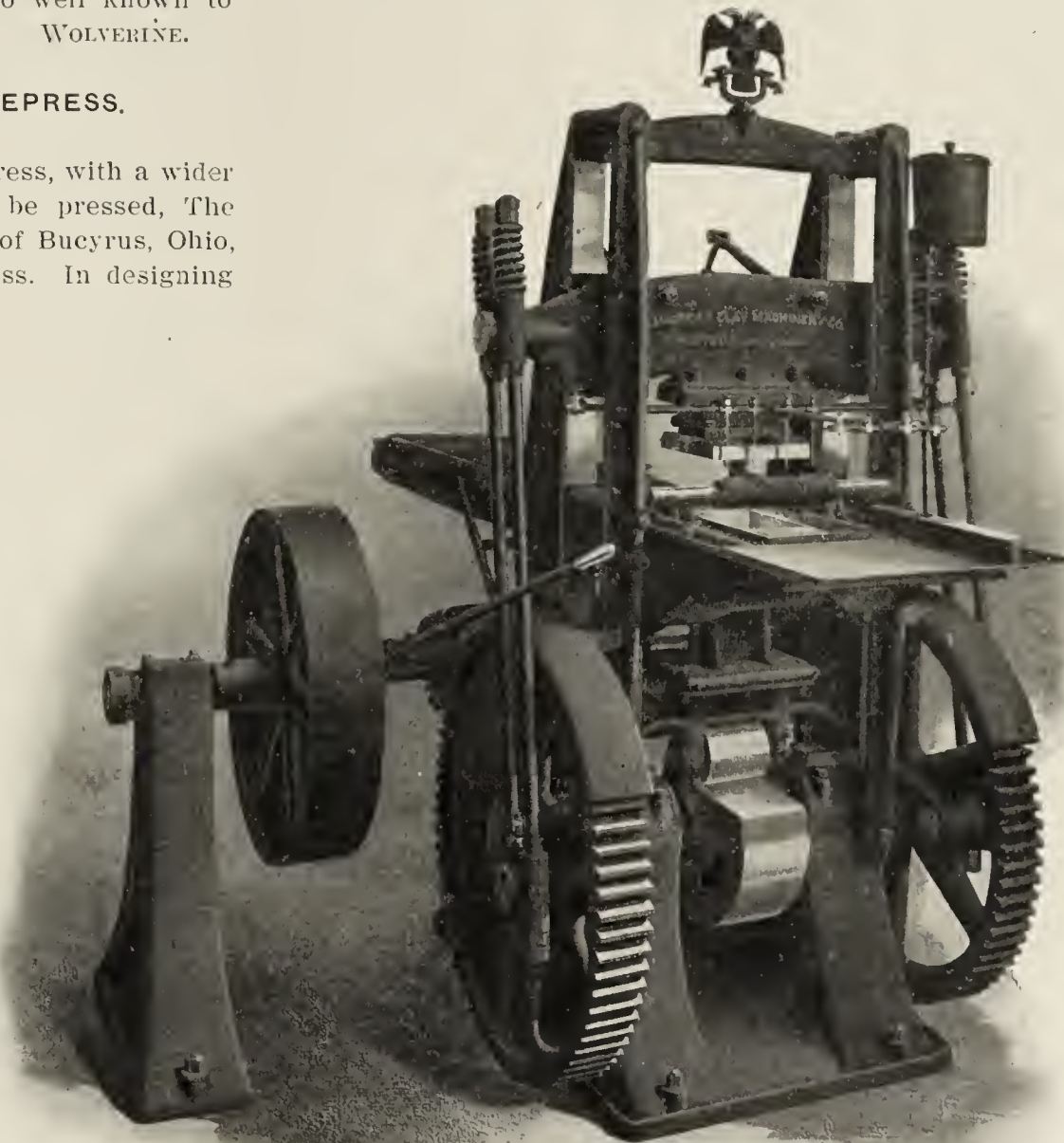
front away from the cam. All corners are well rounded, making the 85 Press an attractive, as well as a strong machine. All these small things go to make up a complete excellence.

Depth of molds, 8 inches; greatest thickness that can be pressed, $7\frac{1}{4}$ inches; largest block, $15 \times 17 \times 7\frac{1}{4}$ inches. Floor space, 5 feet 10 inches, by 11 feet $1\frac{1}{2}$ inches, with a standard length of off-bearing table, which is 6 feet from center of pulleys. Height of table from bottom of base, 5 feet 2 inches. Height over all, 9 feet 1 inch.

A Challenge.

Editor THE CLAY-WORKER:

We enclose herewith, a letter recently received from the Simons Brick Company, of Los Angeles, Cal., and hope you will see fit to publish same, as it is the only means we have of learning if this record can be beaten. It is surely an interesting proposition. The machine used at the Simons plant



"Double Eagle" Repress No. 85.

is a Potts horizontal sand mold machine, with a Potts disintegrator and mold sander, working direct from the clay bank.

C. & A. POTTS & Co.

SIMONS BRICK COMPANY,

Manufacturers of

COMMON BRICK, PRESSED BRICK, ROOFING TILE AND FIRE PROOFING.

Los Angeles, Cal., August 14, 1907.

C. & A. POTTS & Co., Indianapolis, Ind.:

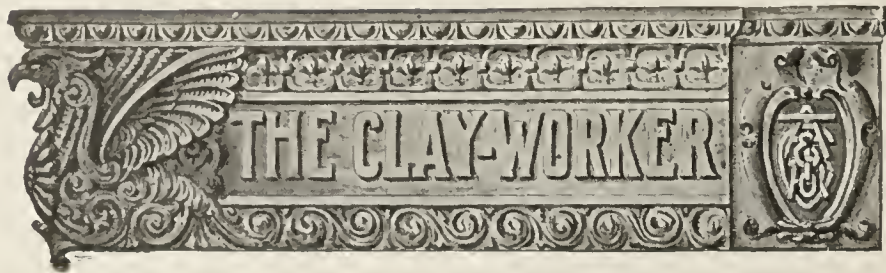
Gentlemen—We have a gang working on one of your machines, and they wish to make a world's record on a soft mud machine. What machine holds the record for making the greatest number of brick from 7:00 a.m. to 5:00 p.m., one hour taken for dinner. Our men made a record today of 52,000 brick in nine hours.

Let us know what the record is and they will try and beat it. If they do beat it, I want you to give each one of them a medal. The record was made today with ten men. This does not include the men actually engaged in getting clay to the machine, but does include hoe down and all others.

Yours very truly,

SIMONS BRICK CO.

By J. Simons, President.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

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SEPTEMBER, 1907.

No 3.

CURRENT COMMENT.

It looks like a whole lot of the lumber of the future will make a noise like terra cotta.

* * *

Yes, it improves a concrete building to face it with brick, and while you are about it you might as well go a step further and make it all brick.

* * *

There are some things you can tell a brick burner, but there is a whole lot more he has simply got to learn himself before he is worth while.

* * *

The bricklayer seems to be still getting more out of the business than the brick manufacturer, and doesn't seem to be doing much to help push the work along, either.

* * *

Success don't consist in making mistakes, nor entirely in making money, for that matter, but without either mistakes or money the game would soon grow rather monotonous.

* * *

The papers and magazines are full of advice these days about how to save your savings. What most people want to know first, though, is how to get them.

* * *

A breakdown in the busy time is an expensive but forceful reminder that a dollar saved in the purchase of a machine is not always a dollar earned, but may mean several dollars lost.

* * *

When the farmers begin to market their crops they will also do more or less planning for new buildings, and one thing that every brick man should make it a point to do, is impress on all of them he comes in contact with, the advantages of building with brick, and also point out its availability now as compared to other building material. We need

more farm houses built of good brick and it is doing a good service for the country as well as enlarging the brick business, to push this idea along.

* * *

Keep an eye out for new uses for clay products, but don't neglect the old ones, for the field is enlarging all the time and if you spend too much time looking for something new some things that are better may get away from you.

* * *

In the process of developing enthusiasm for concrete work, too many people make the mistake of figuring that a yard of cement, three yards of sand and five yards of gravel, will make nine yards of concrete, when in reality it is only about five; quite a difference.

* * *

Some smart people explain all about things being high by the simple theory that money is so plentiful that it is depreciating in value. We knew something was seriously interfering with efforts to make both ends meet, but then the mysteries of finance are at times too much for us, and call for more complicated analyses than a sample of blue clay.

REINFORCED CONCRETE DANGEROUS IN INEXPERIENCED HANDS.

After reading for some years a series of puffs in daily and weekly papers about concrete as a great building material, in which all sorts of ridiculous claims are made for it, both as to cheapness and good quality, it is a bit refreshing to catch a paragraph now and then of a different tone from the same papers. A case in point is some comments by the Pittsburg Dispatch on the recent collapse of the Bridgeman building in Philadelphia, which reads in part as follows:

"It emphasizes the fact, so often pointed out, that reinforced concrete must be handled along scientific lines, and with much care. Otherwise it is dangerous. The usual explanation of such accidents is that supports have been removed while the work is 'green.' That statement may explain, but it does not excuse. Mistakes of that sort should not occur. Concrete construction of ordinary lines is tedious if the factor of safety is fully regarded, but no contractor has any right to try to make speed at the expense of security.

"One thing is obvious. Concrete is a new type of construction. It must be followed cautiously until the factors of safety are absolutely determined. Stresses and strains must not only be carefully computed, but ample margin must be given until experience fixes limits. Every engineer and architect is aware of the treachery of improper mixture in concrete, and it really seems this type of construction should be put under expert official inspection. General building inspection is recognized as a necessity. Concrete demands something more than perfunctory supervision, at least until experience has reduced the frequency of such accidents as that in Philadelphia yesterday."

INTELLIGENT ROAD BUILDING.

The influence being brought to bear these days for better highways and more of them is much stronger in pressure and greater in volume than it has ever been before. Everybody realizes now as they never did before the importance of good roads, but certain classes of people are urging the matter with more force and persistence than others. One forceful element in the good work comes through the use of automobiles. The influence of these people has been felt for some time, but with the great increase in the number of automobiles being used, the influence has grown and expanded until it is today a much larger factor than it was even a year ago. In many cities automobile clubs are organized for the purpose of pushing this good work, and they in turn enlist commercial bodies of all kinds, so that with it all it looks like

the opening of a great era of road building. It is all needed, too. But there is road building and road building and there has probably been more money and time spent to less permanent good in making and repairing highways than in any other public work. It has been the idea in the past, if there was any definite idea, that anybody could take a crew of men and construct or repair a road. Many thousands of dollars have been spent in a haphazard way, doing some temporary good, it must be admitted, but contributing very little to permanent benefit. To get the best results in road building, or in any other undertaking, it requires not only intelligent, but specifically educated supervision. When a man goes to erect a building of any magnitude he doesn't think of doing it without calling in an architect to make plans and supervise the work that it may be rightly done. Building a good road of any great length costs considerably more than a building, and such an undertaking should be put in the hands of competent engineers who have made a thorough study of the subject and are qualified to plan and direct the work. In short, it's time to quit this haphazard wasting of money and energy on roads, and set about the matter in an intelligent manner, surveying and planning them in the same careful way that railroads are laid out and constructing them all the way through with a view to future service. There is no doubt either but what we are making some progress in this line, but the sooner we get hold of this idea of intelligent road building in the right way, the sooner will come a reasonable solution of the highway problem. The brick people, not only as public citizens, but also as brick manufacturers, should, wherever practical, join in all these movements looking toward the end, not only of more road building, but more intelligent road building. It's a natural continuation of street building, and like street building, when rightly carried out in many instances, means the use of paving brick.

A RUDE AWAKENING—A CONCRETE EXPERIENCE.

There are lots of things in this world that are slow about being found out because a fellow naturally don't like to tell things when they are on himself and make him appear in a rather ridiculous light. Occasionally, however, a man will get in the right mood and tell the jokes on himself, and thus we get a little inkling of things that are, but are not generally spoken of. An instance of this kind came up the other day in connection with the use of concrete where a big contractor told about losing money on a job by having figured wrong, and through this loss he got an awakening, rather rude it is true, but effective just the same. There was a big concrete job to be let for foundation work and things of that kind in which the specifications were rather easy, 1, 3 and 5. This contractor sharpened his pencil half way up to the rubber and went after this job to get it. He got it, too, but before it was half done he realized that there was something wrong with his figures. It was taking more cement, more sand and more gravel than he was counting on. He went over his figures carefully to see if he had in any way miscalculated the number of square yards involved. His figures on the quantity seemed to be correct, so he was puzzled for a while and considerably worried. By and by after frowning and thinking over it for quite a while a great light broke on his mind and relieved his worry some, though it did not help him financially. He found he had figured that a yard of cement, three yards of sand and five yards of gravel would make nine yards of concrete. When he got to putting it in, of course it didn't. The sand and cement simply served to fill the voids in the gravel so that his calculations were out about 33 1-3 per cent., enough to make his loss account even larger than he figured his profit account would be.

Probably many others have stumbled over this same point and have pocketed their loss and said nothing rather than tell the joke on themselves. It don't matter whether

the mixture is 1, 3 and 5 or 1, 2 and 4, the resultant product is not equal in yards to the sum of the factors making it up, because part of it swallows up the other part. The gravel swallows the sand, the sand swallows the cement, and if a man hasn't figured right, and calculated on these things, the chances are that between them it will swallow up all his profits. The realization of this point has brought the question up for discussion and experiment among various people to determine just how much of cement, sand and gravel it takes to make a square yard of concrete. Can you answer the question and be sure of yourself? Different people seem to have different ideas on the subject. One architect, when asked about it, said that an aggregate of three yards made up of cement, sand and gravel in the proportions of 1, 2 and 4 should make approximately 1 1-3 yards of concrete. That's cutting it down some, isn't it, from three yards to 1 1-3 yards, and makes quite a difference in figuring the cost. Verily there are lots of things it takes us a long time to find out. We have been wondering for a long time from what source comes the wide difference between the estimates of enthusiasts on concrete construction and its cheapness and the stern reality which comes later with a cost greatly in excess of all calculations. Part of it is, probably swallowed up in this matter of aggregates where 2 and 2 don't make 4, and 3 only makes 1 1-3.

ANOTHER CONCRETE FAILURE.

It is impossible to gather a record of all the concrete failures, but now and then one of more prominence, one in which much damage is done and human life is lost, comes to light through the columns of the daily papers. There was one at Philadelphia, June 10, in which it is reported that two men were killed and fifteen injured. It was a four-story reinforced concrete building, in course of erection for Bridgeman Bros., 1426 Washington Avenue, Philadelphia. According to the Public Ledger, the building gave way and fell without warning to the 42 plasterers and laborers working in the basement and on the several floors. Many workmen were distributed upon the roof, where the last concrete girders were being built in the northern end of the building. There was a sinking of the northeastern portion of the structure followed by a terrific wrenching of the covered iron supports. Without any sound of warning, the upper portions of the building, with their tons of heavy iron girders, reinforced by concrete, slowly gave way and fell. There seems to be, as in most similar cases, a difference of opinion as to just what caused the failure. Some say that the foundations were not good, some that the props were knocked out from under the concrete while it was still green, some say one thing and some another, but the sad fact remains, that while the contractors seemed to have conformed to both the letter and spirit of the building laws of the city, the structure failed and wrought havoc to both life and property. It is this element of uncertainty of concrete, the danger of its failing at times, even when put up under careful restrictions, and the almost certainty of failure when not carefully put up, that is making people afraid to risk it.

It is worthy of mention in this connection, that concrete construction and its element of uncertainty has been a source of more trouble and work to those who frame and execute building laws in cities than anything else. From the many accidents and the great amount of faulty construction, it has seemed imperative to safeguard this work with minute restrictions, covering as fully as possible all the details of the work. Practically every city having building laws has had to frame special laws covering concrete work. They have always found it a difficult job, too, to frame effective restrictions that will offer a fair degree of protection and at the same time not work any unnecessary hardship on those who desire to use this method of construction. Not only that, but frequently after laws are framed and carefully made up in all their voluminous detail, they are found to be inadequate and then the whole problem is open again. Perhaps this thing

will help solve itself in time and concrete will gradually work into its proper channel, but meantime we are paying certain penalties and experience, though a good one, is proving to be an extremely expensive teacher in many instances.

CONVENTION ANNOUNCEMENTS.

While it is a little too early to give accurate information as to all the various meetings, the dates of two conventions have already been decided.

The Iowa Brick and Tile Association

Will hold its twenty-eighth annual meeting at Des Moines, January 22 and 23. The official announcement and program of the convention will be published in a subsequent issue of the CLAY-WORKER.

The Canadian Clay Products Manufacturers

Will hold their sixth annual meeting at Ottawa, November 19, 20 and 21. The headquarters have not yet been decided, nor the program completely arranged. The CLAY-WORKER will make a more complete announcement in the October issue.

OBITUARY.

Joseph Stafford, one of the pioneer brickmakers of Illinois, died at Springfield, Ill., Saturday evening, September 7, aged eighty-two years. The Evening News of that city, in an interesting obituary, states that Mr. Stafford deserves to be remembered as having been the first to manufacture brick from shale. It was his proud boast that he was the first one to make shale brick at Galesburg, Ill. He afterward became a resident of Springfield and it was due to his investigations and enterprise that the immense and valuable beds of shale in that vicinity were discovered and utilized in the manufacture of paving brick. Mr. Stafford was an enthusiast on the subject of brick, tile and pottery. For many years he was a regular attendant at the State conventions and when for any reason he was unable to be present at these meetings, he never failed to read the reports of same in the CLAY-WORKER, which he prized highly. Mr. Stafford was a man of sterling character and wielded a helpful influence among those with whom he was associated.

OUR FUNNY LANGUAGE.

You take a swim
You say you've swum;
Your nails you trim,
But they're not trum;
And milk you skim
Is never skum.

When words you speak,
Those words are spoken.
If a nose you tweak,
It's never twoken;
Nor can you seek
And say you've soken.

If a top you spin,
The top is spun;
A hare you skin,
Yet 'tis not skun,
Nor can a grin
Be ever grun.

If we forget,
Then we've forgotten;
Yet if we bet,
We haven't botten.
No house we let
Is ever lotten.
What we upset
Is not upsotten.
Now, don't you think
Our language rotten?

—New York World.

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ESTABLISHED COMPANIES, as well as beginners, find our services profitable. We correct faults of manufacture and keep plants up-to-date. Engagements for special service, or by the year.

THE RICHARDSON-LOVEJOY ENGINEERING CO.

[See page 322.]

WANTED, FOR SALE, ETC.

WANTED—Capital \$15,000 to \$20,000 to put in a brick business in Charlotte, N. C. The plant is already equipped and the present owner needs more capital to increase the business at present. The profit now about 20 to 25 per cent. net. Write for particulars. LEROY DAVIDSON, 9 1 L Charlotte, N. C.

WANTED.

By one of the largest face brick, fire brick, common brick and pottery plants in the South, first class help of all kinds. For our face and fire brick plants we want first class pressman, setters, tossers, burners and laborers of all kinds; also men that are handy with the trowel on repair work around kilns. For our pottery plant we want first class jolly men, pressers and turners for majolica ware. We have a fine climate the year round, no cold weather, pleasant surroundings, and our superintendents are all northern men. To good men that understand their business we can offer good inducements and steady work all the year around. Address with experience, wages expected, etc., to SOUTH, 9 3 dm Care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on Pages 302, 303, 304 and 310.

200%

MORE

Radiating Service than any "Hot Air" Dryer made.

Simple of operation and construction.

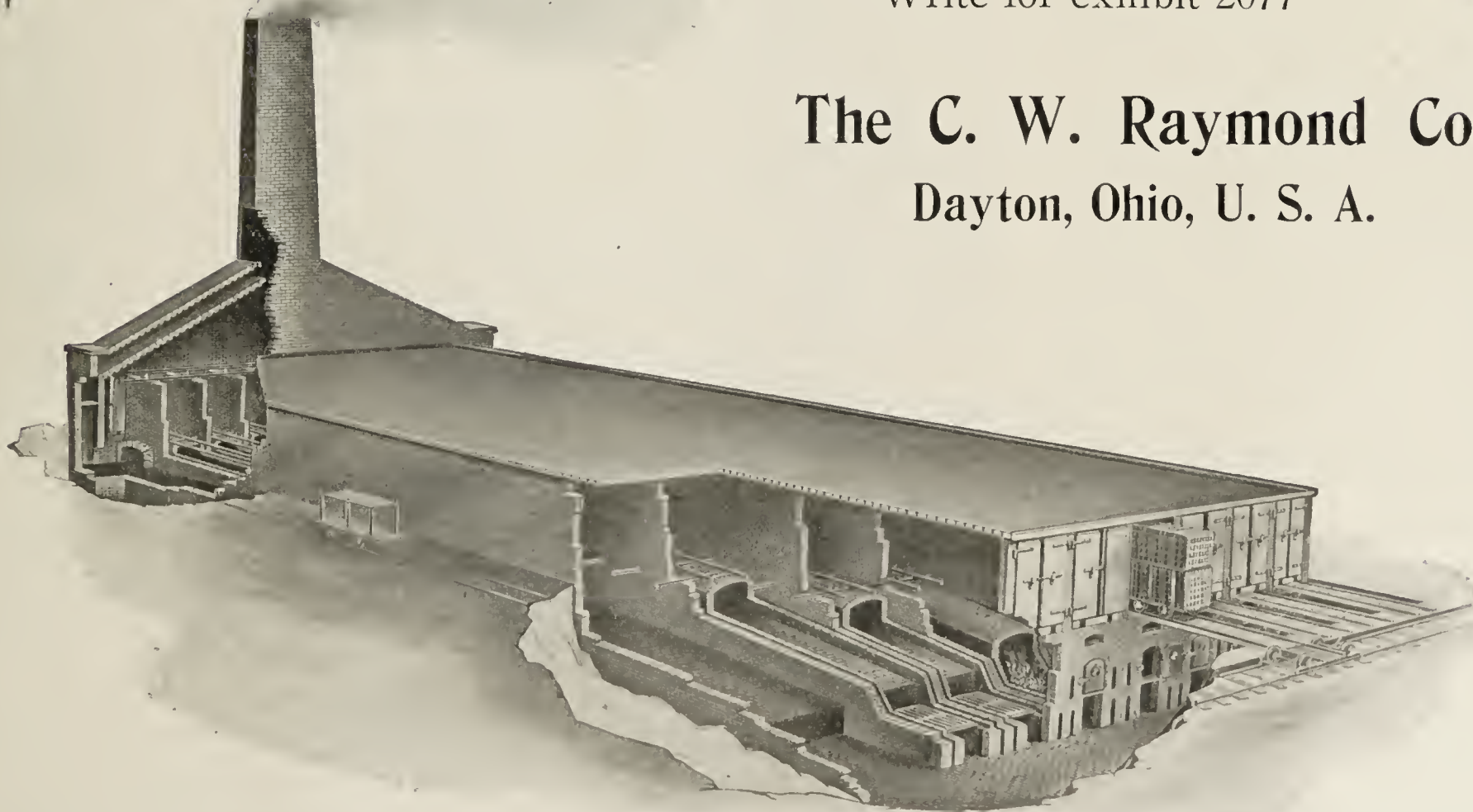
Burns any kind of fuel.

Constantly under perfect control.

A new system of ties and a positive rail clamp
absolutely prevents spreading of the track.

Write for exhibit 2077

The C. W. Raymond Co.,
Dayton, Ohio, U. S. A.



THE RAYMOND RADIATED HEAT DRYER

Written for THE CLAY-WORKER.

BRICK AND BUILDING NOTES OF CLEVELAND AND VICINITY.



CONDITIONS HERE have not changed materially during the past month. The demand for pressed and paving brick continues as heavy as ever but there seems to be something of a dullness in the common brick market, although some of the dealers report a very fair line of orders.

Considerable work is under way in Cleveland and in the surrounding towns and the supply men are all busy. There will be a brisk fall as builders are busy finishing up summer work. The building of several big schools, several hotels, a market house, a zoo building and other big structures are already in sight for next spring.

Bids were received August 28 for the new West Side market house, but were rejected by the Board of Public Service on the ground that they were above the estimate. The contract for the excavation and basement was let to the C. H. Fath & Son Construction Company, of this city, and work has already commenced. It is not certain whether brick or terra cotta will be used on the building.

George H. Gynn's brick plant, which was destroyed by fire some months ago, has been entirely rebuilt at an estimated cost of about \$30,000. Horton machinery was used throughout. Two new Horton machines and a Cummey dryer have been recently installed. Electricity is used as a motive power. The plant is located at Harwood avenue and Beyerle road, but owing to the fact that the present clay bank will be exhausted in a few months the management is contemplating moving the whole plant over near the Wheeling tracks where the new bank is located. A fair business is reported this month.

A number of changes have been made at the plant of the Metropolitan Paving Brick plant in Newburg. A new kiln has already been finished and another is about to be installed. Four more tunnels have been added to the dryer, the Rodgers system has been used throughout. Most of the plant's stock has been sold to local contractors this year for paving and sewer purposes.

The plant of the Farr Brick Company, at 125 Reeves avenue, Newburg, is reported as being very busy. The owners claim that the yard supplies a superior grade of brick because it is free of lime. Preparations are being made to spend \$20,000 for new equipment this winter. A new brick machine and dryer are to be added, as well as a new kiln. The manager says his plant has about all the business it can handle.

The Brookside Brick Company, another concern which was destroyed by fire, has its new plant working smoothly and has all the business it wants. It reports that common brick is selling at \$6.50 for run of kiln and \$7 for select stock.

Dawson & Carder have rebuilt their kilns this summer at an expense of \$6,000 and will add a new soft mud machine. The present capacity of the plant is 30,000 brick a day. A satisfactory business is reported from this plant, which is located in Kingsbury Run near Kinsman road.

The Ohio Clay Company, which is making a specialty of manufacturing hollow brick and fireproofing tile, announces that it will double the capacity of its plant this winter. Business has been so rushing, however, that definite arrangements for equipment have not yet been considered. The outlook for this line of brick for next year is said to be exceedingly good.

The Masons Supply Company has had a good month's business in its brick department. A new block is being built for the Bradley estate at West Third street and Noble Court, in which 55,000 pressed Canton brick are being used. Through the same agency, the Forest City Brick Company has been given a contract for 3,000,000 shale brick to be delivered to the Reaugh Construction Company for sewer purposes. Deliveries have already started on the big order.

One of the finest brick jobs attempted in Cleveland for some time is now being executed on Euclid avenue, where a residence is being built for Arthur F. May, a local druggist. About 40,000 iron clay Roman brick are required on the job. The Masons' Supply Company, agents for the Iron Clay Brick

Company, of Columbus, are supplying the brick. The residence is to cost about \$20,000 when completed.

The Deckman-Duty Paving Brick Company, of this city, announces that it has all its product sold for the season and that it is put to its wits end meeting the unprecedented demand. No effort has been made as yet to close up any business for next season, although a number of jobs in some of the towns and cities in Northern Ohio are to be let in the next few weeks.

At the plant of the Malvern Clay Company, two new boilers having a capacity of 125 h. p. each, have been installed in a new boiler house built to receive them. At the Collinwood plant of the Deckman-Duty Company a new 9-foot fan has been placed in position, six tunnels to the dryer being added at the same time. Improvements are also being made at the Carrollton plant of the same concern and preparations are being made for a big business next year.

Two prominent builders of Cincinnati called upon W. H. Hunt, of the Cleveland Hydraulic Press Brick Company, a few days ago. They were Charles E. McCammon, a well known Cincinnati building supply man, and Harry Cortes, another Cincinnati dealer. Mr. Hunt took them out to the plant at South Park in his automobile and showed them about. This plant, by the way, was put out of business for a few days during August by a famine in water. Early spring brought a flood which almost drowned out the plant; now the reverse is the case, for there is no water with which to continue operations. New arrangements were made for a water supply and the plant was once more set in active motion. Extensive changes are being made at the plant, details of which will be announced by Mr. Hunt shortly.

An unfortunate accident happened at the plant of the Stowe-Fuller Brick Company, on Perkins avenue, early this month, when a workman was fatally injured by the falling upon him of five tons of cement. He was hurried to a hospital. The cause of the accident is unknown. Another man was fatally hurt in a cave-in at the plant of the Metropolitan Brick Company, on Canal Road.

Despite the poor outlook for the securing of money for paving purposes at the beginning of the present season, an unusually large amount of street paving has been accomplished this year, as the reports of President W. J. Springborn of the Board of Public Service indicate. Springborn declares that he expects all city contracts to be finished by the time frosty weather sets in. Altogether 132 streets have had paving laid on them this season, involving a total area of 4,761,560 square feet. Of these, forty-seven have been entirely completed, leaving a balance of 3,144,330 square feet yet to be finished. Much of this work is practically completed but has not been officially accepted by the city.

Contracts for twenty-one miles of brick paving on country roads have been let by the County Commissioners this year. They say that for the most part all of this work will be finished up before the snow flies. Extensive plans are being made by the commissioners for more brick pavements for next season, to replace the plank on several toll roads which have recently been acquired by the county at considerable cost.

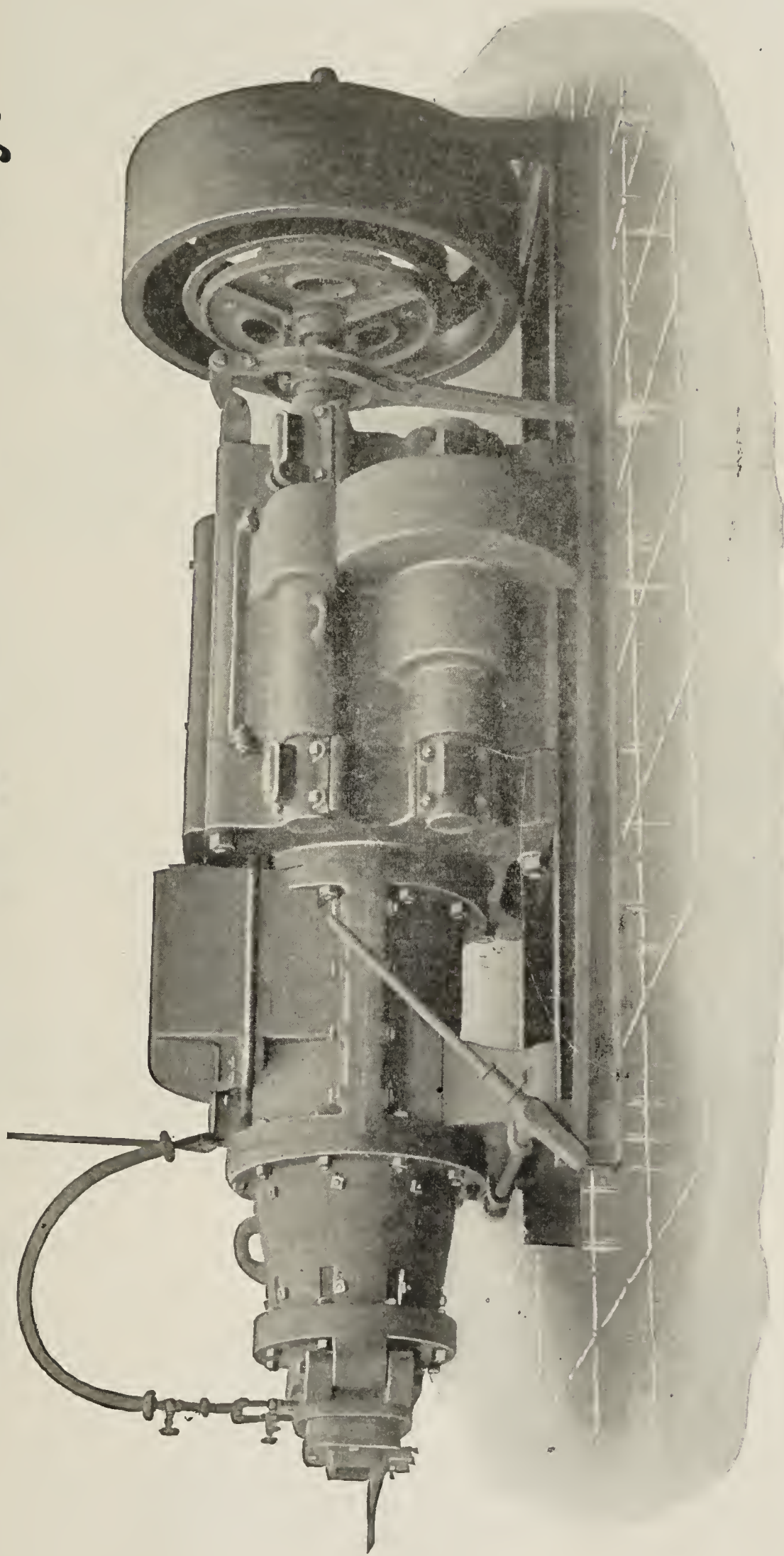
A mammoth new water works tunnel, involving the use of many million of shale brick, is planned in Cleveland by the City Engineer. The tunnel will cost about \$600,000 and will be 15,000 feet long, jutting out into Lake Erie from the west side of the city, which district it is planned to supply with water. The total capacity of the tunnel will be 50,000,000 gallons per day.

Another city job involving a big brick contract is being advertised. The city will spend \$70,000 for a new contagious disease hospital on the West Side. It will be one of the most modern in the state. The city is planning also to expend \$40,000 for a new zoo building of brick or terra cotta.

BUCKEYE.

The Ceramic Brick Company, of East Liverpool, Ohio, has increased its capital stock from \$10,000 to \$50,000. Brick is made from a patent process, mainly from useless matter cast off by potteries. An additional kiln is being erected. The plant is now equipped with six drying tunnels with a capacity of 24,000 brick each.

Modern Stiff Mud Brick Machinery.

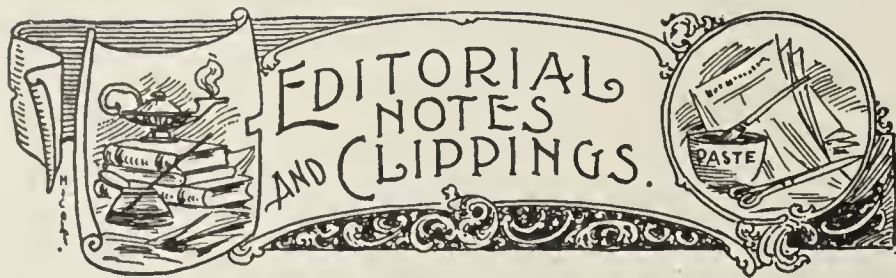


We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.



Bullard & Johnson will establish a plant at Fairmont, Minn., for the manufacture of tile.

The Owensboro Brick Company, of Owensboro, Ky., has been incorporated with a capital stock of \$100,000.

The Elk Fire Brick Company, St. Marys, Pa., will increase its capacity by enlarging the plant very materially.

Wm. Dull, manager of the Dickson Brick Company, died at his home in Dickson, Tenn., July 24, after a short illness.

W. R. Whitney has sold his interest in the Salina Vitriified Brick Company, Salina, Kan., to F. C. Hadden, vice-president of the company.

G. B. Buhler, of San Francisco, Cal., is investigating the advisability of establishing a plant at Edmonton, Alta., for the manufacture of sewer pipe.

The new brick plant of the Columbus (Ohio) and Hocking Coal and Iron Company, has been placed in operation. It is located in the Hocking valley.

Albert Cake, an employe of the Denny-Renton Brick and Tile Company, Seattle, Wash., was caught in the shafting while oiling some machinery and mangled to death.

A number of improvements are being made at the plant of the Aledo (Ill.) Brick and Tile Company, including the installation of a new clay crusher and the building of some new kilns.

A company is being organized to erect a brick and tile plant at Austin, Minn. One hundred thousand dollars will be expended on the plant. The clay has been tested by experts and pronounced first-class.

A company is in course of formation at Cold Spring, Minn., which will equip and operate a large and up-to-date brick manufactory. Peter Maurin is to be in active charge of the business as manager, and those interested will invest altogether about \$25,000.

The Shields-Chamberlain Company, of Hackettstown, N. J., has been incorporated to manufacture brick stone, building materials, etc. Capital stock, \$10,000. Incorporators: Thomas A. Shields and Emma E. Shields, Hackettstown, N. J.; Piereson M. Chamberlain, Netcong, N. J.

J. A. Haynes, of Cleveland, Okla., has in contemplation the erection of a brick plant at that place. He has an option on the plant of the LaHarpe (Kansas) Shale and Brick Company, and if satisfactory arrangements can be made will move same to Cleveland instead of building an entirely new plant.

The Detroit Roofing Tile Company is the name of a new concern which has been incorporated at Detroit, Mich., for the manufacture of roofing tile, terra cotta and brick. The company is capitalized at \$25,000, of which \$20,000 is paid in, and work on the plant will be pushed as rapidly as possible.

Lee Childers is at the head of a company that is being organized to manufacture brick at Jacksonville, Ore. The plant, which will be first-class in every particular, will be operated by electric power. Several acres of a superior quality of clay have been purchased and work on the plant will begin at once.

What might have been a bad fire at the plant of the Wooster (Ohio) Shale Brick Works was discovered in time to prevent serious loss. Just what caused the fire is not known, but it is supposed to have been the result of natural gas flashing back from one of the tunnels. The flames were confined to one of the drying sheds and were discovered and extinguished by three workmen who are employed at the plant during the night.

The plant of the American Clay Product Company, at Forty Fort, Pa., is to be enlarged so as to double the present capacity. About seventy-five more men will be given employment. It is planned to erect two more kilns, which will have a monthly capacity of between 120 and 130 tons and which will more than double the present capacity of the plant. In addition to these an addition to the main building is to be erected, which will be about 100x100 in size and a kiln shed for the two

new kilns is also to be erected. These additions will be built on the front of the present building.

Fire at the brickmaking plant of the Kyle Rock Company, Kansas City, Mo., caused a \$1,000 loss September 1st. The origin of the fire is unknown.

The Hanover Red Pressed Brick Company, Hanover, Ohio, is to be reorganized and the plant enlarged. C. H. Forry will continue as manager.

Arrangements are being made to enlarge the plant of the Redfield Brick and Tile Company's plant, at Redfield, Iowa, owing to the increased demand for their products.

The Pierre Brick and Tile Company has been incorporated at Pierre, S. Dak., with \$25,000 capital stock. The incorporators are Wm. G. and J. M. Bower, and A. W. and C. E. Ewart.

Perry Moon, an employe of the Hartford (Conn.) Brick and Tile Company, was buried beneath falling clay at the clay bank and instantly killed. He was a married man and leaves several children.

Thomas Kelly and Alfred Town have purchased the brick plant of Kelly Bros. & Company, at St. Boniface, Manitoba, Canada, and will hereafter conduct the business under the firm name of Kelly & Town.

The plant of the Valley City Brick Company, at Grand Rapids, Mich., was badly damaged by fire recently, which started in the kiln sheds. The loss is estimated at \$5,000. The plant of the Grand Rapids Brick Company, adjoining, was also slightly damaged.

The new paving brick plant of Burke Bros., at Fort Smith, Ark., commenced operations September 1, and they expect to begin to pave the streets of that city early in October and continue the good work until seventy-one miles of brick streets have been laid.

The Standard Brick and Tile Company's plant at New Glasgow, Nova Scotia, was entirely destroyed by fire September 6, throwing one hundred men out of employment. The loss is estimated at \$100,000. The plant will be rebuilt without any unnecessary delay.

Articles of incorporation have been filed by the Mt. Jewett Fire Brick Company, of Mt. Jewett, Pa. The company, which has a capital stock of \$200,000, will manufacture, buy, sell and deal in fire brick. Thomas E. Moulton and J. G. Ansler are the principal stockholders.

An amendment to the articles of incorporation of the Kaysville Brick Company, of Salt Lake City, Utah, has been filed with the County Clerk, by which the capital stock of the company is increased from \$50,000 to \$100,000, divided into shares of the par value of \$100 each.

Pierce G. Wolf has brought suit against the Columbus Clay Manufacturing Company, Columbus, Ohio, for \$5,000 for injuries received by the explosion of dynamite May 1, and his son, Frank Wolf, has brought suit against the same company for \$10,000 for the loss of several fingers while working with machinery.

The Holmes County (Ohio) Coal and Clay Product Company has been incorporated with \$75,000 capital. A Board of Directors has been elected and the following officers: President, C. D. Parkinson; vice-president, R. L. Palmer; secretary and general manager, W. P. Walker; treasurer, C. J. Fisher. Active operations will soon commence.

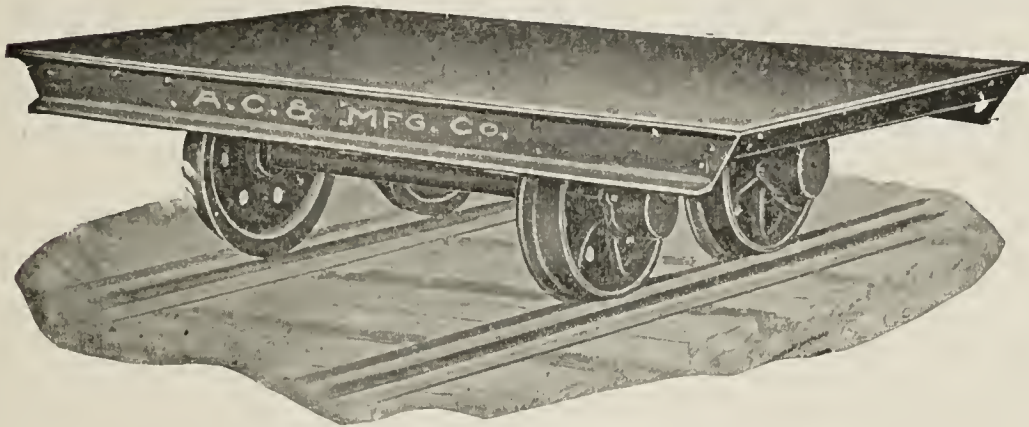
James A. Gray, of Saco, Maine, one of the best known brick manufacturers in that section, who retired from the brick business a number of years ago, has decided to again engage in the manufacture of brick. He has purchased a tract of land on which there is a fine deposit of clay and will erect a plant that will be modern in every respect. Mr. Gray does not expect to have his plant in operation until next season.

Mr. H. Walters, of the Hydraulic Press Brick Company, has just received an order for 1,250,000 of the pale gray face brick to be used in building the new Palace Hotel in San Francisco, which was destroyed by the earthquake and fire last April. The bricks sold at approximately \$50 per thousand on cars at San Francisco. They were selected over every other brick submitted for their superior quality and suitability for that damp locality. The Palace Hotel will be the largest and finest building on the Pacific coast, covering a full block and eight stories in height. In the laying of the brick, the brick are laid with the end out every other course, increasing the strength and also the number of brick used. The

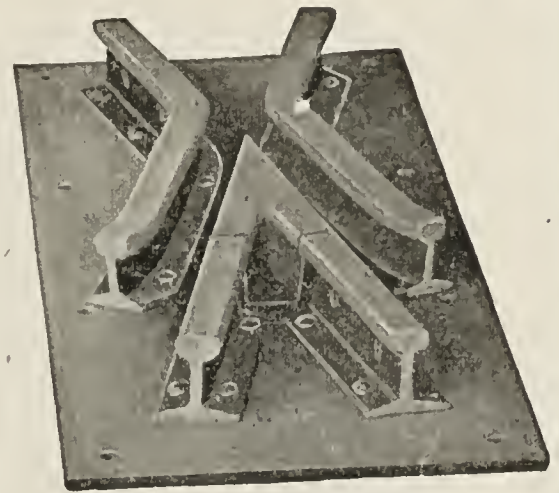
(Continued on page 298.)



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

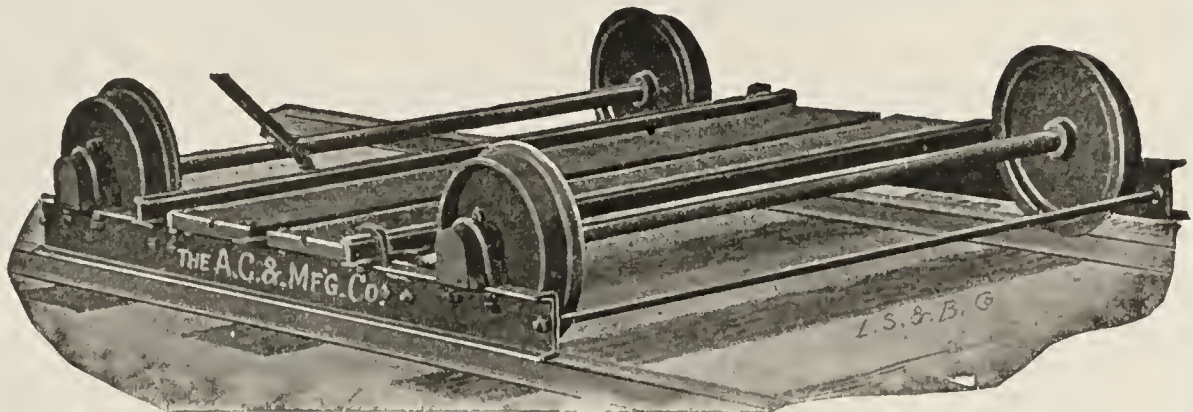
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

EDITORIAL NOTES AND CLIPPINGS—Continued.

Hydraulic Company will also furnish the brick for the new Odd Fellow's building at Brazil, Ind.

Fire, which started in the kiln sheds, caused a \$3,000 damage at the plant of the Pine Bluff (Ark.) Brick Company's plant recently.

G. E. Carlyle is at the head of a company that is being organized to erect a plant at Olive Hill, Ky., for the manufacture of fire brick.

The Paris Press Brick Company, of Paris, Texas, has been incorporated with \$20,000 capital stock. J. N. Blake, Edwin Jenkins, and Wm. L. Jones.

J. P. Jones & Sons are preparing to manufacture brick on a large scale at their new plant at Whitesburg, Ga., and expect to have the plant in operation by October 1st.

The Standard Brick Manufacturing Company, of Evansville, Ind., will erect one of Haigh's continuous kilns at their plant. The construction of the kiln will be under the direct supervision of Mr. Hervey Haigh, of Catskill, N. Y., and this insures satisfactory work.

One of the workmen was caught by the caving in of the clay bank at the plant of the Phoenix Brick Company, at St. Joseph, Mo., and badly injured. The bank at the point where the men were working was fifty feet high and several tons of earth fell without any warning.

A new company has been organized to take over the plant of the United Brick Company, at Conneaut, Ohio. E. P. Lippincott and others, of Greensburg, Pa., are interested. The name of the company will not be changed and the plant will be put in operation immediately.

An early morning fire completely destroyed the brickmaking plant of Phillips & Bartlett, at Deadwood, S. Dak. The loss is estimated at \$25,000, on which there is a small amount of insurance. The plant was the only one in that immediate vicinity and will be rebuilt at once.

At a recent meeting of the Hudson River Brick Manufacturers Association, at Newburg, it was decided to cease operation on all of the yards of the Hudson River valley October 1. This has been a good season for the manufacturers of that section with a good demand for brick at prices ranging from \$6.00 to \$7.50 a thousand.

The Haileybury Brick and Tile Company has been organized at Haileybury, Ont., Can., with the following directors: A. J. Murphy, E. E. Wilson and B. C. Beach, of Haileybury, and C. F. McArthur, of Kenmore. The foundation for the buildings has been laid and the necessary machinery has been ordered.

A plant will be erected at Jasonville, Ind., for the manufacture of paving brick from shale. Wood Noel, Jr., Terminal Building, Indianapolis, Ind., will be glad to receive catalogues of machinery and kilns and supplies necessary for the equipment of a paving brick plant of 50,000 daily capacity. The shale has been tested with very gratifying results.

The Bennett Brick Manufacturing Company, of Benton, Ark., has sold a third interest in the concern to W. L. Dalton, of Hot Springs, and the firm name has been changed to the Benton Brick and Pottery Company. In addition to the manufacture of building and fire brick, the manufacture of pottery will be taken up. A specialty will be made of jugs, churns, jars, milk crocks, flower pots, etc.

Mr. C. Dickens Sternfels, who for some years has had charge of the publicity department of the Arthur Koppel Company, New York City, has severed his connection with that company and will hereafter have charge of the publicity bureau of the Standard Roller Bearing Company, of Philadelphia, Pa. This company has recently made many large additions to its plant and now claims to have the largest works of the kind in the world. The buildings extend over one-half mile of ground from end to end, with a floor space of more than 500,000 square feet. Fifteen hundred men are employed by the concern.

Articles of incorporation of the Mason City Drain Tile Company, Mason City, Iowa, have been filed. The capital is \$100,000. The officers of the company are: President, O. T. Dennison; vice-president, F. A. Stephenson; secretary, F. E. Keeler; treasurer, L. W. Dennison. It has been the policy in the past of Mr. Dennison and those associated with him in his enterprises to form a new company instead of enlarging the old plants. This makes the fourth company formed and three others are now in operation at Mason City, known as the

Mason City Brick and Tile Company, the Mason City Sewer Pipe Company, and the Mason City Clay Works, respectively.

James Starr, 1128 Central Avenue, Kansas City, Kan., is organizing a company to start a brickmaking plant at that place.

Mrs. Marie Lemon will establish a dry press and paving brick plant at Bonnierville, Ky., and is in the market for machinery for same.

J. L. and E. S. Shearer, of Cullom, Ill., have purchased three acres of clay land at Jackson, Minn., on which they will erect a brick and tile manufacturing plant.

J. W. Stipes, Champaign, Ill., has had an unusually busy season this summer. The plant has been run to full capacity in order to meet the demand. Good prices have prevailed.

E. L. Bishop & Sons have begun the operation of their new plant at Spartansburg, S. C. The plant is well equipped with good machinery and with an excellent clay deposit is turning out a fine grade of brick.

The Arcadia Brick Works, one of the largest industries of Arcadia, Ind., sustained a serious loss by fire September 15th. The origin of the fire is not known. The loss is estimated at \$30,000, only a fourth of which is insured. The entire building was consumed and the contents including 50,000 green brick and pallets ruined.

A CHANGE IN THE MANAGEMENT OF THE HORTON MANUFACTURING COMPANY.

The controlling interest of the Horton Manufacturing Company, of Painesville, Ohio, manufacturers of the "Hercules" and other standard types of brickmaking machinery, has been sold to Herbert W. Cole, who has assumed the general management of the business. The character and quality of the machines manufactured by this company will be improved in every possible way, and they solicit the business of every brickmaker in the United States, who is desirous of improving the quality and the amount of his output.



STANDARD ^{DOUBLE} ^{SIDE} ALL STEEL DUMP CARS

These cars are built entirely of steel and of the best construction throughout. We carry these cars in stock in capacities from 18 to 54 cubic feet, and in gauges 18 to 36 inches. The uses that this car can be put to is unlimited and *clayworkers* would do well to write our Dept. 2 for Catalog B.

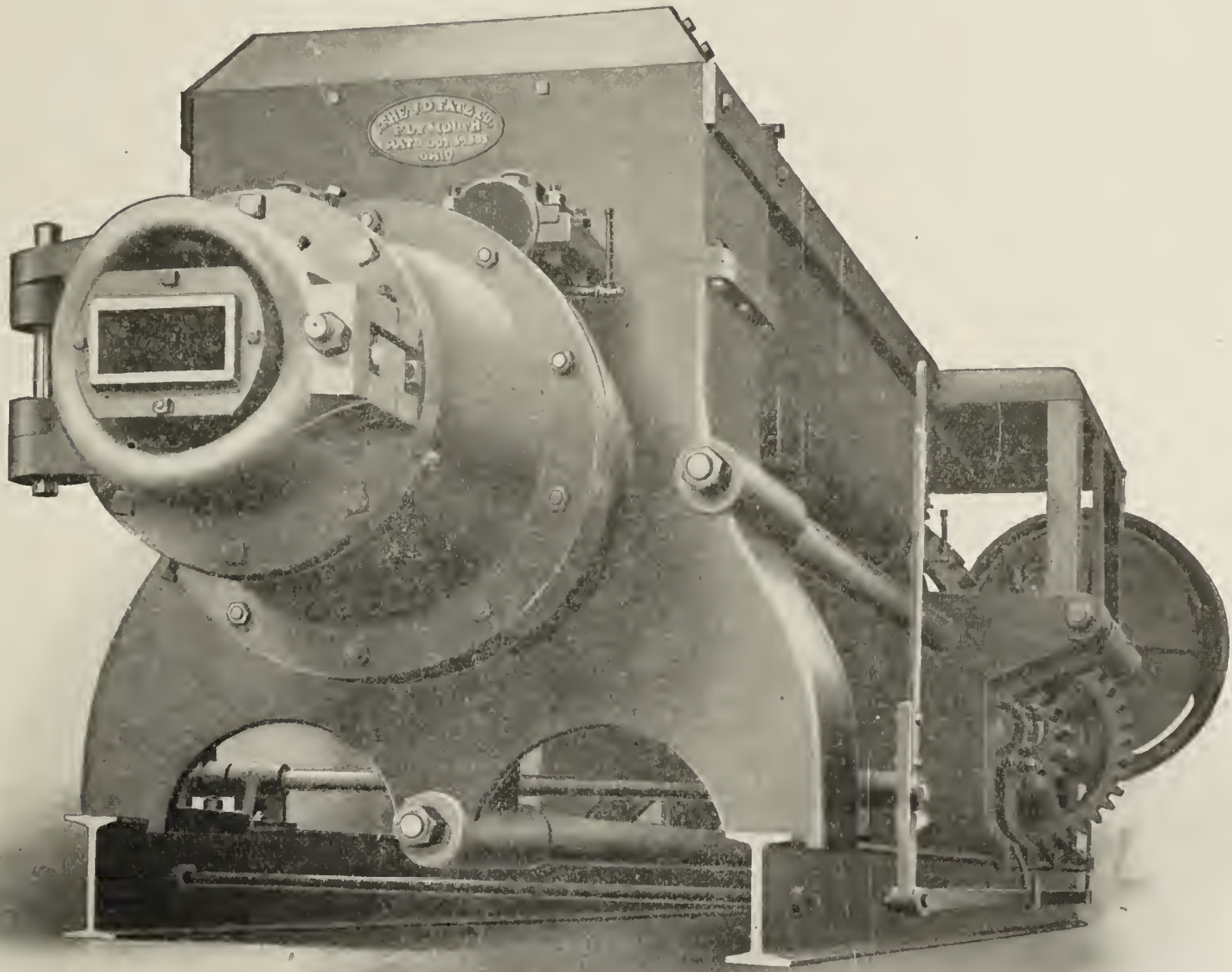
We carry a LARGE STOCK of all INDUSTRIAL RAILWAY equipment at our works and warehouses.
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RAILROAD SPECIALISTS **ERNST WIENER** COMPANY.
FOR ALL INDUSTRIES.

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The Youngstown Car Mfg. Co., Youngstown, O., representatives for West Virginia, Ohio and Western Pennsylvania.

THE FATE SPECIAL

The Largest Combined Brick Machine in the World.



Length of machine over all, 25 ft. Width, 6 ft. 4 in. Height, 6 ft. 6 in. Weight, 35,000 lbs. Mounted on steel "I" beams, has interlocking hubs and independent knives. Capacity, 15,000 to 20,000 brick per hour. All the bearings have automatic wick oiling device and all those with heavy end thrust are of the marine type.

One of these machines has been recently installed in each of the following plants: Johnson Bros.' Clay Works, Iowa; La Prairie Brick Works, La Prairie, Quebec; Fredonia Brick Co., Fredonia, Kansas, and the Logan Brick Co., of Logan, Ohio, and all are doing fine work. This is especially true of the one at Logan where they make a paving block $4\frac{3}{8} \times 4\frac{3}{8} \times 9$ and weighing 13 pounds and they get a capacity of about 90,000 of these blocks per day, being more than they formerly got with two large machines. If you want the largest, strongest and best brick machine and one with the largest capacity, write us and we will tell you more about this machine.

The J. D. FATE CO.,

Plymouth, Richland County, Ohio.

Mention The Clay-Worker.

Written for THE CLAY-WORKER.
NEW YORK AND VICINITY.



TRADE in New York has continued satisfactory up to now and promises to be even better during the remainder of the season. The demand for brick for public and semi-public purposes has increased very rapidly during the season and now, as it is about to close, the market is still quite as good as it was at the beginning. The great buildings which are under construction, the tunnels and railroad terminals and other great works are all huge consumers of brick of all grades, and work upon them goes forward regardless of weather. Consequently there is little likelihood of any reduction in demand for more than one year to come. Demand will continue unabated unless some great financial difficulty occurs to prevent the industrial expansion, which is now such an important feature of metropolitan life. The reconstruction of Manhattan goes on so fast that the requirements for constructive work are steadily increasing.

Up the Hudson, where the great yards are located, the manufacturers are busy preparing for the idle season. They have worked early and late all summer and their output has been commensurate with their efforts. The market has taken everything procurable, and now, even though the supposed close of the season is not far in the future, huge schooner and barge loads of brick are coming down the river, sometimes a dozen barges in a string, and the contents are swallowed in the capacious public and other works of the city without exciting a ripple. The consumptive possibilities are unequalled. The market is unexpectedly active and has been throughout the season. Makers are exerting all their efforts to get the stock to market as rapidly as circumstances permit, and buyers are ready to take what is offered.

The concrete situation in and about New York remains

unchanged. The new buildings are looked upon in the light of experiments and the vigilance of the building department is making it extremely difficult to go ahead with these structures without conforming to the laws and regulations of that department and the fire department as well. No important buildings in New York itself have been built of concrete. The use of this material has been limited largely to foundations and experts say that it is admirable for that purpose. They do not speak so enthusiastically of the possibilities of the stuff for other uses. There would be fewer difficulties encountered in building if the cement or concrete buildings were erected by experts. Too often the work is done by those who have no exact knowledge of the material or its possibilities and ghastly accidents are the result. After the material has ceased to be experimental and has become standard, with full knowledge of its capabilities known to every builder, there will be some necessity of brick men fearing it. At present it would not be used in any important constructive work. Builders would not dare undertake it. Some are disposed to think that it will have its run and disappear along with other fads which have appeared from time to time, played their little parts and have disappeared, never to be seen again. When the material is openly condemned and its use criticised by those publications which are supposed to defend it, the future is not especially promising. And this is exactly what has happened with reference to concrete.

The great Singer building, forty-one stories high, is fast being filled in. The steel skeleton is all up and the dome is being put in place as this is written. The filling of the frame is white or face brick, with trimming of the same material. The huge tower, springing high above every other building in New York, will look like a graceful monument, piercing the skies. The construction is plain, but handsome, and the fact that this, the most famous building in the United States, or it will be when completed, is being filled with brick, shows what experienced builders think of this material when any important constructive work is undertaken where stability and beauty are both required.

BURTON.

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Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.



FAIR AMOUNT of business is being done by the brick and terra cotta manufacturers of St. Louis. They are not rushed by any means, but are having a nice seasonable trade.

Building permits for the month of August showed a falling off of over \$700,000, as compared with August last year. The decrease from the July record exceeded \$1,800,000. This showing was anticipated by the noticeable retrenchment in operations as compared with the extreme activity of 1906, which was a banner year. The year 1907 will not be able to reach the mark set by 1906. In the opinion of conservative operators, it will be several years before the city witnesses such a remarkable period of building as in 1905 and 1906.

The following are the detailed figures of the Building Commissioner's report for the month of August, with comparisons:

	Permits, 1906.	Amount, 1906.	Permits, 1907.	Amount, 1907.
New brick buildings....	311	\$2,910,345	248	\$1,211,061
Brick alterations	123	101,760	151	179,174
New frame buildings...	431	104,608	416	112,610
Frame alterations	83	17,186	84	13,010
Totals	948	\$3,133,899	899	\$1,515,855

Street Commissioner Travilla, a couple of weeks ago, came to the aid of the brick pavement contractors, who have been delaying work because of inability to get material to rush work, they declaring that they could not get enough brick in St. Louis. Commissioner Travilla, accordingly made arrangements with a concern in Galesburg, Ill., to supply them.

Miss Caroline W. Kramer, who was a stenographer in the office of the Newburn Brick Company, was married a few days

ago to Harry L. Meyer, who is the assistant manager of the Alton Brick Company. Their parents were friends in their school days.

The Enterprise Brick Works Company, of this city, has bought the property occupied by its plant on Fyler avenue east of Kingshighway. The purchase supplants a ground lease which was due to expire in about two years. The tract fronts 990 feet on the north side of Fyler and is triangular shaped, with a 460 foot frontage on the Oak Hill railroad. The consideration was \$12,000. The company's plant was built several years ago for the manufacture of fire brick and building brick.

George Jones, secretary of the Evens & Howard Fire Brick Company, reports quite a satisfactory business being done by the company in the manufacture of fire clay products.

The Illinois Supply and Construction Company is receiving numerous inquiries and quite a number of orders have recently been placed with the company for the new Grath presses and kilns manufactured by the company.

The Laclede Fire Brick Company is doing a satisfactory business.

John P. Camp, president of the Ross-Keller Triple Pressure Brick Machine Company, says business is quite satisfactory. The triple brick press made by the company is one of the best machines made. Not only are a number of the presses being installed, but quite a number of orders are on the books for future delivery.

Wm. F. Scott, president of the Scott Manufacturing Company, is well pleased with the trade that they are now having. The Andrus brick press, the "Press that Scott Makes," is one of the most satisfactory brick presses in every way, now on the market, and is in use in many of the leading brick plants on the country. The bricks manufactured by the press are of the highest grade and the cost of manufacture is brought down to the minimum.

A. SAINT.

A SURE CURE FOR THE CONCRETE CRAZE

"BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE"

AN ELABORATE PUBLICATION

Cover in 4 Colors.

Ninety-Six 10x12 Pages.

Eighty-three 7x5 Half-tones.

Issued by the

BRICK CONSTRUCTION ASSOCIATION,

which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

Every brick man should have a book, and see to it that everyone interested in construction in his locality has a copy.

The Brick Construction Association has distributed gratis, locally, over 3,000 copies among Architects, Engineers, Bank Directors, Builders, etc. **Do your share.**

Books sent prepaid at the following rates:

Single copies, up to 100.....	\$ 1.00 each
100 lots.....	75.00
500 lots.....	250.00

Brick Construction Association,

707 Lankershim Building.

LOS ANGELES, CALIFORNIA.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

MONEY TO INVEST.

Will invest money with practical factory man in brick plant. Fire brick. Middle West preferred. Address JOSEPH, 9 1 d Care Clay-Worker.

FOR SALE—The undersigned has 30,000 wooden pallets, size 34x10, to hold six bricks, and racks complete to hold 250,000 bricks, for sale cheap. Address 9 1 cm HORACE EVANS, Ontario and O Sts., Philadelphia, Pa.

FOR SALE.

One Chambers (side or end cut) brick machine and pug mill. Capacity, 100,000 brick in ten hours. These machines have only been used for one season and are a bargain. Address FISKE & CO., Inc., 9 1 d 161 Devonshire St., Boston, Mass.

WANTED—Young man, a hustler; one who can take charge of office and go out on the road and willing to put in some money and take on interest in an old established clayworking machinery business. Don't answer this unless you mean business. Box 23, care Clay-Worker. 9 1 L

A SPLENDID OPPORTUNITY

For party with \$10,000 to \$15,000 to form partnership with owner of a large, workable coal and clay deposit on railroad in Central Iowa. No competition in immediate vicinity and demand for coal, brick and tile is large. Address, H. E. NELSON, 9 1 dm Dayton, Iowa.

FOR SALE—A modern stiff mud brick plant; capacity 25,000; automatic cutting table; 15 acres, which burns a fine red color, 30 to 50 feet deep; good market for brick; best shipping facilities; three miles from Syracuse. Price, \$10,000. Terms to suit purchaser. Address 1702 Midland Ave., Syracuse, N. Y. 9 1 d

FOR SALE—A good sand mold brick plant at Wrenshall, Minn., 24 miles west of Duluth. A good market. Yard now in operation. The present owner wishes to retire on account of advancing years. Also offers a good wire-cut brickyard at Little Falls, Minn., which is running. For full particulars, address, O. DUCLOS, 9 1 cm Wrenshall, Minn.

FOR SALE—Brick yard well located; capacity, 75,000 per day; can't supply demand; first class machinery and equipment; stiff clay process; 30 acres of land with houses, barns and teams; fuel plenty and cheap. A splendid opportunity. Owner made competency and wishes to retire. Come and see it.

SMURTHWAITE & ALWAY, Attys., 9 1 cm Traverse City, Mich.

WANTED—An assistant superintendent on our yard. We want a careful, industrious man and a first class brick burner in up draft kilns. We make dry press and soft mud brick. A good, permanent position for the right man, and an opportunity for promotion as well as to take some stock in the plant if he wishes to. Salary, \$75 per month. Prefer a man about thirty years old. Party should have eight or ten years experience in the business. Address, 9 1 c S. B. T., Care Clay-Worker.

WANTED—Brickmakers of Colorado and adjoining states to know that by writing me they can learn something to their interest regarding brickmaking. Address, 9 1 cm W. S. P., Box 636, Denver, Col.

WANTED—Practical man for superintendent of plant in the West producing fire, hollow and building brick. State experience with clays and manufacturing. Give terms. Address, POSTOFFICE BOX 528, Chicago, Ill.

FOR SALE—Two brick and tile machines, Nos. 9 and 10 Brewer. Have made 5,000 per hour on No. 9 and 10,000 on No. 10. All in good condition. Reason for selling, clay not suitable for stiff mud process. Will change to dry press. Address, D. A. LAYTON, 7 tf d Marion, S. C.

FOR SALE.

One power repress, in No. 1 condition; used only a short time. Capacity, 10,000 per day. Ask for full particulars. Address, AMERICAN ENAMELED BRICK & TILE COMPANY, 1 Madison Avenue, 7 3 dm New York City.

FOR SALE.

Well equipped brick and tile plant near Portland, Oregon. Runs the entire year. Will take the entire output of plant at a good price per 1,000. Six thousand dollars needed to handle this plant. Best of reasons for selling. Address, C. E. FULLER, 8 tf d 374 Water St., Portland, Ore.

FOR SALE.

Controlling interest in a good and profitable clayworking plant with clay enough to run it for one hundred years. Works easily, dries quickly, burns hard and holds its shape. Will make all kinds of building materials in all shapes, sizes and kinds. Plant can be seen in operation. Poor health compels me to change climate and I will therefore make a very low price on it. Address, S. H. RECORD, 8 1 2p Charleston, Ill.

FOR SALE.

At a bargain, a yard equipped with granulator, disintegrator and a Big Wonder machine. The Warner system of handling and drying brick, the Boss system of burning. Sixty-nine acres of good clay, with market for the output. Yard is in active operation and has a first-class reputation. A splendid opportunity. Reason for selling, failing health. Address, P. J. CONNELL, 7 3 cm Muskegon, Mich.

FOR SALE—Within 100 miles of the City of Chicago, 60 acres of the best Illinois fire clay and shale land. Will join party in erecting plant or sell outright. This is worthy of thorough investigation. Address, 8 6 d G. A. R., care Clay-Worker.

WANTED—Experienced pressers, turners, etc., for stoneware plant in vicinity of New York City. Good pay and steady employment to reliable men. Address with references, P. O. BOX 142, 8 3 d Brooklyn, N. Y.

FOR SALE.

Three 9-ft. Chambers Bros. Co. dry pans, 4-ft. wheels, 10-inch. face. One No. 4 Austin crusher, in good condition. For particulars, apply to the DUNBAR FURNACE CO., 8 2 dm Dunbar, Fayette Co., Pa.

DRY PRESSES FOR SALE.

One 2-mold U. S. brick press. One 3-mold Boyd brick press. One 4-mold brick press of standard make. One 3-mold Andrus brick press. Dry pan, pulverizer, screen and transmission. One set of plates for 7-foot wet pan. 1,000 horse power Corliss engine and boilers. B-K BRICK CO., 9 tf d Denver, Colo.

WANTED—A practical man with some capital, say \$5,000, who is able to superintend the building of an up-to-date shale brick plant and to take entire charge of the manufacturing and business end of a \$50,000 plant. For such a man we will furnish money for the plant, make him general superintendent, give him interest in the business and a good salary. The best references as to ability and character required. 7 3 cm R. S. T., Care Clay-Worker.

FOR SALE—ENGINES AND BOILERS.

BOILERS.

4 72x18 horizontal tubular, high pressure.
1 84x18 horizontal tubular, standard.
1 78x16 horizontal tubular, standard.
1 72x16 horizontal tubular, standard.
5 72x16 horizontal tubular, standard.
1 66x16 horizontal tubular, high pressure.
1 60x18 6-inch rivetted flue, standard.
3 60x16 horizontal tubular, standard.
Sixty others, all styles and sizes.

ENGINES.

20x48 Wheelock.
18x42 Hamilton.
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14x20 Atlas.
14x14 Vertical.
Forty others, all sizes and styles.
Also pumps, heaters, tanks, saw mills and general machinery. Send us specifications of your wants.
THE RANDLE MACHINERY CO., 1735 Powers St., Cincinnati, Ohio.
7 tf d

FOR SALE.

Up-to-date stoneware plant in Southwest Texas. One each 18, 20 and 24 ft. down draft and one 12x14 ft. Howard kilns. Taplin, Rice & Co. 8 ft. Chaser Mill. 3 turning and 3 jolly wheels. Shop fully equipped. Output 100 cars per annum and equal in quality and appearance to any out of state. Unable to supply demand for goods @ 7½ cents and 8 cents per gallon Northern computation. Maximum carload rate 20 cents. Leaving to take charge of interests in Mexico. Will retain \$5,000.00 stock in new company. Address SAENGER POTTERY WORKS, 8 3 d Elmendorf, Texas.

WANTED

To let contract to responsible, practical brickmaker to make ten million brick. Will furnish modern equipped plant that can be operated the year round. Steam shovel in pit; plenty clay, cheap labor and fuel. For further information address
BRICK,
 9 2 d
 Care Clay-Worker.

TO PRODUCE POTTERY ECONOMICALLY
USE**CROSSLEY MACHINERY**

THE CROSSLEY MFG. CO.
TRENTON, N. J.

Robert Twells Will Buy or Sell Second-Hand Brick Machinery.

For some time past, I have been devoting my time to assisting fellow clayworkers who have had trouble in burning their ware, and have always succeeded in obtaining better results in burning, as well as improving the ware, shortening time of burning, saving coal and getting the desired color.

SECOND-HAND BRICK MACHINE EXCHANGE.

I have now opened an Agency or Exchange for second-hand brick machinery and brickyard supplies of every description. Why buy a new machine when you can buy a good second-hand machine for half the price? Many machines are taken out to make room for one of larger capacity, or because it was not adapted to the particular clay it had to work, or because the clay bank becomes exhausted, or the plant burned down, or the owners failed in business, or for a number of reasons, none of which reflect upon the machine itself. Tell me what you want, and I will tell you at once whether I can furnish it.

If you are putting in new machinery, and have any machines or supplies that you wish to dispose of, send me a description of same, stating exact condition of machine, and the lowest cash price you will take for same, f.o.b. cars at your place. Listing it for sale with me will not hinder you from selling it yourself if you get a buyer.

ROBERT TWELLS, Walnut Hills, Ill.

Mention the CLAY-WORKER

When writing to Advertisers.

WANTED—Second-hand cars and track.
 Give lowest price and condition in first letter.
 BOX 81,
 9 1 dm
 Independence, Iowa.

FOR SALE—A 75 h. p. gas engine, complete with air tank and gasometer, in good condition. Let go cheap if sold at once. Address
 RAY,
 9 3 L
 Care Clay-Worker.

WANTED—Brick plant at Wenona, Ill. One million tons of material located in "Y" of Illinois Central and Chicago & Alton Railroads. One hundred tons of new material dumped daily. Will make good paving brick and front brick. Coal mine adjacent. Plenty of artesian water. For information, address,
 WENONA COAL CO.,
 S 2 d
 Wenona, Ill.

FOR SALE—The plant of the Poteau Brick Co., at Poteau, Ind. Ter., consisting of one four-mold Ross-Keller press; nine-foot Frost dry pan; 50 horse-power boiler; 40 horse-power engine; three up-draft kilns; railroad switch in yard; large deposit of shale and unlimited supply of fire clay. Coal cheap and convenient. Plant in good running order and behind with orders. The owners want to sell because they have too much other business and cannot attend to it properly. Will sell outright or will sell an interest. A splendid opportunity for a man who has had experience and can manage business. Address

POTEAU BRICK CO.,
 9 2 cm
 Poteau, Ind. Ter.

FOR SALE.

The Memphis Stoneware Company, of Memphis, Tenn., lost by fire almost its entire plant July 1st. The insurance is not sufficient to rebuild the plant, hence the company desires to sell what is left, which consists as follows:

One lot with 500 feet railroad frontage, with all necessary side tracks.

Four down draft kilns, 22 feet inside diameter.

Two 100 h. p. boilers.

Warehouse and stable.

Several jigger wheels, with blocks and cases.

Pug mills, disintegrator and rolls, and a great deal of machinery.

Memphis is the best location for a pottery in America, as it is the best home market. Memphis uses more stoneware than any city in the Union. We have a better rate to all common points in Texas and all points southeast of the Mississippi river than any other pottery.

Memphis buys \$50,000 stoneware per annum.

Here is a rare opportunity for a practical stoneware man with some capital. Address, MEMPHIS STONEWARE CO.,
 7 3 cm
 Memphis, Tenn.

[Continued on next page.]

FOR SALE—

Immediate delivery. Two 6 ft. diam. by 68 ft. long hardening cylinders; 125 lbs. working steam pressure. One removable head, complete with track, head crane, safety valve, steam gauge, trap and head wrench.

FRANKLIN BOILER WORKS CO.,
TROY, N. Y.

WANTED, FOR SALE, ETC.

WANTED—A traveling salesman, a man who has a general knowledge of the brick business. Permanent employment. Address 9 1 L B. C., Care Clay-Worker.

WANTED—Second-hand automatic side cut brick table. Must be in good condition and guaranteed to do good work. State lowest cash price. Address, 9 1 c G. W. SAUGER, Rosenberg, Tex.

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.
THE T. B. TOWNSEND BRICK & CON-
TRACTING CO.,
5 1 f d Zanesville, Ohio.

FOR SALE—Steele & Sons No. 4 brick machine and cutter, pug mill, disintegrators, crushers, winding drum, cars, etc., used one month, same as new. Inquire,
BOX 463,
7 5 cm Ft. Wayne, Ind.

WANTED—Position as superintendent of fire brick, gas supplies or building brick plant. Have had 15 years' experience; understand brickmaking in all its departments. Address, F. M.,
9 1 cm Care Clay-Worker.

FOR SALE.

Two complete sets brickmaking machinery, including Chambers brick machines, elevators, clay rolls, granulators, hoists, etc. Also, one Frey-Sheckler brick machine, at present in operation. Address,
ILLINOIS BRICK CO.,
7 3 d Chicago, Ill.

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH,
5 1 f L 3325 Caroline St., St. Louis, Mo.

ATTENTION!

Steam Shovels, Cars, Locomotives of all kinds and Rails.

Give us your requirements.

THE MALES CO.,

26 Cortlandt St., New York, N. Y.
1508 First Nat'l Bank Bldg., Cincinnati, O.

FOR SALE—One of the best brickyards in the Northwest. Fine deposit of clay. Plant equipped throughout with modern machinery, including Penfield brick machine, Potts disintegrator, Benson side cutter, Bechtel system of trucking, good kilns and dryer sheds, machine shop, barns, boarding house for employees. Everything in first class shape. A bargain if sale is made at once. Reason for selling, owner moving away. Address MINN.,
9 1 d Care Clay-Worker.

MANGANESE

FOR ALL USES.

LUMP GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS GOODS A SPECIALTY.

SAMPLES AND PRICES ON INQUIRY.

METALLIC ALLOYS CO.

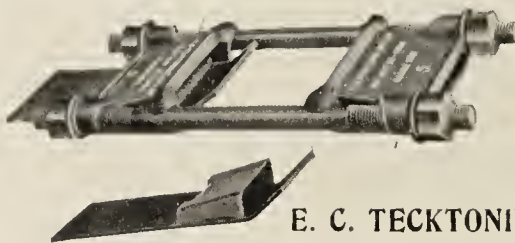
99 JOHN ST NEW YORK, N.Y.

SUCCESSORS TO KENDALL & FLICK.

Philadelphia LINK-BELT COMPANY Indianapolis

New York St. Louis Chicago Denver Pittsburgh

CONVEYING & POWER-TRANSMITTING MACHINERY

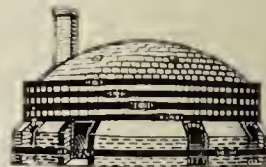


The Best and Cheapest

BAND LUG

on the market.

Write us for price.



E. C. TECKTONIUS MFG. CO., Racine, Wis.

LeROY DAVIDSON,

ORGANIZER
PROMOTER
AND DEALER IN

Investment Securities

Money loaned on well located business and city property and industrial plants in any part of the United States.

OFFICES:

Charlotte, N. C., and
Wall St., New York, N. Y.

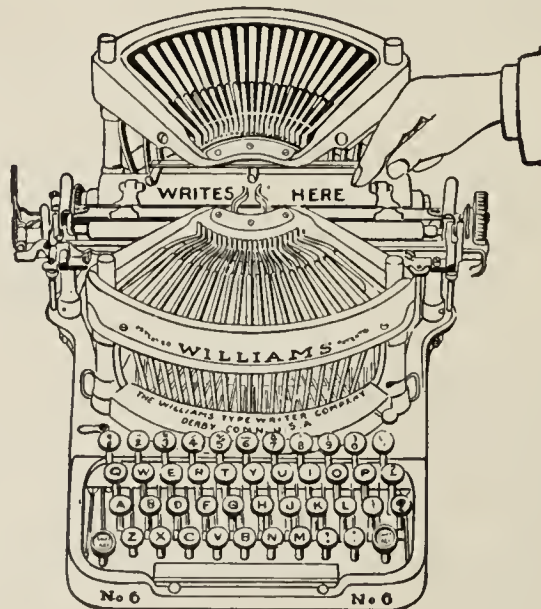
Money to Loan on
Good Business,
Well Located City
Property in Large
Cities, in any part
of the U. S.

SEEING

Saves the beginner time when learning.

Saves the learned time when beginning.

New
Number
Six
Visible
Writer



Saves time, energy, worry and money.

Gives speed, simplicity and beautiful work. Single shift. Strictly visible writing.

Old machines of any make taken in trade.

The Williams is sold under a positive guarantee and on easy terms.

If you want the best value in a typewriter ever offered, write us.

Williams Typewriter Agency,

Indiana Agency, 221 East Ohio Street, Indianapolis, Ind.

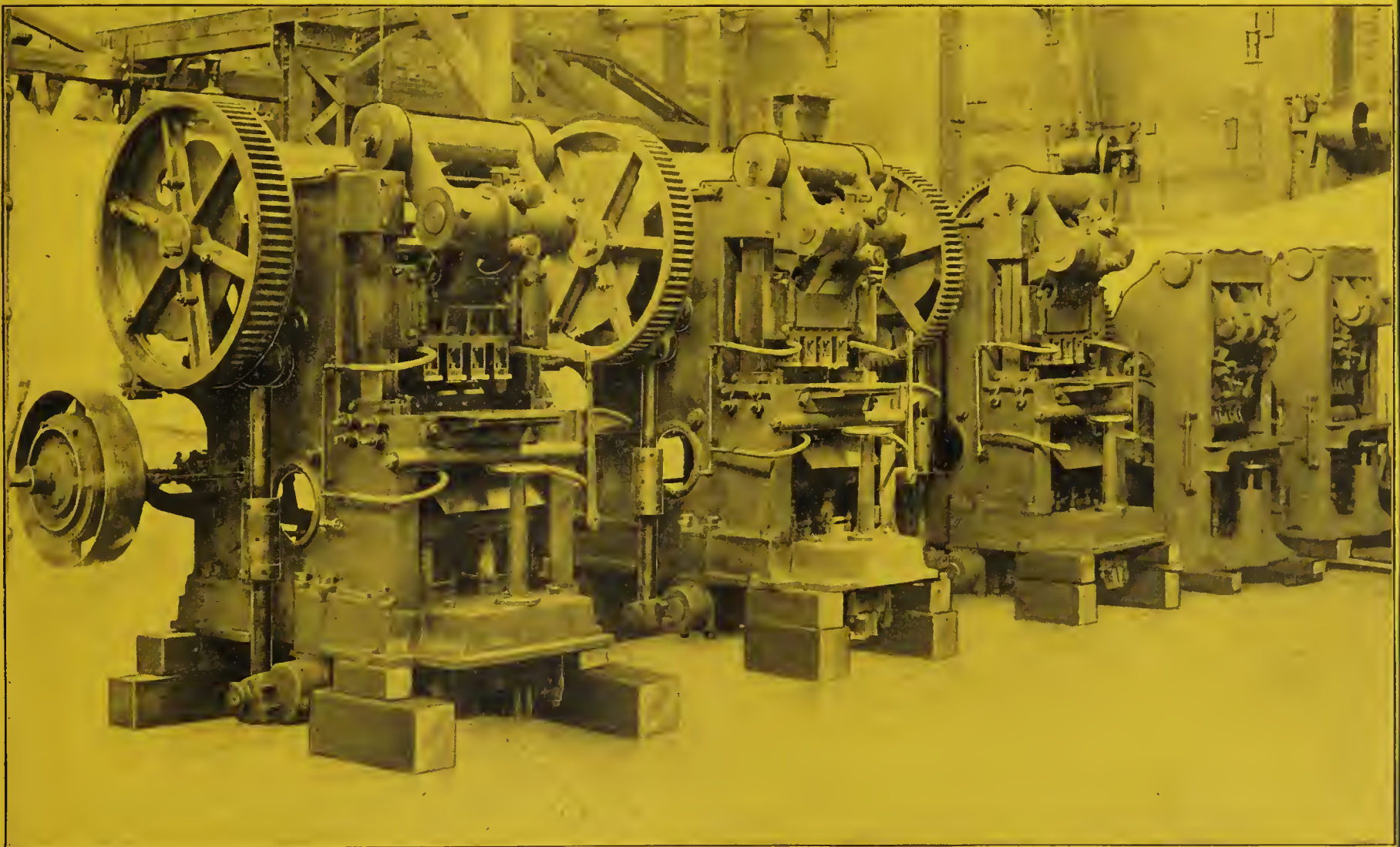
Home Office and Factory,
Derby, Conn.

Old Machines Taken in Trade.

The Leading Line of Dry Press Brick Machinery.



We are builders of the most extensive line of Dry Press Brick Machinery on the market. Our complete modern factory is perfectly equipped for the economical and substantial building of this class of machinery. Our fifty years' experience in building and operating Clayworking Machinery insures correctness of principle and our complete factory organization gives us faultless construction. Our line of Dry Press Machinery has a wide range and insures your needs being supplied. From the heaviest six mold machines down to hand power presses our line is complete. We invite correspondence relative to any Dry Press Machinery or appliances.



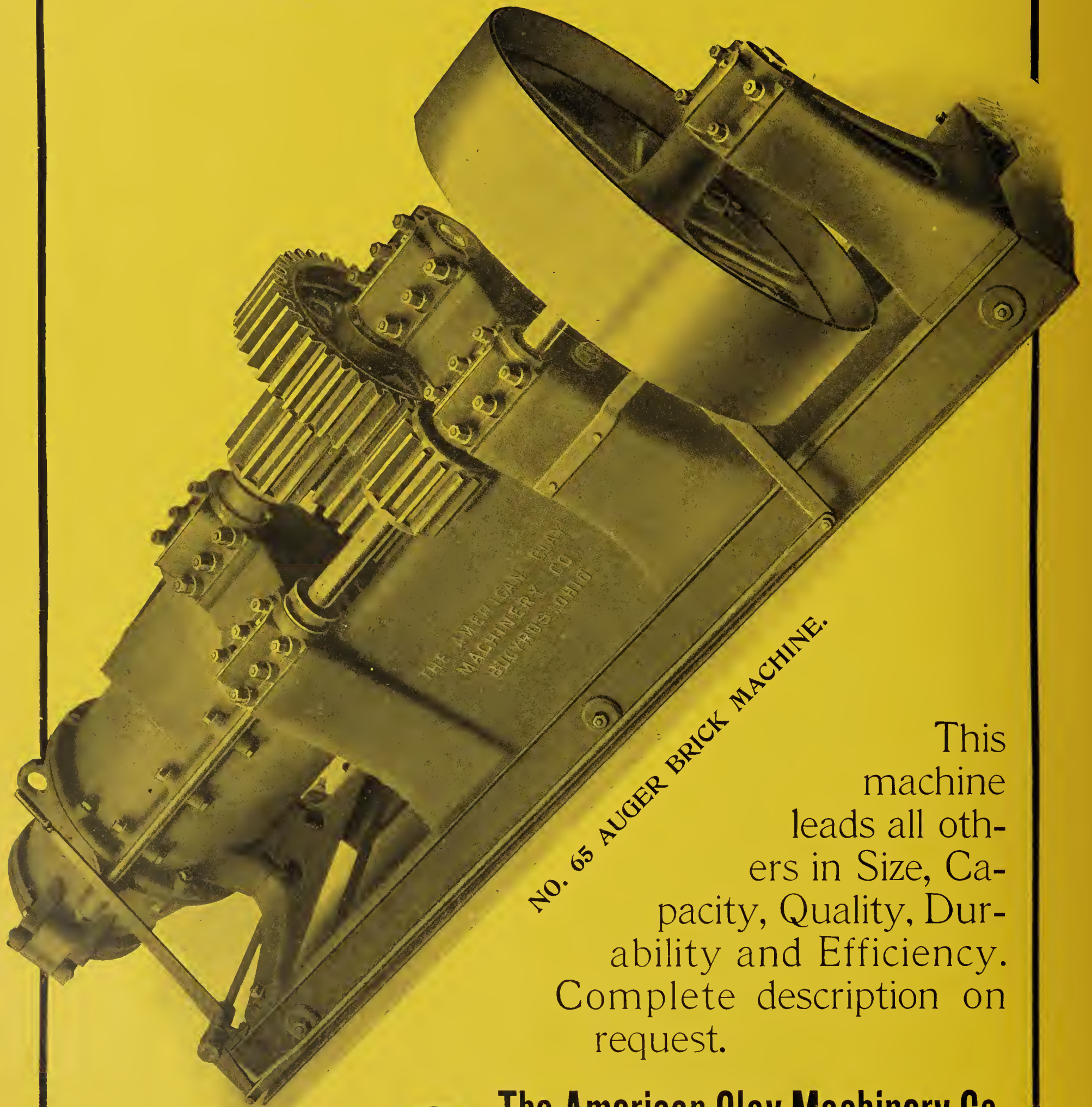
View on Dry Press Floor of Our Factory.

The above view in our factory shows our Dry Press department and illustrates our method of building machines in gangs in order to keep the cost of construction down to the minimum.

We build every class of Clayworking Machinery and can supply all machines and appliances needed for the manufacture of any Clay Product. Every machine and appliance is built in our own shops under our own careful supervision and is of the Standard American Quality.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

MONSTER MACHINE.



This machine leads all others in Size, Capacity, Quality, Durability and Efficiency. Complete description on request.



The American Clay Machinery Co.

Bucyrus, Ohio, U. S. A.

STEEL FRAME CONVEYORS.

This Conveyor is constructed with structural steel side rails, lattice braced, making a light, strong, firm frame, at one end of which is bolted the head gearing frame, supporting a reel made of a cast iron spider and steel slats, to carry the belt at the driving end. The shafts are in proportion to the width and length of the Conveyor and run in babbitted bearings.

The gearing is also in proportion to the width and length of the Conveyor. To the lower end is bolted a take-up, supporting a reel

similar to the upper or driving end. This reel is mounted on a shaft which is supported by adjustable take-up babbitted bearings, with adjusting screws for taking up the slack of the belt.

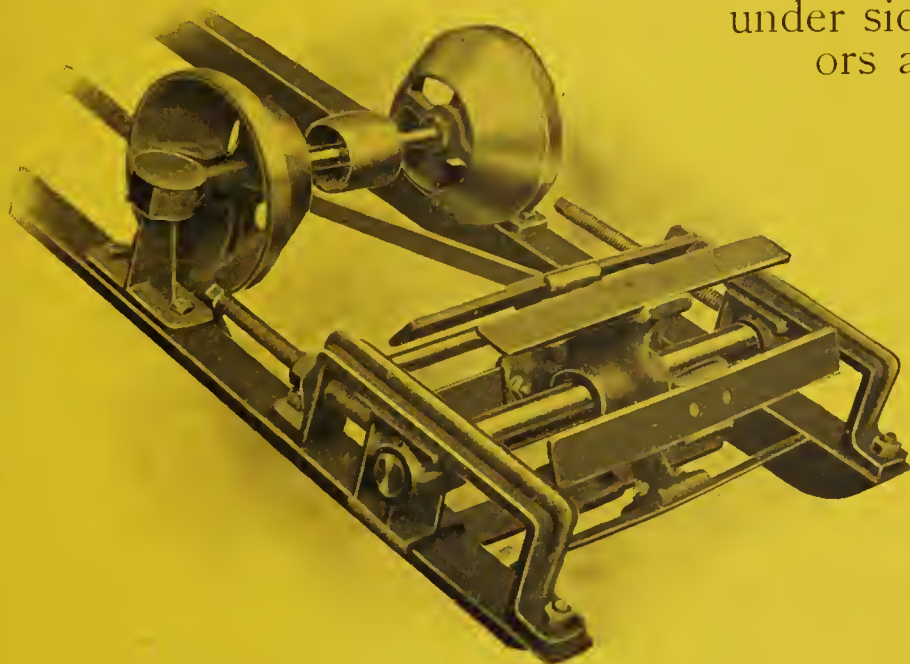
The Conveyor belt is supported by cones carried on shafts mounted in pedestal bearings, bolted to the side rails. These bearings are provided with caps to prevent dust and dirt falling into them. On each of these shafts is a double bell-shaped cast iron roller, loosely mounted on the shaft. There are also small intermediate iron pulleys held to the shaft with set screws. These small rollers support the center of the belt. The combination of the small and bell-shaped rollers converts the belt into a trough.

These rollers are properly placed to give the best service. On the under side of the steel frames, spaced about 10 feet apart, are hangers supporting a shaft with iron roller, to support the under side of the belt. We build these conveyors any length desired.

We build every machine and appliance needed in the manufacture of Clay Products by all processes. Correspondence invited.

**The American Clay
Machinery Co.,**

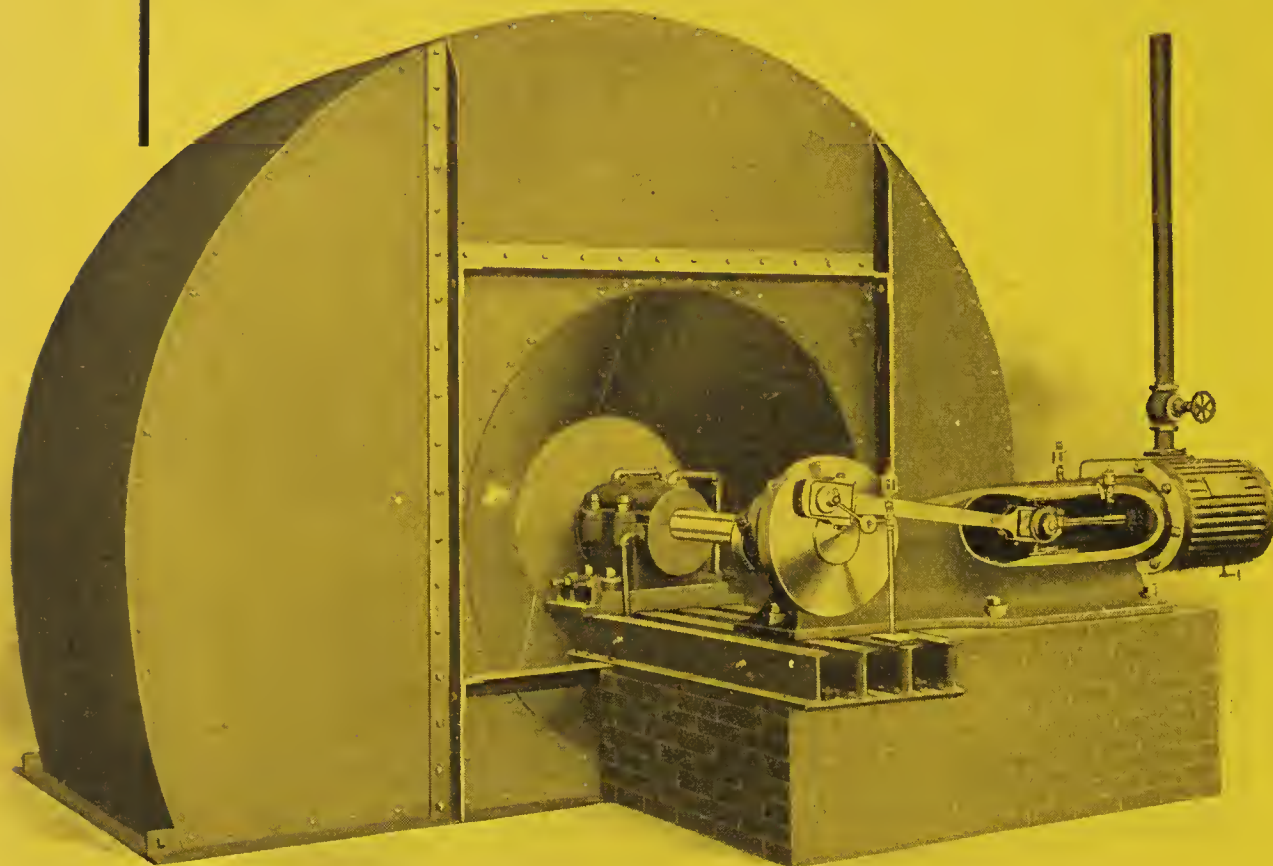
**Bucyrus, Ohio,
U. S. A.**



Adjustable Foot Pulley of Steel Frame Conveyor.



Waste Heat Dryers And Other Dryers.



We are Dryer Specialists in every sense of the word. We are not content with making one kind of Dryer, but make every kind. We are, therefore, in a position to consider your interests without any bias or prejudice toward any one kind of Dryer. This insures your getting a Dryer which will most successfully handle your clay, whether that Dryer be a Waste Heat, Steam, Hot Air, or Furnace Dryer. We build a full equipment for every Dryer in our factory, including Fans, Heaters, Cars, Transfers, Turntables, etc. We also build and equip Dryers operated by the carless system.

If you are in the market for a Dryer let us look over your plant, consider the clay and conditions, and design you a system that will be a success. Then if you place the order with us the equipment will be made in our own factory and will be of our standard quality.

As it is with Dryers, so it is with every class of Clayworking machinery. We build a full line for making Clay Products by every known process.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

**ALWAYS
ON HAND**

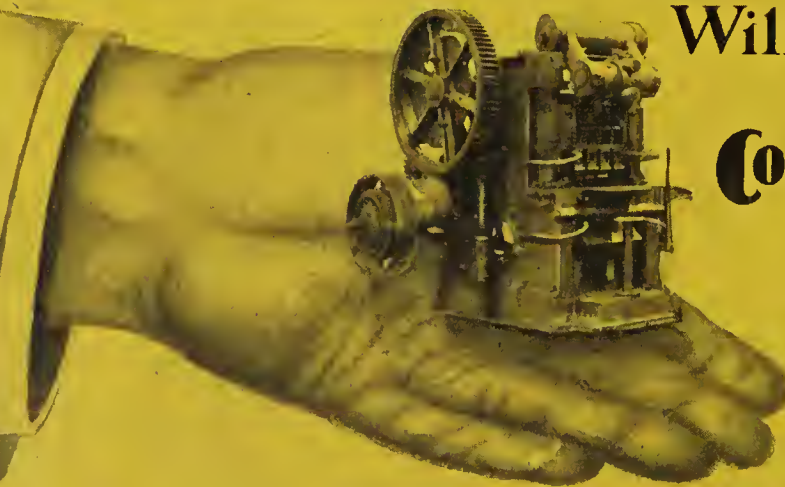
THE AMERICAN CLAY MACHINERY Co.

Willoughby, Ohio, U.S.A.

**PLANTS
DESIGNED**

**COMPLETE EQUIPMENT
FURNISHED,
AND INSTALLED
SET IN OPERATION**

SAND-LIME BRICK MACHINERY





GRIZ

REMARKABLE OFFER.

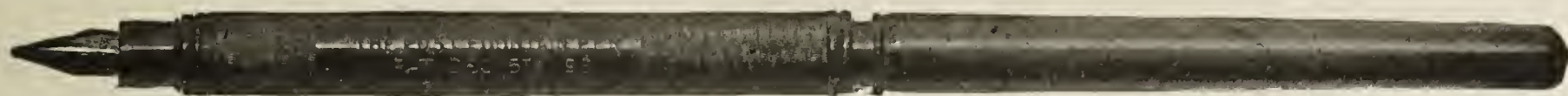
We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for

\$3.00



The New Way.

“POST” SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen.

Guaranteed by Makers.

NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

Gen. Lew. Wallace: The author of “Ben Hur” writes, “I have tried every kind in the market and unhesitatingly give the preference to the “Post.”

Judge Luther L. Mills, Chicago: The “Post” Fountain Pen is the Best I have ever used; simple, reliable, durable.

Dr. Josiah Strong: The great author of “Our Country” says: “I have been hunting for twenty years a perfect fountain pen; have tried many, and they have tried me; but the “Post” leaves nothing to be desired.”

The CLAY-WORKER, INDIANAPOLIS,
—INDIANA.

**DO
IT
NOW**

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis :

You will please send me THE “POST” FOUNTAIN PEN and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued, beginning with the.....Enclosed find \$.....

Name.....

Postoffice.....

Street and Number.....

County..... State.....

FOR SALE.

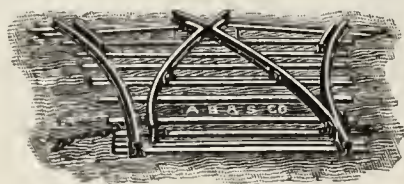
One steam power and one h. p. soft clay machines.
 One feed water boiler heater.
 One wheel scraper.
 A number of dryer cars.
 Two second-hand dump carts, practically as good as new.
 All of the above in first-class condition.
 Address,
 THE HORTON MANUFACTURING CO.,
 6 tf L Painesville, Ohio.

Do you want to sell your brickyard?
 Do you want to buy a brickyard?
 If you want to buy, sell or exchange any kind of business or real estate, anywhere at any price, address

FRANK P. CLEVELAND,
 Real Estate Expert,
 965 Adams Express Bldg.,
 5 tf d Chicago, Ill.

FOR SALE.

Modern brick and tile plant in central Iowa, now in successful operation. Fully equipped with up-to-date machinery, waste heat dryer, dryer cars, four round draft kilns, in good condition. Eighteen acres of clay land. Principal product is drain tile, which is of excellent quality. First class shipping facilities and good, close market. Good yard trade. Good reasons for selling, but must be sold soon or be taken off the market. A splendid opportunity for a good, live man. Satisfactory terms will be made any one worthy of credit. Write us without delay. Address, 7 3 cm OWNERS, care Clay-Worker.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
 7 tf d Cleveland, Ohio.

(See additional ads under Table of Contents.)

The Department of Clayworking and Ceramics

Established by the Legislature
 in 1902 at the

New Jersey State College,

RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture. Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

For information or catalogue address,
 Prof. EDWARD ORTON, JR.,
 Department of Ceramics.
 DR. W. O. THOMSON, President.
 Columbus, Ohio.

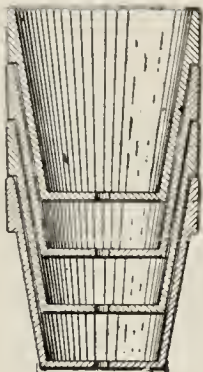
COX'S Special Drawn Coil Wire is
 Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

For End-Cut, Side-Cut and Automatic Tables.

GEO. S. COX, East Liverpool, Ohio.

Satisfaction guaranteed.
 Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
 4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.

The Rockwood Mfg. Co.,

1801 English Ave.

INDIANAPOLIS, IND.



The Kiln of Kilns is the "IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.
 No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.
 All progressive brick manufacturers must have this kiln.
 For full particulars please apply to

J. OSMAN & CO., Ltd.,

Cable Address: Dampening, London. Arundel St., Strand, London, W. C.

THE WEBB WIRE WORKS

MANUFACTURERS OF

MUSIC WIRE NEEDLE WIRE

NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE CUTTING WIRE, drawn especially to withstand abrasion.

Send for prices of wire in coils.

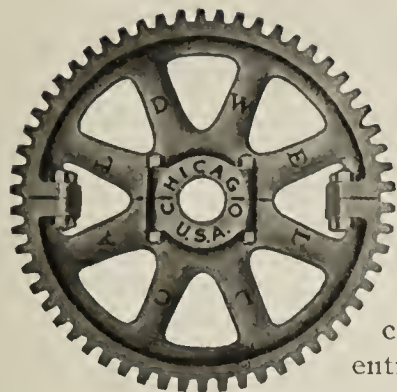
CANADIAN TRADE.

Wooden Brick Pallets.

WRITE US

BARCHARD & Co., Limited,

135-151 Duke St.,
 TORONTO, CANADA.



Machine = Molded Gears

One to 6-inch pitch and larger. Our machine-molded gears last longer than others, give higher efficiency under actual scientific tests, and in many cases cost no more than inferior gears. Catalogue 27 for all gear users.

H. W. Caldwell & Son Co.

17th St. and Western Ave.
CHICAGO

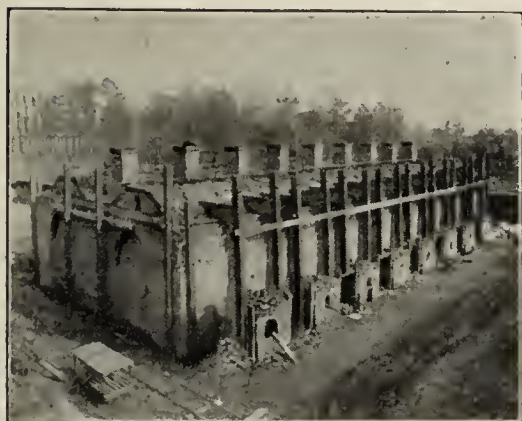
NEW YORK CITY
95 Liberty Street

Woodward, Wight & Co., Ltd.
New Orleans

Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

ANY KILN OF THE MORRISON OR WINGARD TYPE CAN EASILY BE CHANGED INTO THE DENNIS DOUBLE DOWN DRAFT KILN.



Double Up and Down Draft Kiln.

Atlanta, Ga., May 28, 1907.

Mr. F. W. Dennis, Norfolk, Va.

Dear Sir—I have been running the brick yard for the Capital City Brick Company over three years and have been using two of your double up and down draft kilns, also two of your hot air brick driers. The kilns hold over 300,000 brick each, and we think the kilns will burn brick at less cost than any other down draft kiln. We burn all hard brick.

Yours truly,
J. W. FREEMAN.

Wood burning kilns changed to coal burning. Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

F. W. DENNIS,

145 Water Street, Norfolk, Va.

C. K. WILLIAMS & CO.,
EASTON, PA.

Largest Manufacturers in
United States of

Brick and Mortar COLORING.

Correspondence solicited.

Samples and estimates cheerfully furnished on application.

Chattanooga Paint Co.,

Chattanooga, Tenn.

Manufacturers of

Red Oxides for Brick-makers' Use.

**Eclipse
Mortar Colors,**

Red, Brown, Buff, Black.

GABRIEL & SCHALL

P. O. Box 1712.

205 Pearl Street.

NEW YORK.

Sole Importers in the United States of the



The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

The COLOR

That Never fades.

Tried out for 20 years.

For mortar, brick, cement, stone, etc.

Red, brown, buff, purple and black.

RICKETSON MINERAL PAINT WKS.,

MILWAUKEE, WIS.

THE PIONEER. Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-working industry for the past thirty years.

It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

The Kells Foundry and Machine Co.
ADRIAN, MICH.

\$2.00 THE CLAY-WORKER **\$2.00**
ONE YEAR (IN ADVANCE)

EXPERT SERVICE.

Instructions how to improve burning Paving Brick, Drain Tile and Face Brick. Saves Coal, Time and Labor.

New simple method to create draft from the start of the fires.

Down-draft kiln plans for sale.

The least expensive and most effective kiln on the market.

ANTON VOGT,
Care Clay-Worker.

H. H. Wright, Maitland, Mo., writes under date of May 22, 1907, "I am just emptying a kiln today—splendid burn. I can say truly that I never before burned a kiln so easy, as I have this one under your instructions. We always made hard work of it."

ATTENTION.

Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

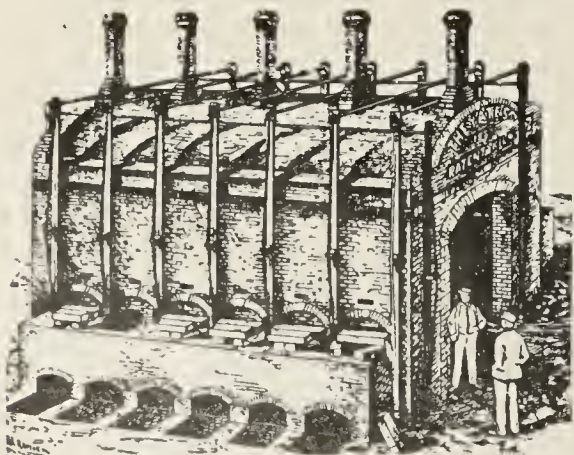
Do you want to buy a

Good Clay Screen?

If So

Correspond with

Stedman's Foundry & Mach. Works
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For Economy of Fuel and Percentage of Hard Burned Brick, This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns. Hot air dryer. Continuous and muffle kiln.

ALFRED YATES,
SHAWMUT, PA.

Or Eastern Terra Cotta, Brick and Tile Co.,
327 Old South Bldg., Boston, Mass.

White Pine Pallets

**For Brick, Roofing Tile,
And Sewer Pipe Boards.**

The Best Are the Cheapest.

Send Specifications and Get Prices.

Mershon, Schuette, Parker & Co.,
Saginaw, Mich.

**Converted to
Leviathanism.**

"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

"Thanking you for your courteous dealing, and assuring you of our patronage for anything in your line we may need in the future, we beg to remain,

"Yours very respectfully,

"Signed: VALLEY BRICK & TILE Co."



Send for "FACTS."

MAIN BELTING COMPANY,

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BOSTON—140 Pearl St.

BUFFALO—40 Pearl St.

NEW YORK—309 Broadway.

PHILADELPHIA—1215-1245 Carpenter St.

TRIPLE PRESSURE BRICK PRESS

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

**We build and equip complete
SAND-LIME BRICK PLANTS,
SHALE AND CLAY BRICK PLANTS.**

Ross-Keller Triple Pressure Brick Machine Co.,
Offices Fullerton Building, St. Louis, Mo.

MANGANESE.

BEST QUALITY MANGANESE, CAREFULLY AND UNIFORMLY PREPARED FOR BRICKMAKING. WRITE US FOR SAMPLES AND PRICES.

NATIONAL PAINT AND MANGANESE CO.,
LYNCHBURG, VA.

MINERS AND GRINDERS.

If you intend to build or rebuild your brick plant acquaint yourself with the

Chmelewski Patent Kiln

That's just the thing you need to get prosperous.
For descriptive booklet write to

DR. HERMAN ROBERGH,

Sole Agent in the U. S. A. and Canada.

24 Cottage Ave., Fitchburg, Mass.

The Improved Flue System.

The most profitable kiln on the market
for burning any clay product.

Absolute Draft Control. Economy of Fuel and Time.
All Hard Brick.

Kiln and Yard Rights, with Plans, Specifications, etc., sold at very reasonable rates. Booklet, estimates and full information cheerfully furnished.

GEO. E. SNOWDEN & CO.,

[Formerly J. P. Bradley & Co.]

New Cumberland, W. Va.

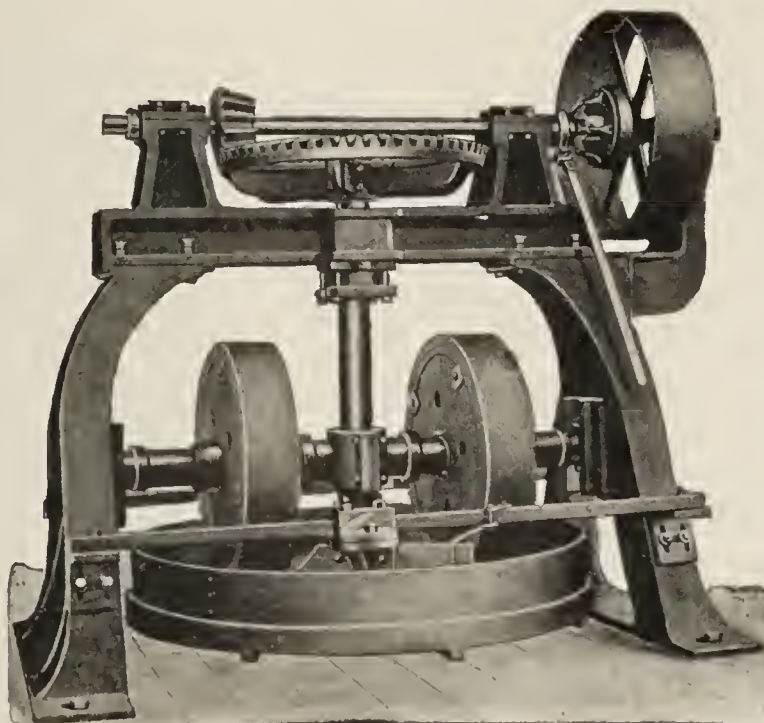
PHILLIPS & McLAREN CO.

PITTSBURG, PA.

Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.
Also
Rock and Ore Crushers.

When writing for Prices state
kind of Clay or Material to be
ground and capacity desired.

Eastern Office,
Stephen Girard Bldg.,
Philadelphia, Pa.



\$2—The CLAY-WORKER One Year in Advance—\$2.

TAPLIN, RICE & CO.,

AKRON, OHIO.

Sewer Pipe and Clay-
Working Machinery.

ESTABLISHED 1862.

— AN — Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



for sewer pipe plants, paving and pressed brick plants and potteries. Full information furnished upon application. In writing please be specific in your inquiries.

Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

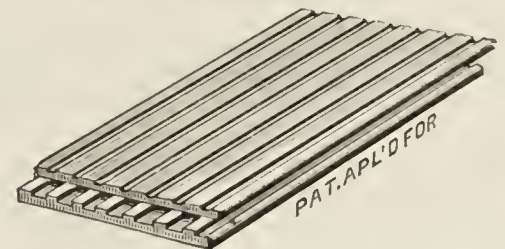
M. SCHULTER,

Industrial Commissioner,

Rock Island-Frisco Lines,

1144 Frisco Building, ST. LOUIS, MO.

Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles, Dies for all shapes, Hips, etc., in metal or plaster.

Special Roller and Auger Presses for Shingles, Interlocking Spanish Tiles. Automatic Shingle Cutting and Punching Tables. Special Tile Tables.

Stiff Mud Machinery for smaller capacity and horse power, stiff mud brick and hollow block dies, dry press liners.

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39 South Channing Ave.

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When Writing to Advertisers.

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," \$1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

T. A. RANDALL & CO.,
Indianapolis, Ind.

Terms
reasonable.

First-class
references.

If you have trouble with Clay, Machinery or Kilns, then consult

THE BRICKMAKERS' ADVISOR,

Julius J. Koch,

(25 years practical experience)

3325 Caroline Street, St. Louis, Mo.

Special attention paid to dry clay press processes and down-draft kilns.

Contracts made contingent upon success.



Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. HANDBOOK on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the

Scientific American.

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, \$3 a year; four months, \$1. Sold by all newsdealers.

MUNN & Co. 361 Broadway, New York
Branch Office, 625 F St., Washington, D. C.

PATENTS

Send model, drawing, rough sketch or photograph of your invention and I will examine the records FREE of charge and advise you whether you can obtain a patent.

All patents taken out by me are advertised FREE in the leading mechanical, electrical and scientific magazines in the country.

Write for my special offer for obtaining Patents, Trade-Marks, Designs, Copyrights, etc. 20 years experience. Best references.

WM. N. MOORE,

Loan and Trust Building,
Washington, D. C.

LACLEDE FIRE BRICK

Are the Best for
BUILDING KILNS.
Laclede Fire Brick Mfg. Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

**Fire Brick for
Building Kilns.**

Factories:

CHICAGO, ILL.
Brickton No. 1 }
Brickton No. 2 } Ottawa, Ill.

General Office:

45th St., Clark to LaSalle Sts.
CHICAGO, ILL.
Phone Yards 525.

Evans & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

— Made by —

MITCHELL CLAY MFG. CO.,

5627 Manchester Avenue.

ST. LOUIS, MO.

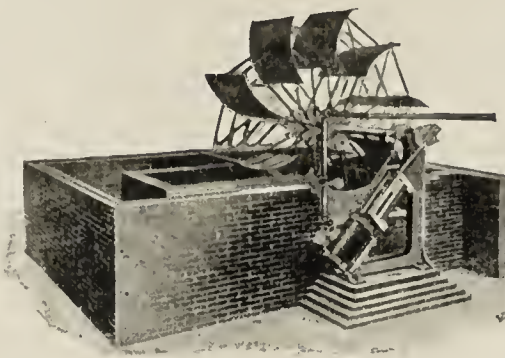
\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

Waste Heat Fans.

While we frequently have to repair other fans than ours we have never yet in years had to repair our own.

Durability is a strong feature and the use of a Brick fan house insures low first cost.

Efficiency is proved by the many thousands of these fans sold for Mining purposes. Outside journals. No water cooled boxes to make trouble.



ESTABLISHED 1869.

Crawford & McCrimmon Co., - Brazil, Ind., U. S. A.

A New Clay Feeder and Mixer.

Send for full descriptive circular.



BOSTON BRICK COMPANY,

Main Yard and Office, South Boston, Va. Branch Yard, Banister River Branch N. & W. Ry. Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

South Boston, Va., Jan. 19, 1907.

Marion Machine, Foundry and Supply Co., Marion, Ind.:

Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men, besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.



If...

You Want to Sell or Buy...

Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

If... You Want a Man

for any position or a position in any connection with the Clayworking Trades use the

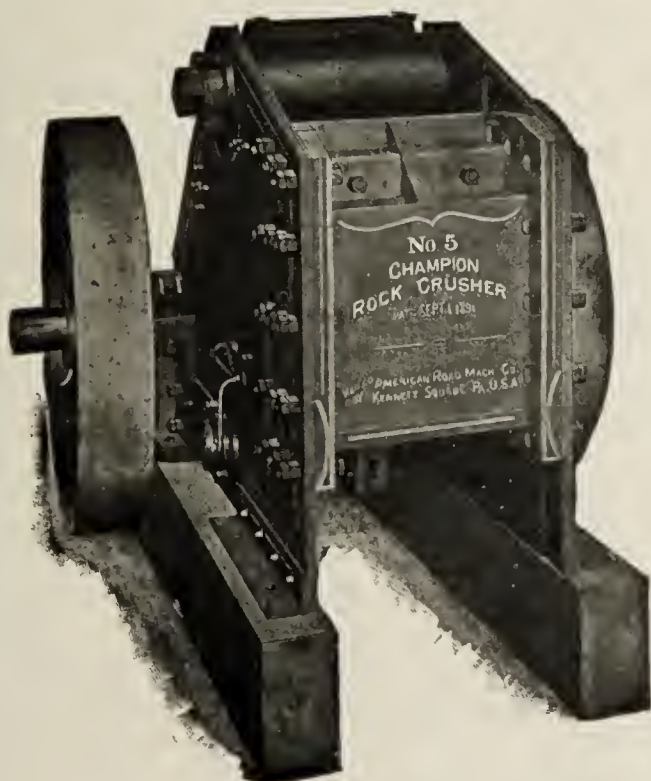
For Sale and Want Columns of...

The... Clay-Worker.

RATES

For all transient advertisements, such as "For Sale," "Wanted," etc., the rate is 25 cents a line per insertion. Average of seven words to line. Head line counts as two lines.

The Best, Quickest, Cheapest Method of Securing Results.



NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good on paper.

It Looks Better

crushing shale, fire clay, rock and other hard material.

THE CHAMPION CRUSHER

is expensive, to do without, because it saves you money.

Catalogue is free on application. Address

AMERICAN ROAD MACHINE CO.

KENNETT SQUARE, PA.

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

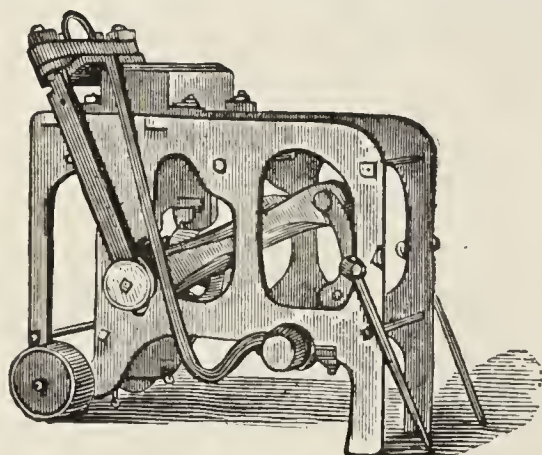
Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

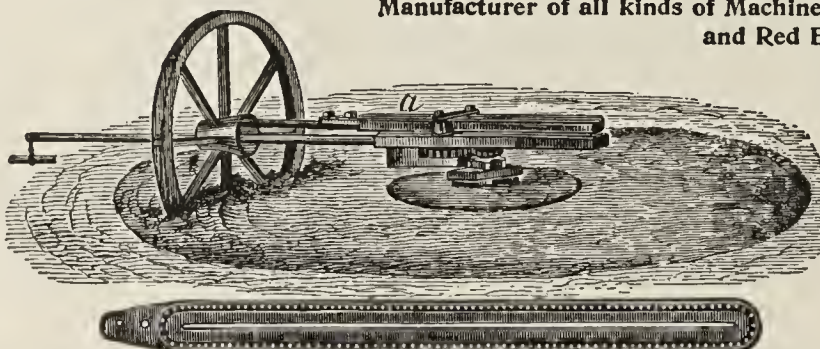


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

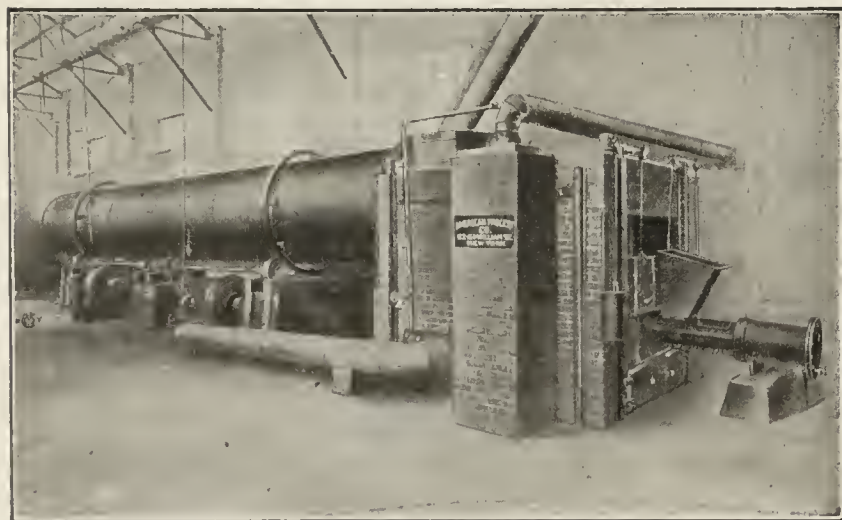
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL, 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

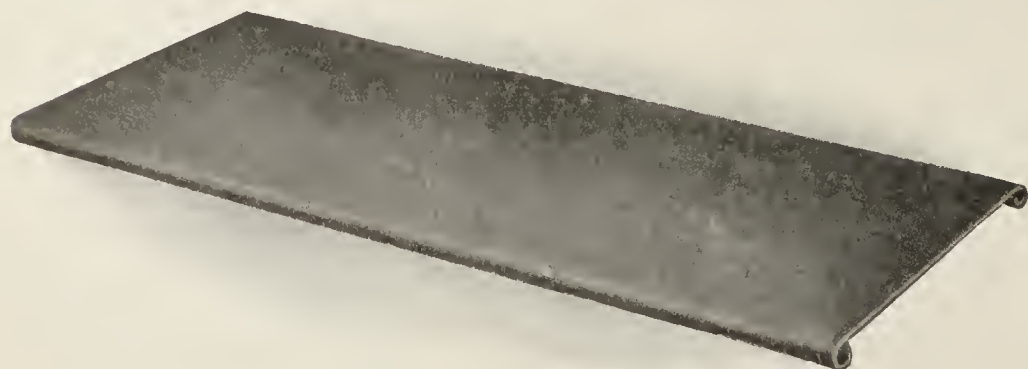
For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel. Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.



Draining Clay Pits.

For this purpose you need a pump that is simplicity itself—one that will handle any kind of dirty, muddy, gritty liquid without suffering the least injury, in short a

PULSOMETER STEAM PUMP.

We don't ask you to take our word for these statements. To responsible parties who will state for what purpose and under what conditions they wish to use it, we will make a special trial proposition. Write for our booklet which tells all about these pumps.

The Pulsometer Steam Pump Co., 14 Battery Place,
New York.

The
ROESSLER-HASSLACHER
CHEMICAL COMPANY,

100 William Street,
NEW YORK.

As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

Ludowici=Celadon Company,

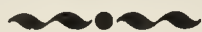
General Sales Office—Chamber of Commerce Bldg., Chicago.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

An Old-Time Favorite.

**Morrison's
Latest Improved Kilns
for Burning Building Brick.**

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & CO.,
P. O. Box 756. Rome, Ga., U. S. A.



B. E. BECHTEL.

**We Are
PRACTICAL BRICKMAKERS.**

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Kenton, Ohio, Nov. 21, 1906.

Mr. John C. Boss, Elkhart, Ind.:

Dear Sir—I will say in regard to using the BOSS SYSTEM for burning brick which I have used for the last six years, that I am more than satisfied with it and do not think that I could find any better way of burning brick and will be glad to recommend it to any one and pleased to show any one who desires to see how it works at my brick works and would be very much pleased to have you yourself call and see how fine we are doing by using the John C. Boss System for burning brick.

Your respectfully,
W. SCHMIDT.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

ELKHART, IND.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906

Pittsburg Kiln Construction Co.,
Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor	3 tier	3 in.	tile of 5,000 each,	15,000
2	"	4	"	3,000
1	"	5	"	2,040
2	"	10	"	550
2	"	12	"	415

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.
The 10 " " 6 ins. and 4 ins.
The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am

Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

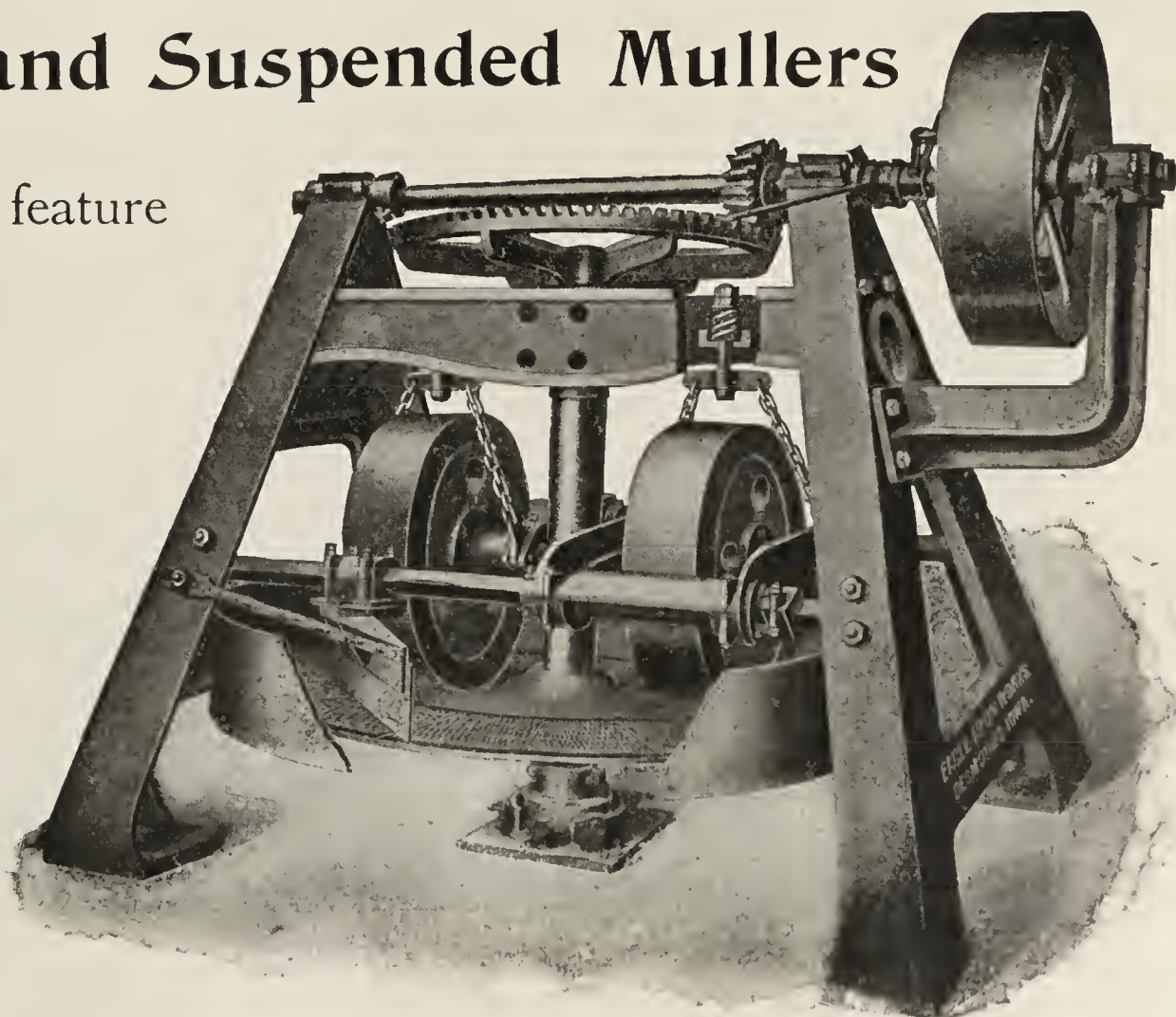
Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.

Independent and Suspended Mullers

the distinguishing feature
of our

DRY PANS.

Other valuable
features which our
catalogue fully
describes.



EAGLE IRON WORKS, Des Moines, Ia.

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



== Jacob Buhrer's Technical Bureau, == CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In Buhrer's Shortened Kiln (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in $1\frac{1}{2}$ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

STEAM SHOVELS FOR BRICK YARDS.



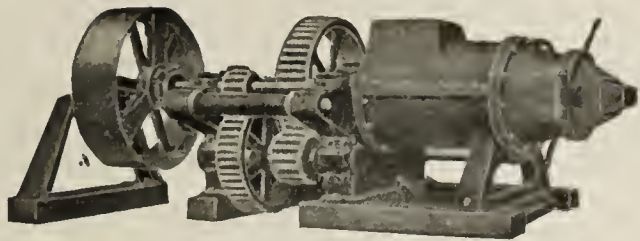
We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

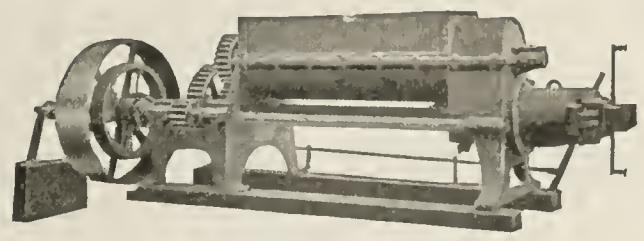
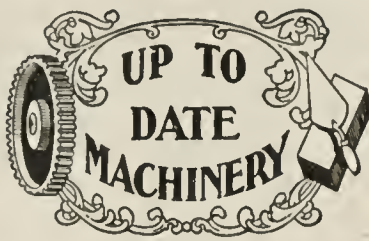
Marion, Ohio.

GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

F. H. HOPKINS & CO., Agents,
Montreal, P. Q.



Auger Machine.



Combination Machine.

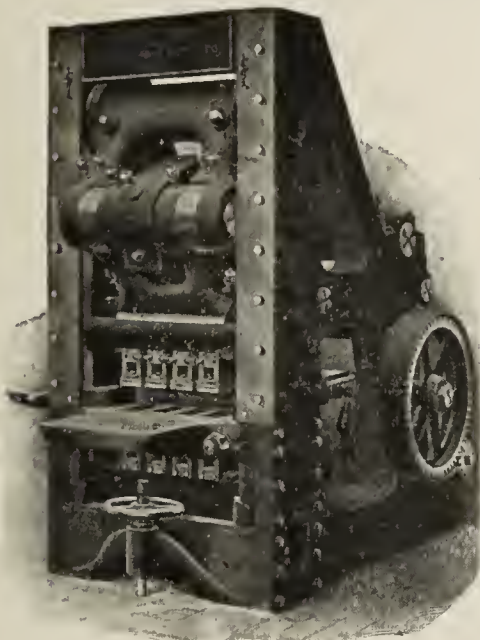
Up-to-Date Machinery

For Making

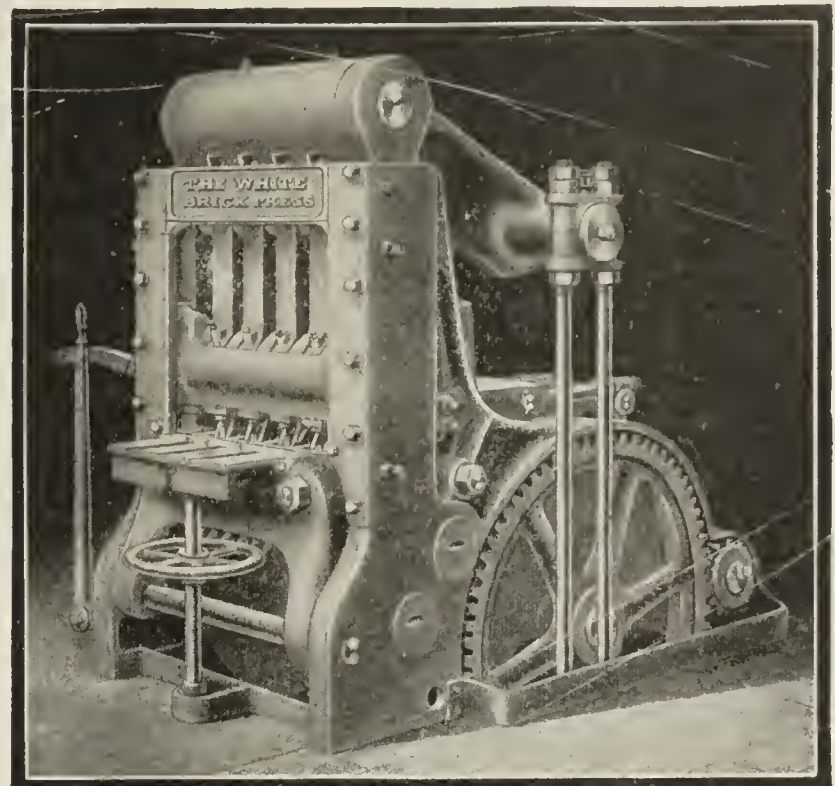
**ALL KINDS OF
BRICK.**

Specialty for 1907
**Rocking Grates
for Kilns.**

**CHICAGO
BRICK MACHINERY
COMPANY,
77 JACKSON BLVD.,
CHICAGO.**



Berg Press.



White Press.

Handle Your Clay With One Man and **The Thew Steam Shovel.**



Type No. 3—George Gynn Brickyard, Cleveland, Ohio.

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

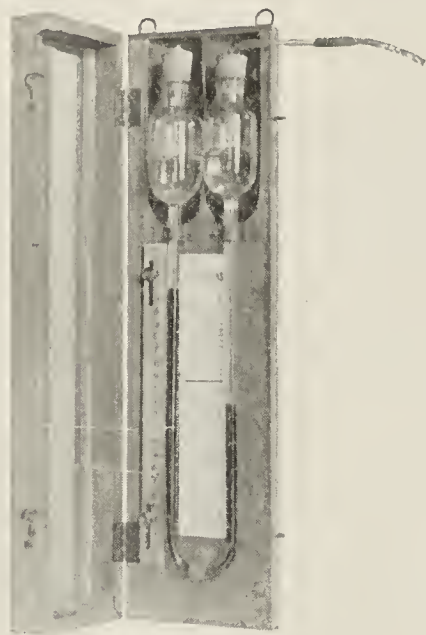
WRITE US FOR CATALOGUES OR INFORMATION.

**THE THEW AUTOMATIC SHOVEL CO., LORAIN,
OHIO.**

DRAFT GAGES

BETTER RESULTS . .

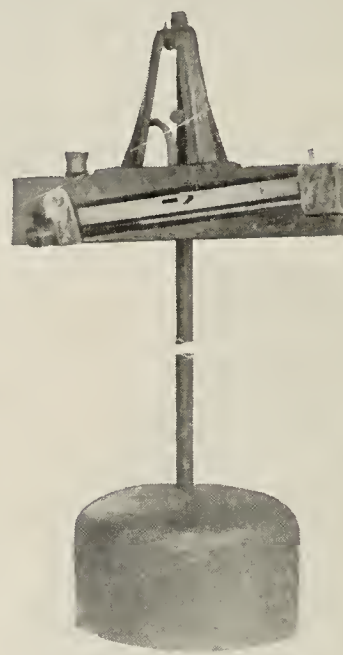
. . LESS FUEL



Seger Gage



Obel Recording Gage

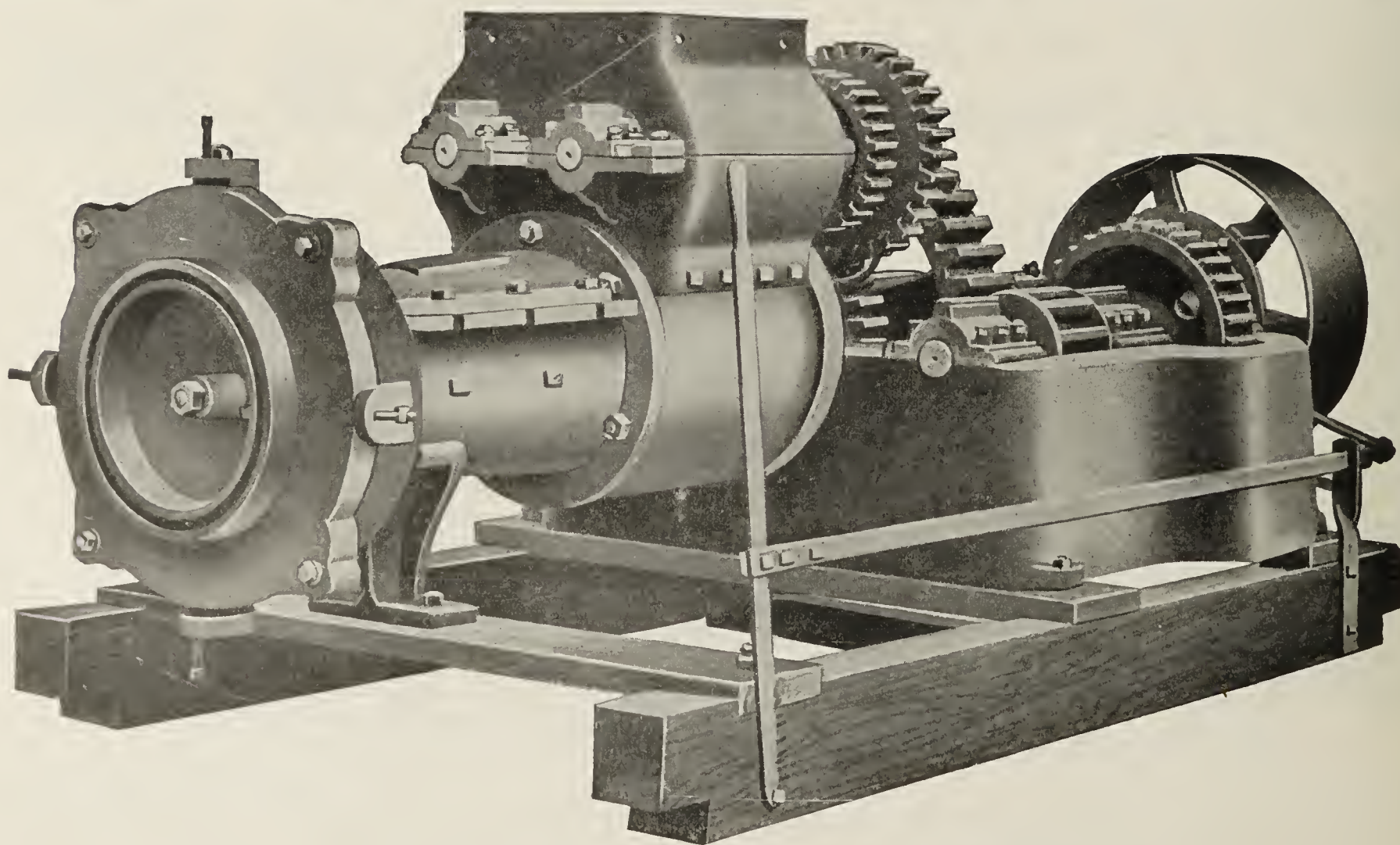


Incline Tube Gage

Pyrometers, Thermometers, Hygrometers, Electric Furnaces, etc.

THE RICHARDSON-LOVEJOY ENGINEERING CO.,

1534 NORTH HIGH STREET, COLUMBUS, OHIO.



NEW MODEL STIFF MUD MACHINE.

Write us for
information.

MADDEN & CO., Rushville, Ind.

BRICKMAKERS WHO FAIL

to take advantage of every opportunity to reduce the cost of manufacturing their products are working on a smaller margin than is necessary.

Every dollar's worth of labor or fuel saved is clear profit to the brickmaker.

Our new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud or soft mud brick.

THE DRYMORE SYSTEM

7TH AND CHESTNUT STS., ST. LOUIS, MO.

EXHAUST STEAM DRYING.

THE LAWRENCEVILLE BRICK AND TILE CO.

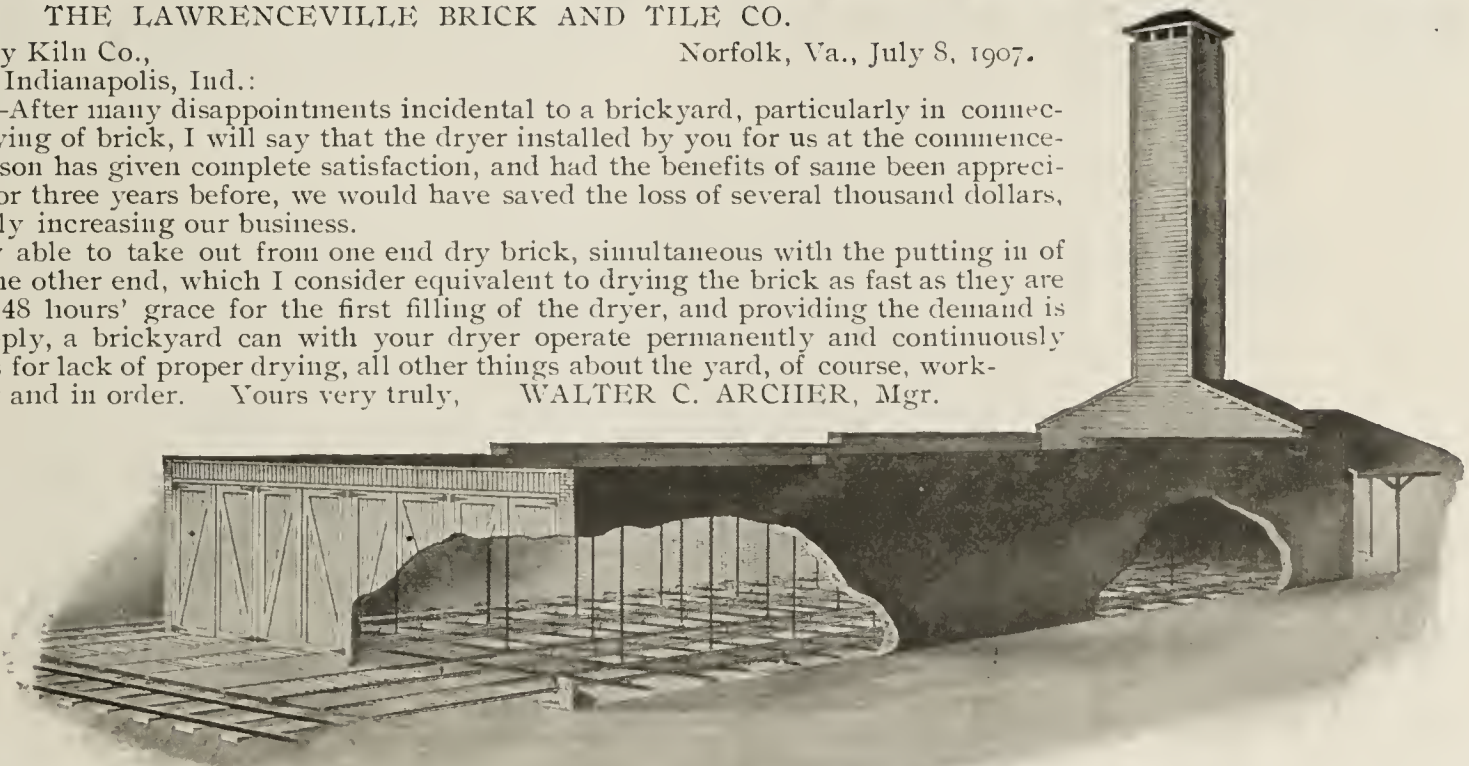
The National Dry Kiln Co.,
Indianapolis, Ind.:

Norfolk, Va., July 8, 1907.

Gentlemen—After many disappointments incidental to a brickyard, particularly in connection with the drying of brick, I will say that the dryer installed by you for us at the commencement of this season has given complete satisfaction, and had the benefits of same been appreciated by us two or three years before, we would have saved the loss of several thousand dollars, besides materially increasing our business.

We are now able to take out from one end dry brick, simultaneous with the putting in of green brick at the other end, which I consider equivalent to drying the brick as fast as they are made, allowing 48 hours' grace for the first filling of the dryer, and providing the demand is equal to the supply, a brickyard can with your dryer operate permanently and continuously without setbacks for lack of proper drying, all other things about the yard, of course, working satisfactorily and in order. Yours very truly, WALTER C. ARCHER, Mgr.

No Fan
No Engine
No Fire
Danger



STEEL Foundations, STEEL Roof Supports, Roller Bearing Cars, Transfers and Turntables.

Send for our large catalogue.

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

THE NATIONAL DRY KILN CO., Indianapolis, Ind.

Portable Excavating, Screening and Loading Machines For Sand and Gravel of Jeffrey Construction.



Elevating-Conveying Catalog No. 80 Mailed Free With Others on
Drilling, Screening, Mining, Crushing, etc.

THE JEFFREY MFG. COMPANY, Columbus, Ohio, U.S.A.

New York Chicago Boston Denver St. Louis Pittsburg Knoxville Charleston, W. Va. Montreal

Success Brick Machinery Co.,

Memphis, Tenn.

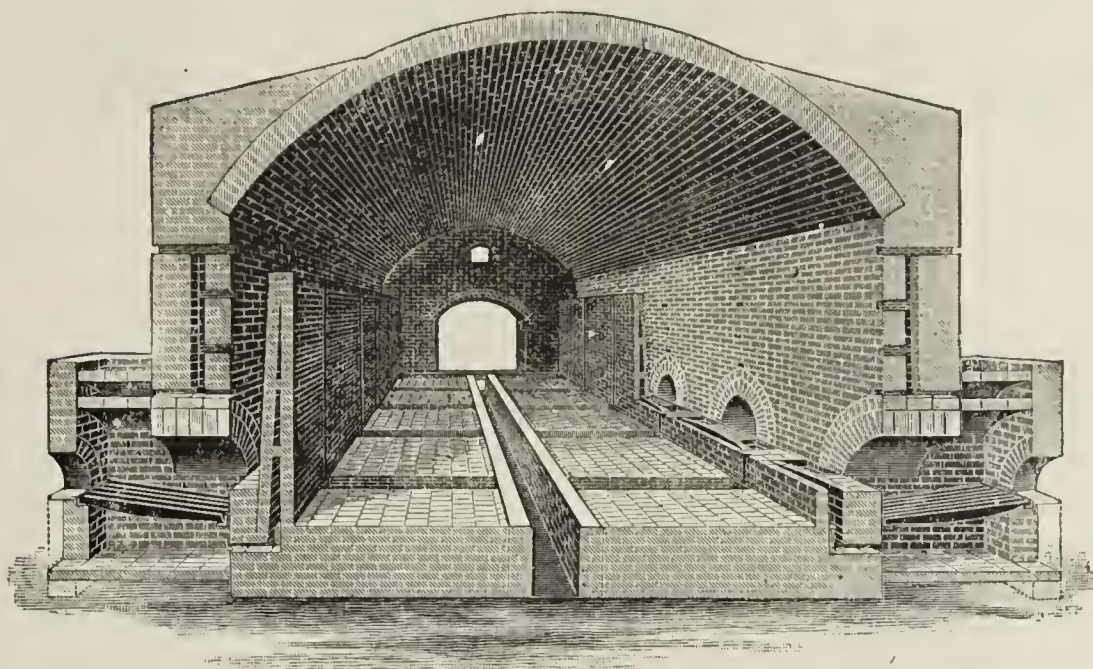
Equippers of COMPLETE Plants.

Let us figure with you on your machinery and supplies. Investigate our brick barrows, trucks, cutting wires, "Perfection" brick moulds, and other supplies.

Our REID'S SUCCESS ELEVATING BRICK CARS AND DRYING SYSTEM [the most modern method of handling your brick] now built in our own shop. Let us install an outfit in your plant. It will save you money.

The EUDALY DOWN DRAFT KILNS

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

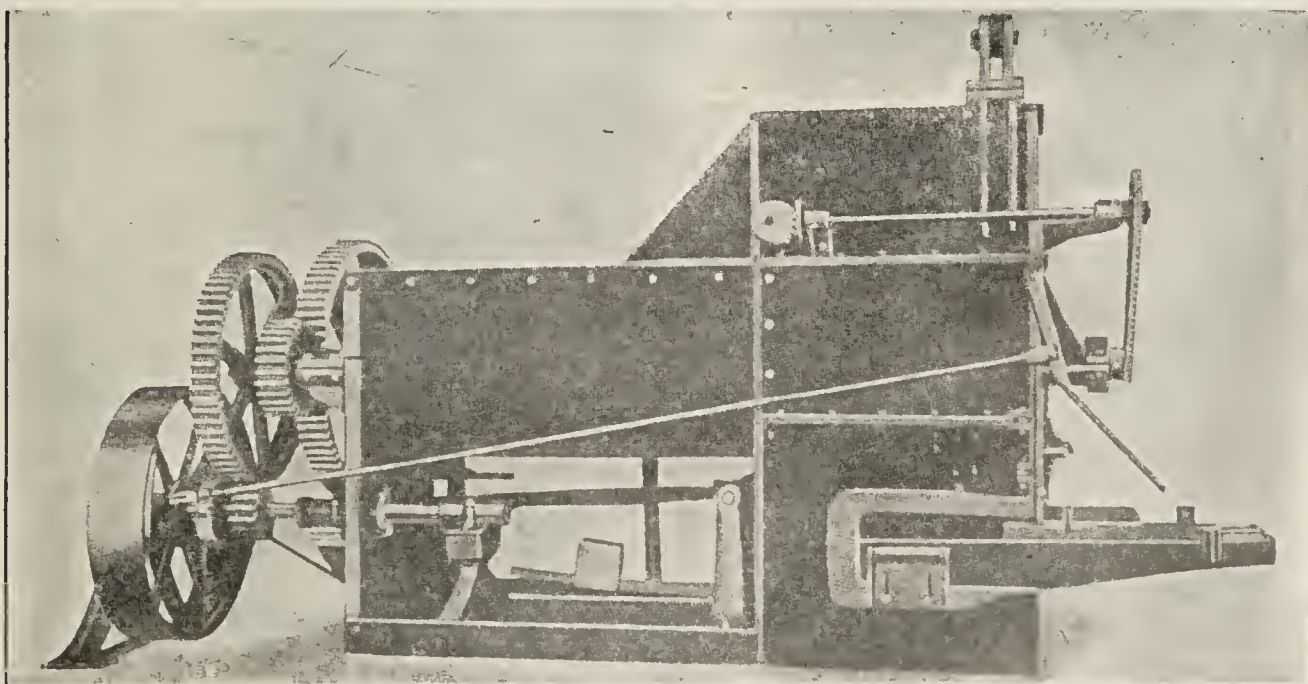
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal, or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg., Cincinnati, Ohio.

The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine, of large capacity strong and heavy, with vertical press. To meet this demand we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

For small capacity yards there is nothing that is quite as good as the "QUAKER" Machine, which is made for horsepower as well as steam.

James W. Hensley,

Indianapolis, Ind., U. S. A.

Let me give you full particulars.

List of users furnished on application.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO
Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untying knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the issue. Enclosed find \$.

Name

Postoffice

Street and Number

County State

The Youngren Continuous Kiln

Producer Gas Fired.



SETTING BRICK IN THE YOUNGREN CONTINUOUS TUNNEL KILN.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

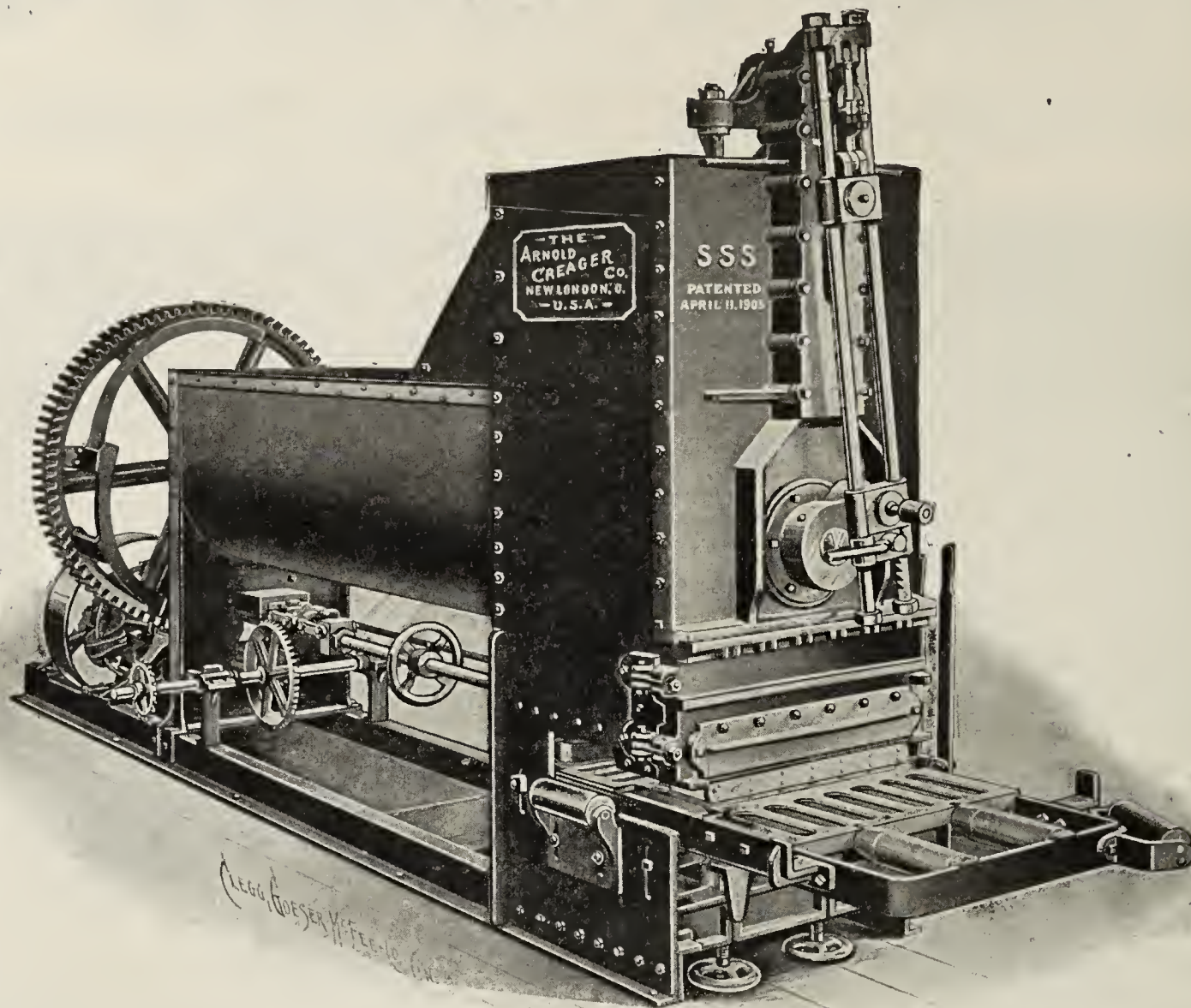
Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

CINCINNATI, OHIO.

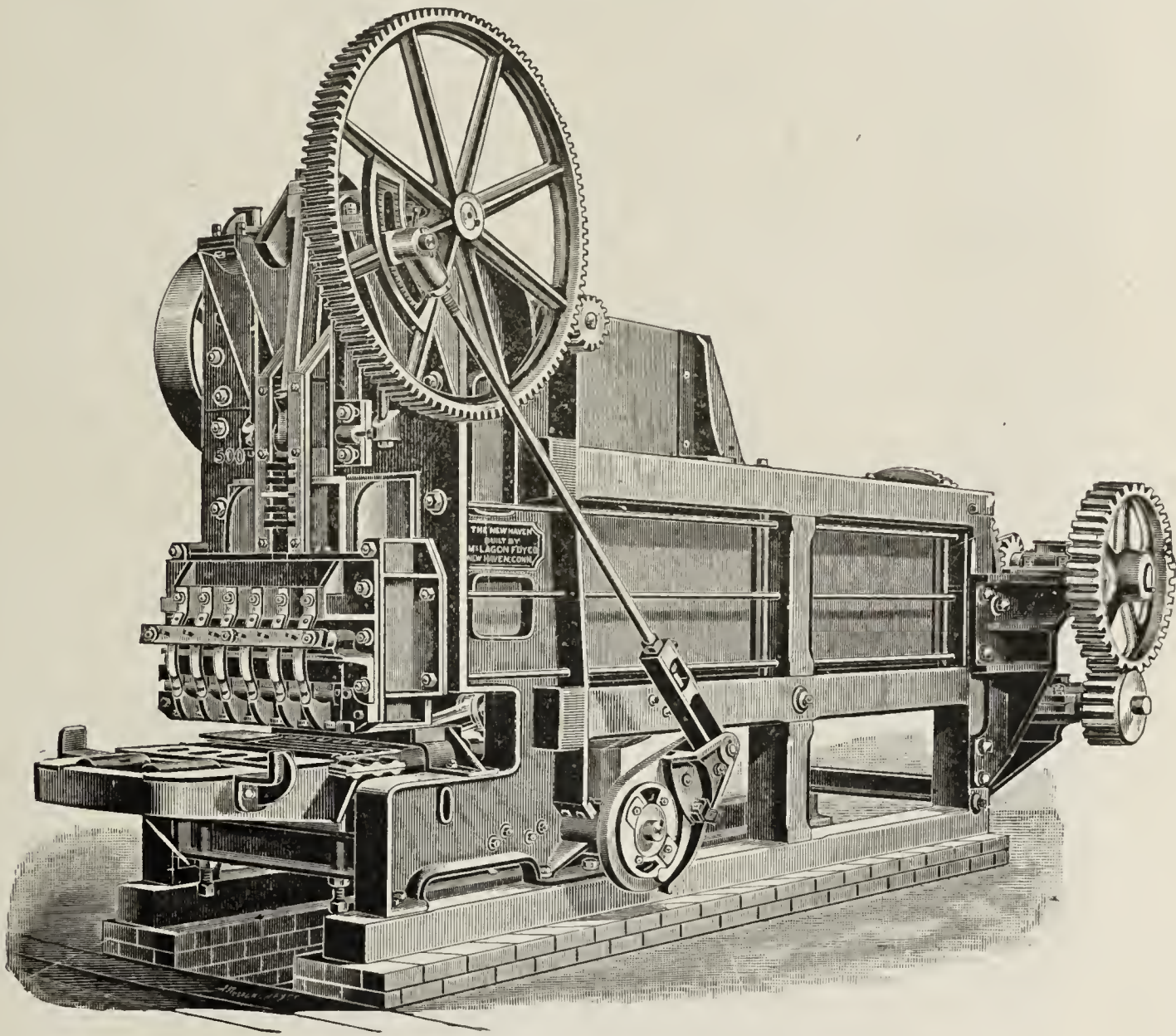
CABLE "AUTOMATIC".

SOFT CLAY BRICK MACHINES

Are the only kind we build, and it is our aim to BUILD THEM WELL. If NEW HAVEN Brick Machines were built just to sell, they might be built cheaper, and for a while more be sold. INSTEAD, they are built to DO THE WORK, and they do it.

Stout shafts, long bearings, large oil holes, strong gears, steel liners and other details in proportion. They are the kind

THAT DON'T BREAK DOWN EVERY DAY.



"New Haven" Horizontal Brick Machine.

"ENDURANCE THE CROWNING QUALITY"

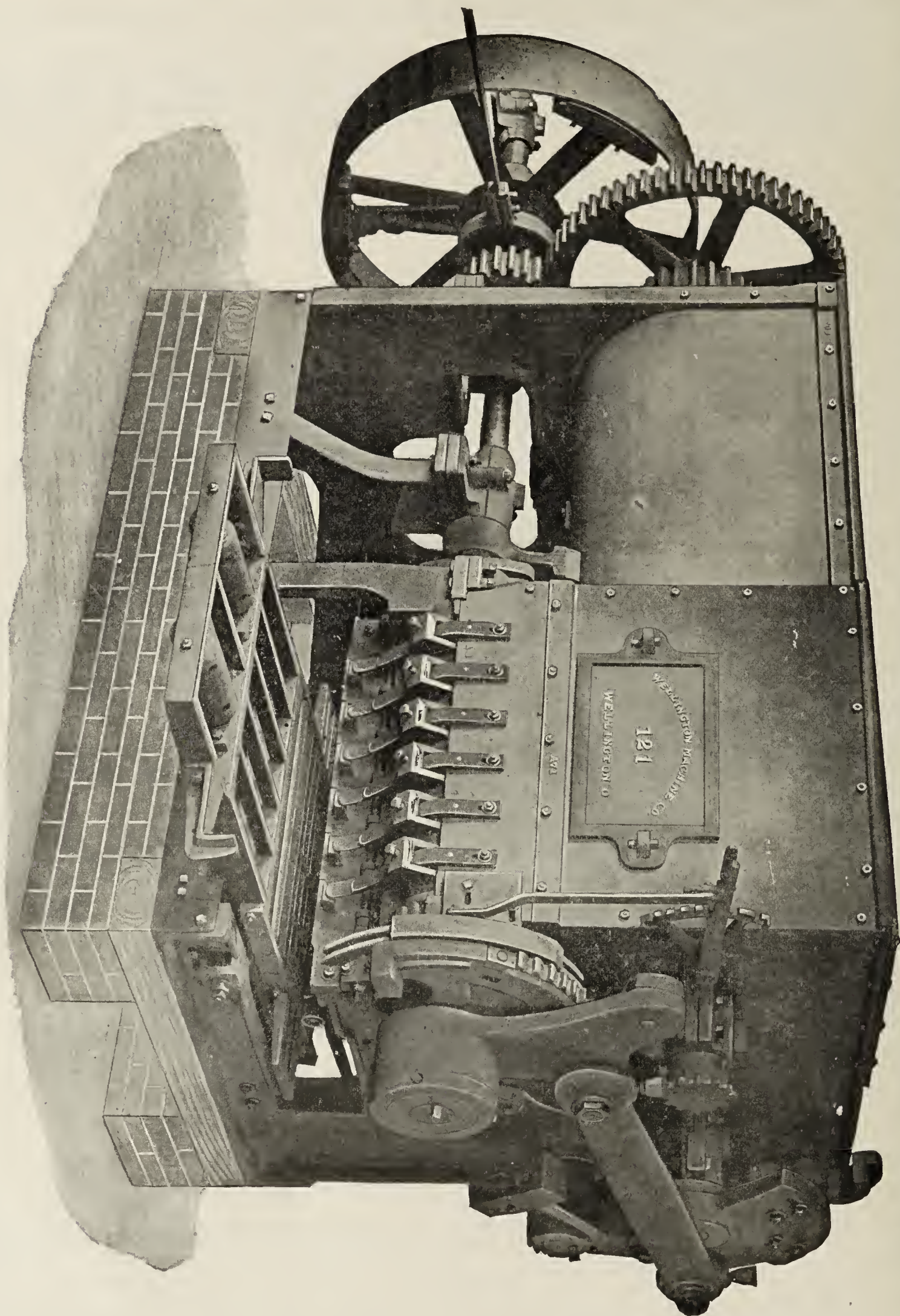
of the New Haven Brick Machines. Their economy does not begin and end with their purchase. It lasts as long as they are in operation. It is not in low first cost, but in efficiency, durability, economy in operation and lack of necessity for repairs. They earn a dividend every day.

The EASTERN MACHINERY CO.,
NEW HAVEN, CONN.

OVER
235
"Monarch"
Brick
Machines
in use

OVER
565
"Quaker"
Machines
in use.

WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

**ROLLER-BEARING
BARROWS.**

The Wellington Machine Co.,
WELLINGTON,
OHIO.

Send for Catalogue.

Sand Mould Brick Plants

OUR SPECIALTY.

The Potts Horizontal Brick Machine is well built, of the best material, simple in construction, strong and durable, has no equal for making brick having clean sharp corners and smooth surfaces.

The Potts Disintegrators are the standard machines of this class. Heavy frames, large steel shafts, adjustable secured steel cutting bars; rolls made from special iron thoroughly chilled.

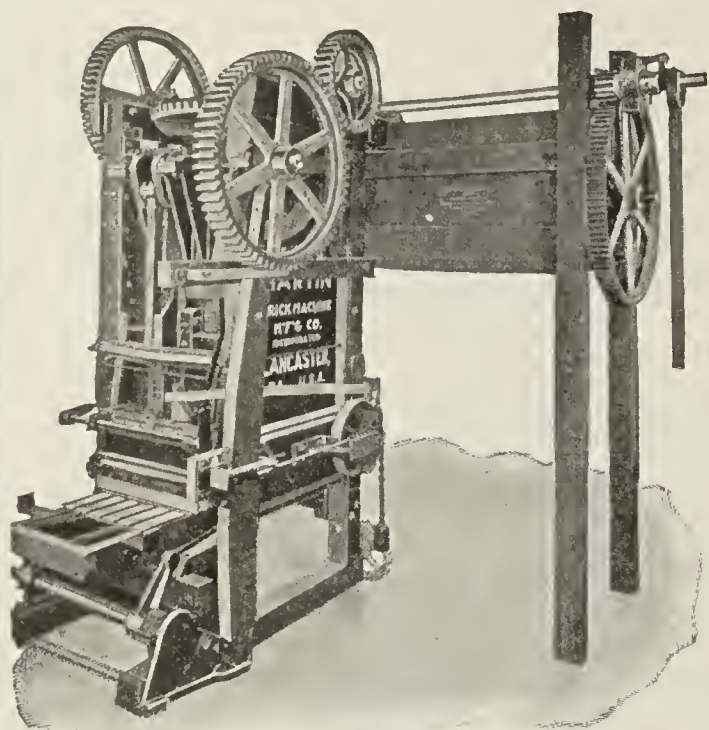
The Potts Mould Sander, simple in construction, does not waste or spill the sand. A boy can operate it.

The Potts System Rack Pipe Dryer, the best drying system on the market, is built on scientific lines; every advantage taken to save fuel. Exhaust steam used during day, live steam at night. Brick thoroughly dried in 12 hours or less.

Let us tell you about it. There is no plant of machinery on the market today that can be compared with it for Quality, Quantity and Cheapness of Operation.

C. & A. POTTS & CO., Indianapolis, Ind.

Mention The Clay-Worker.



THE "MARTIN"

CLAY WORKING MACHINERY

BUILT FOR WORK AND WEAR
CORRECT IN DESIGN—HONEST IN CONSTRUCTION

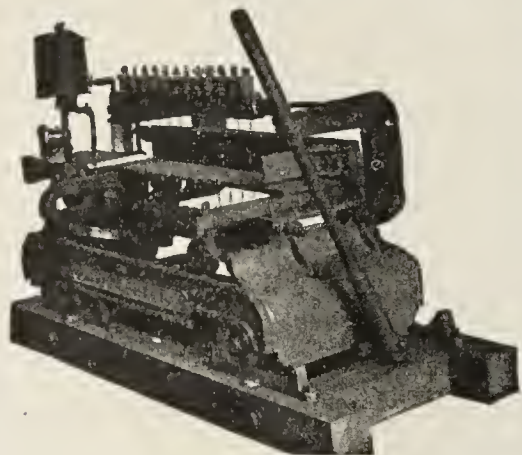
We Are the Builders of Complete Clay Working Plants for the Manufacture of High Grade Building Brick—Our Engineering Department is at Your Command—Write Them—



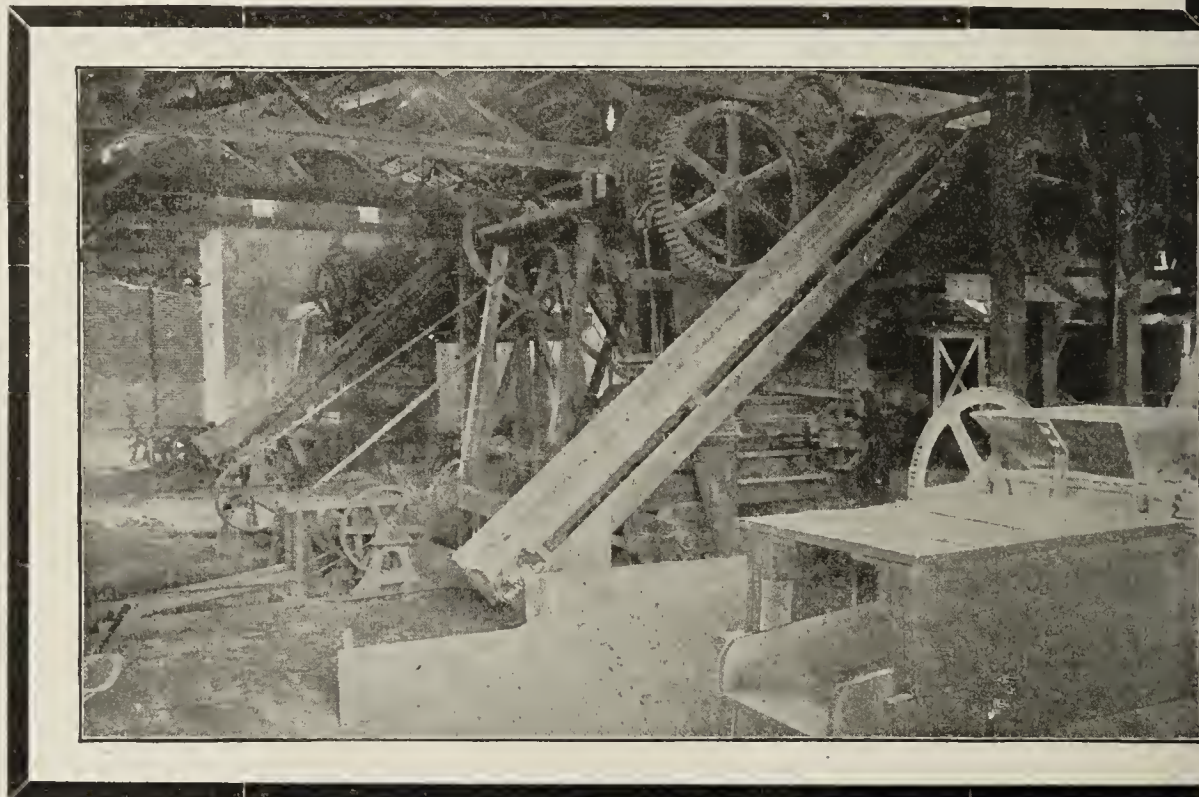
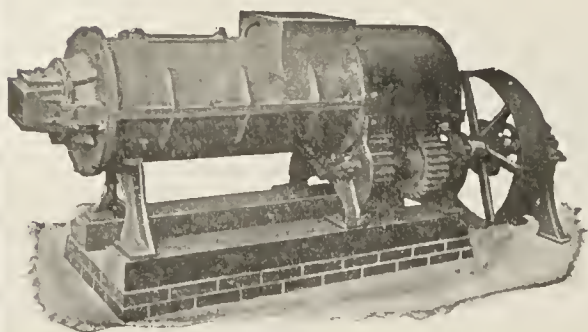
Martin's Style "A" in Combination With Pug Mill Will Produce the No. 1 Article Which Brings Good Marketable Prices.

REMEMBER

"WE FURNISH EVERY-
 THING THE BRICK-
 MAKER NEEDS"

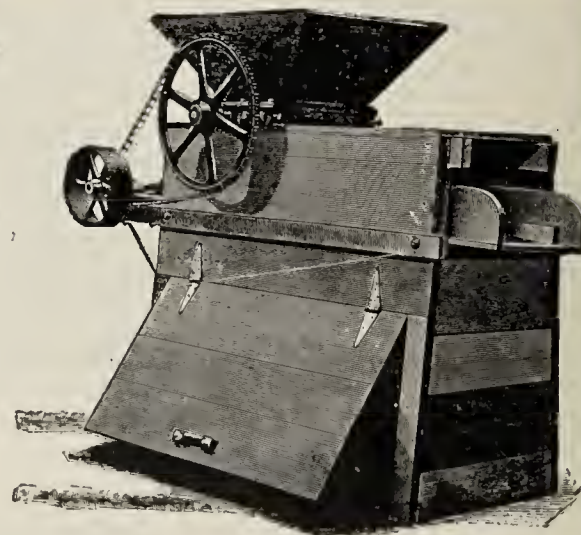


STIFF-MUD MACHINERY
 THAT HAS BEEN
 FULLY TESTED AND
 WILL GIVE
 GOOD RESULTS.



DROP US A LINE AND LET US
 KNOW YOUR NEEDS

CRUSHERS-DISINTEGRATORS
 HOISTING DRUMS
 SCREENS-CLAY CARS
 SAND GRINDERS
 DRYER CARS-BARROWS
 TRUCKS - ETC.



THE HENRY MARTIN
 BRICK MACHINE MFG. CO.
 LANCASTER, PA., U. S. A.



BRICK DRYERS

The "MARTIN SYSTEM"
STEAM RACK PIPE
DRYING & CONVEYING

BRICK--ARE FULLY COVERED BY "PATENTS" GRANTED

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AND

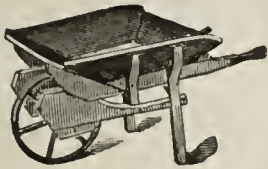
February 22nd, 1898. No. 599509.

October 10th, 1905. No. 95520.

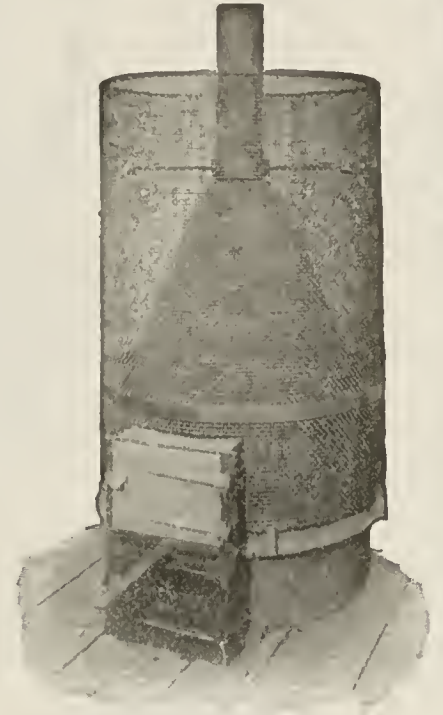
November 14th, 1905. No. 804489.

CONTROLLED

BY THE HENRY MARTIN BRICK MACHINE
==MFG. CO., INC.==LANCASTER, PA.==



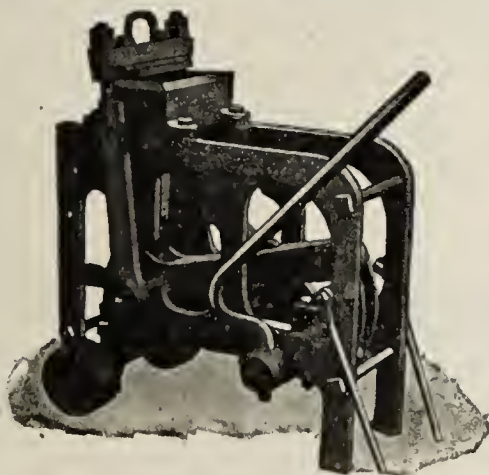
ADAPTED FOR SOFT-MUD OR STIFF-MUD
BUILDING BRICK--LABOR-SAVING THROUGHOUT
NO FANS, BLOWERS, TUNNELS, ENGINES OR CARS



MARTIN'S SAND DRYER
ASK ABOUT IT



The "Martin Patent
System" of Drying is
Superior in Every
Respect to Any Other
System--Quick to In-
stall and Low in
Price and Takes up
Very Little Yard Room



HAND REPRESSES

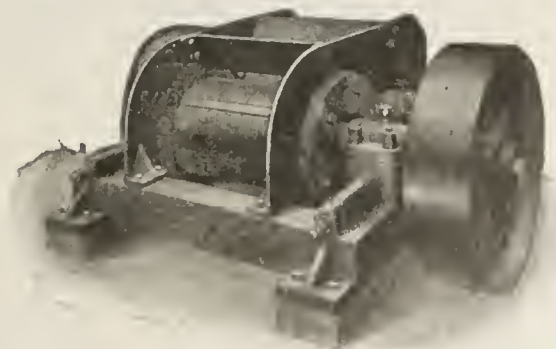
THE SALE AND THE CONSTRUC-
TION OF THE "MARTIN PATENT
SYSTEM" DRYER IS UNDER
THE DIRECT SUPERVISION
OF THE FACTORY OFFICE
AT LANCASTER, PA., U. S. A.

LET US MAKE
YOU AN INTER-
ESTING OFFER



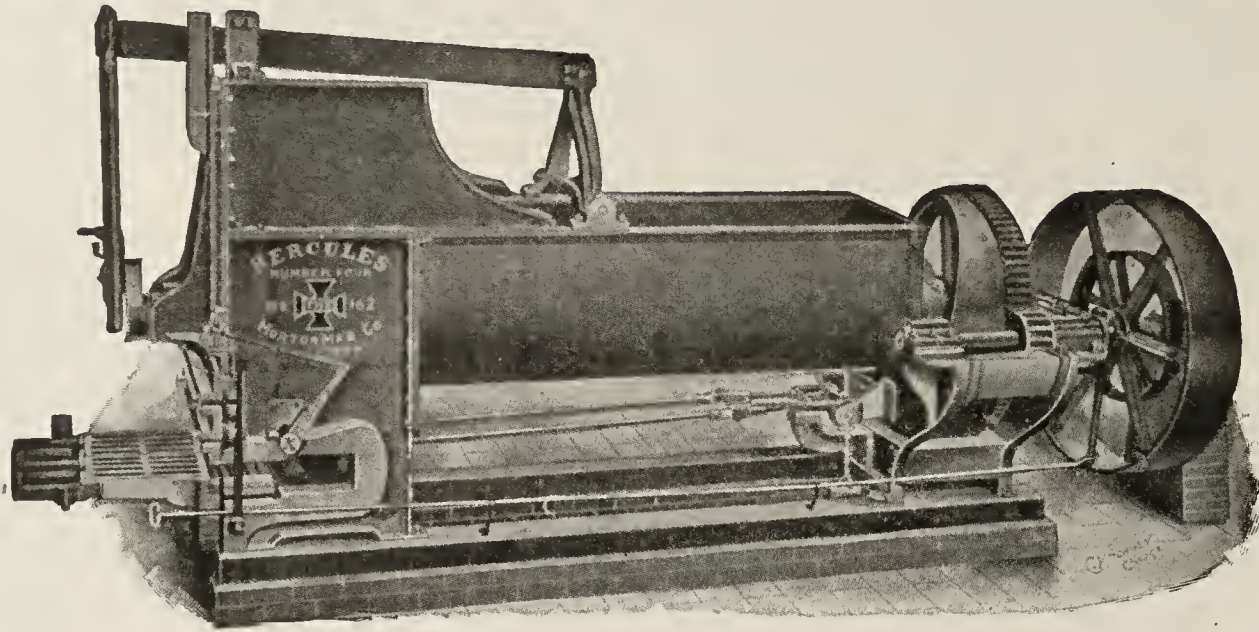
PUG MILLS

MARTIN'S LATEST
IMPROVED DISINTEGRATORS



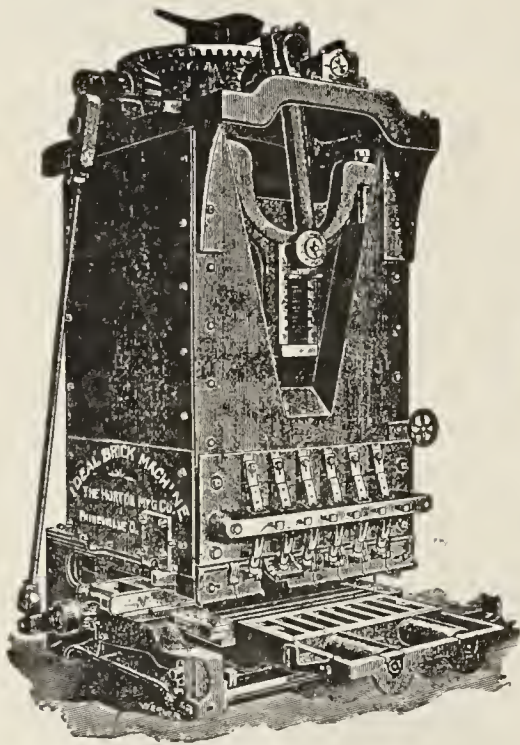
THE HENRY MARTIN
BRICK MACHINE MFG. CO.
LANCASTER, PA., U. S. A.

Do Not Miss This Opportunity.

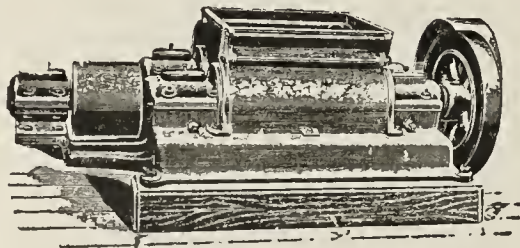


Hercules No. 4 Brick Machine.

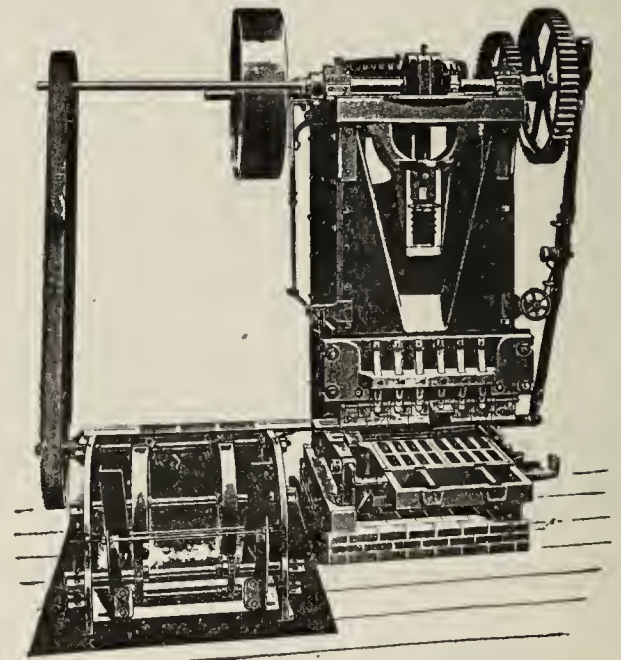
Let Us Have Your Inquiries Today.



Ideal Horse Power.

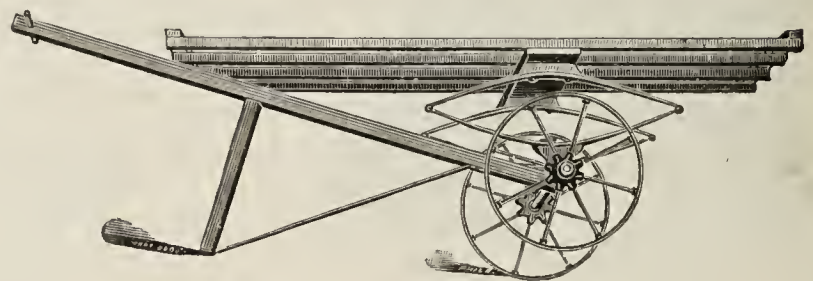
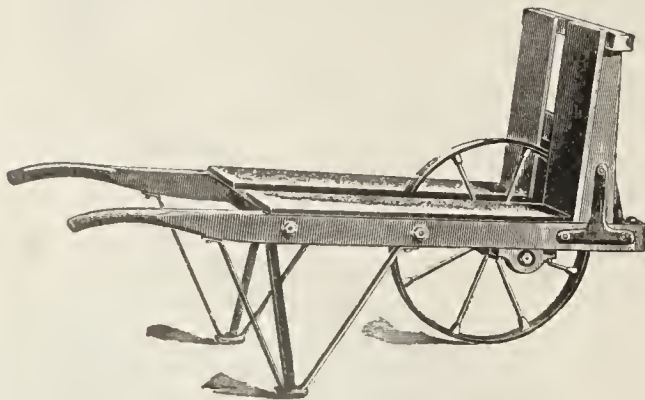


Disintegrator.



Ideal Steam Power and Sander.

OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

BOOKS FOR CLAYWORKERS.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Clay Glazes and Enamels, by Henry R. Griffen. Price \$5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application

Tables of Analyses of Clays, by Alfred Crossley. Price \$1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

Clays; Their Occurrence, Properties and Uses, by Heinrich Ries. Price \$5.00.

A valuable and reliable treatise on the origin of clay, chemical and physical properties, kinds of clay, methods of mining and manufacture and distribution of clay in the United States, including a chapter devoted to Fuller's Earth, its distribution in the United States, mining and uses, etc. The book is well illustrated, which adds much to its value.

Bricklaying, by Owen B. Maginnis. Price \$2.00.

This book contains extensive explanations of the most improved modern methods of bricklaying, and is the current practice and experience of the best authorities, making an invaluable work of reference for architects, engineers, contractors, builders and mechanics.

The Clayworkers' Handbook, by the Author of "The Chemistry of Clayworking." Price \$2.00.

A manual for all engaged in the manufacture of articles from clay, containing chapters devoted to Materials Used in Clayworking, Preparation of the Clay, Machinery, Transport, Conveyors, etc., Drying and Dryers, Engobing and Glazing, Setting or Charging, Kilns, Firing, Discharging, Sorting, Packing and Dispatching, Defects, Tests, Analysis, etc., etc.

Burning Brick in Down Draft Kilns, by W. D. Richardson. Price \$1.00.

A manual on the "Burning of Brick," covering all the essentials of good burning, including chapters on kiln repairs, stages of burning, oxidation period, vitrification period, cooling, with valuable tables and illustrations of various testing apparatus.

Engineering for Land Drainage, by C. G. Elliott. Price \$1.50.

Giving instructions for laying out and constructing drains for the improvement of agricultural lands intended for the use of those who are charged with the responsibility of making plans for and executing drainage improvements.

Kiln Records, by W. D. Richardson. Price \$1.00

To establish a successful system of burning, observations and records should be made regularly, carefully and conscientiously, and this can be done to best advantage by the use of Mr. Richardson's Kiln Records.

Vitrified Paving Brick, by H. A. Wheeler, E. M. Price \$1.00.

A review of present practice in the manufacture, testing and uses of Vitrified Paving Brick.

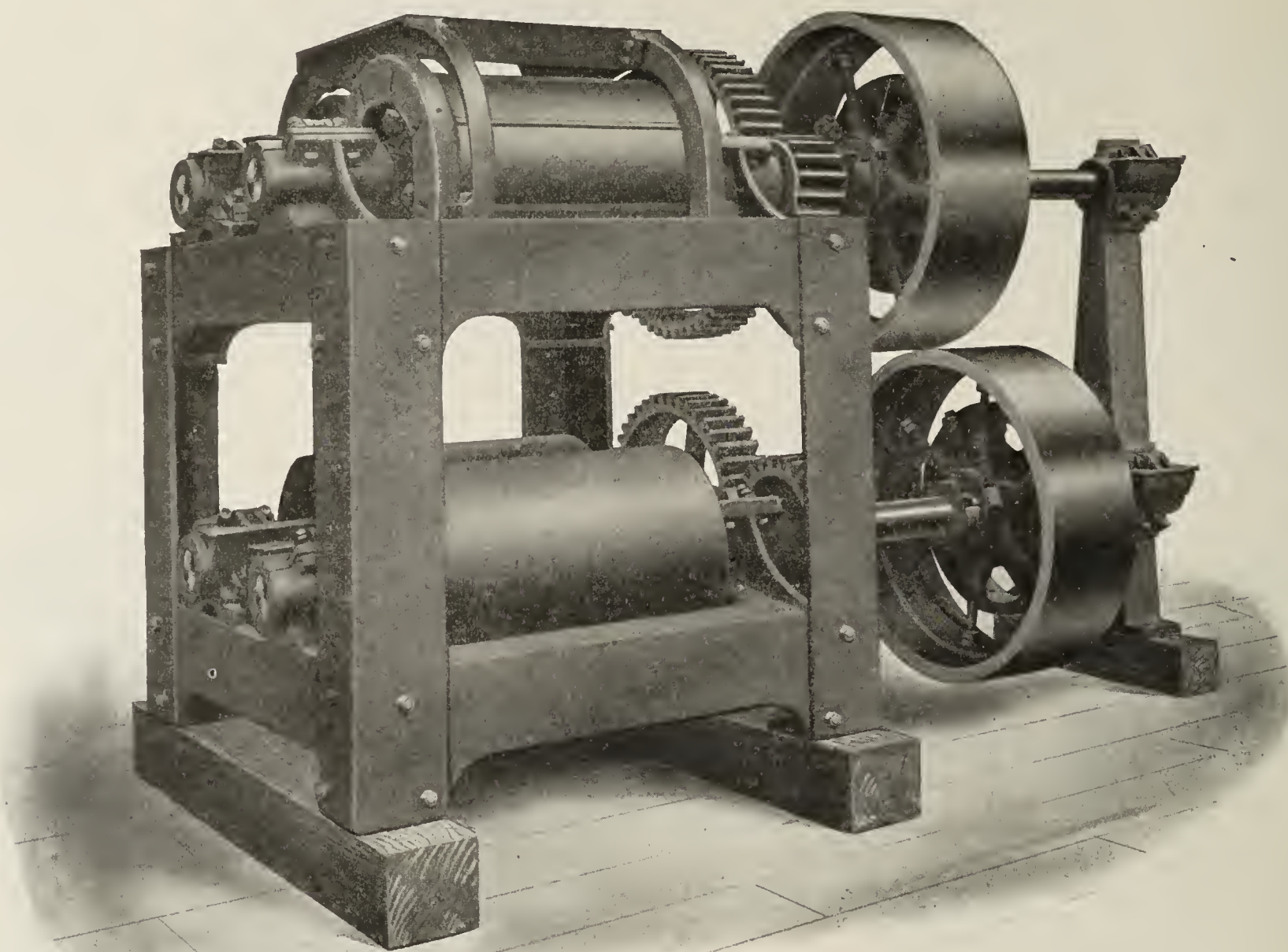
Practical Farm Drainage, by C. G. Elliott. Price \$1.00.

A Treatise on the Benefits of Farm Drainage, with plans and illustrations for making and laying tile.

These Books will be Mailed, Postage Prepaid, to Any Address in the United States or Canada, on Receipt of Price.

T. A. RANDALL & CO.,
Indianapolis, Ind., U. S. A.

A NEW COMPOUND DISINTEGRATOR = CRUSHER.



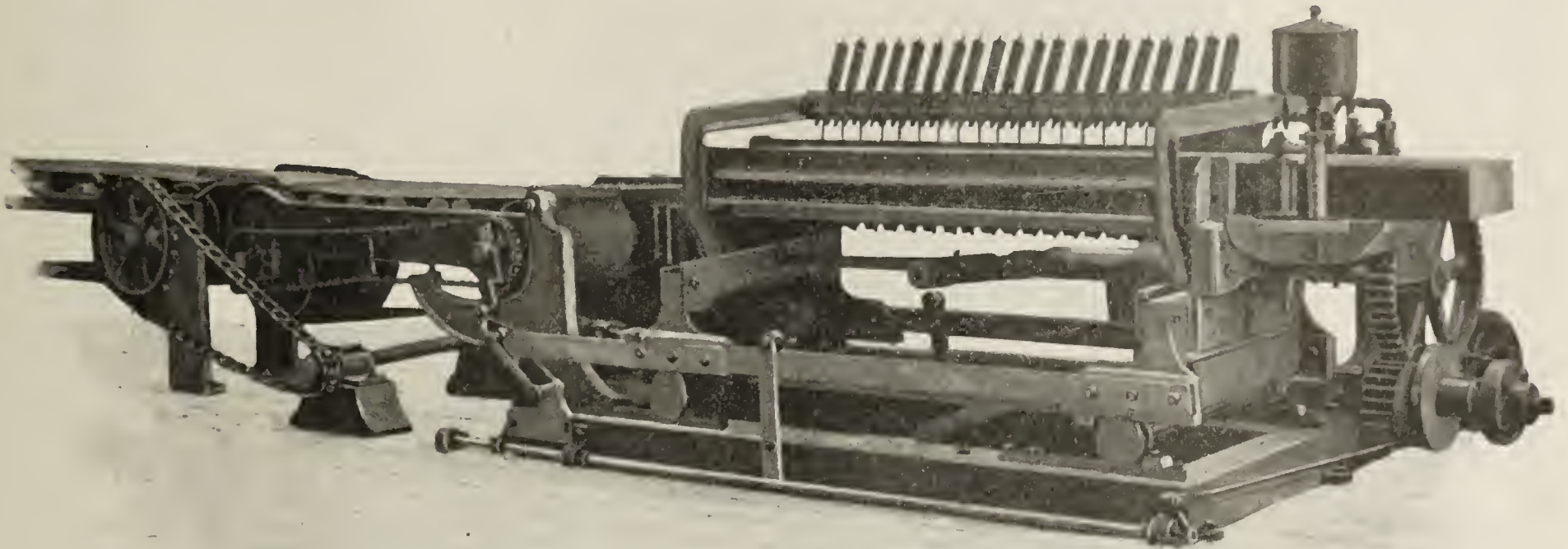
THE BREWER NO. 11.

The space between the two parts of the machine is clear and accessible from all sides, so that choke or clog may be readily removed. The lower rolls are six inches wider in face than the upper set, making choke or clog most unlikely to occur. The shells of all four rolls are made of white-iron and are removable. The cutting bars of the disintegrating roll are removable, reversible and adjustable. The machine weighs 13,500 lbs.

Ask for Bulletin No. 7, which gives all specifications.

H. BREWER & CO., TECUMSEH, MICHIGAN.

Modern Clayworking Machinery.

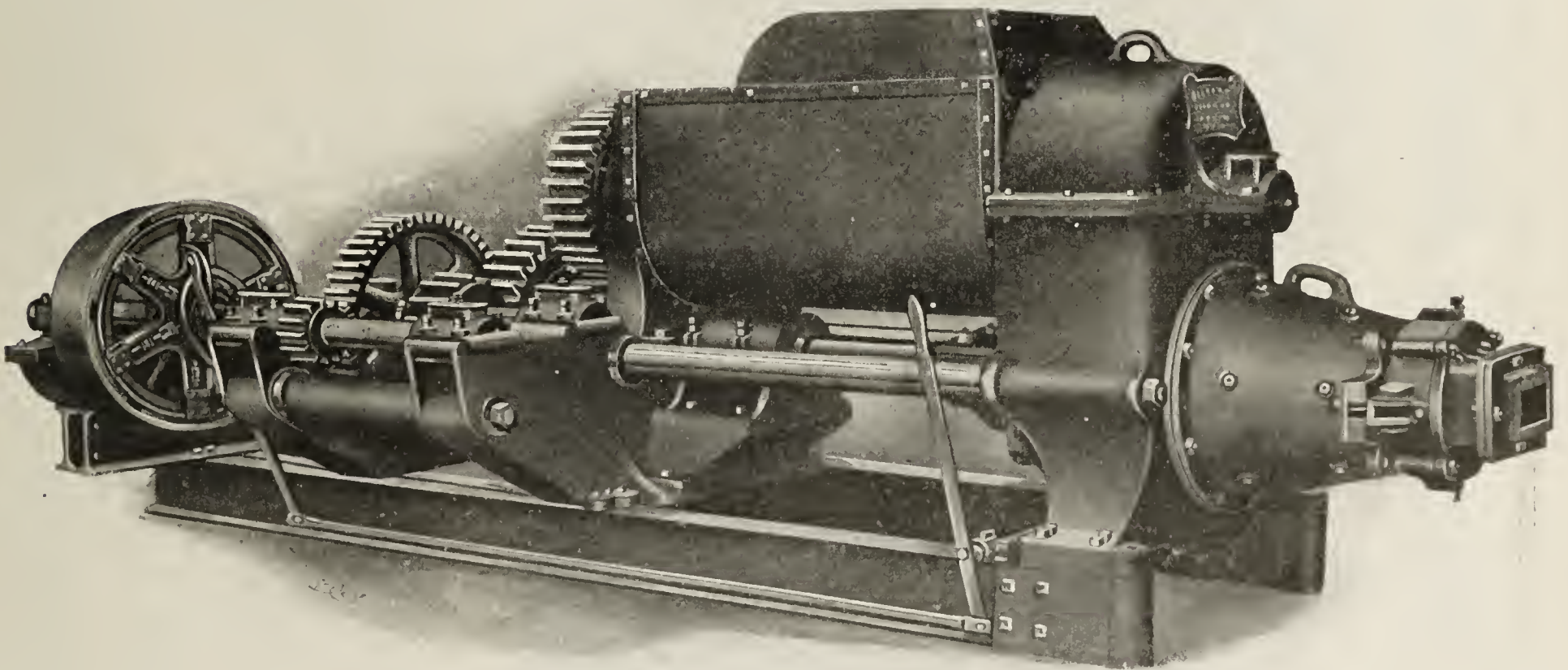


Automatic Side-Cut Table.

Cuts brick 28 inches from brick machine die.

Short cutting wires.

Capacity 25,000 to 125,000 brick in 10 hours.



No. 6 Combined Brick Machine and Pug Mill.

Steel gears throughout.

Self-contained on steel I beams.

Length of pug mill five to thirteen feet.

Interlocking hubs and independent knives.

Capacity 50,000 to 75,000 brick in ten hours.

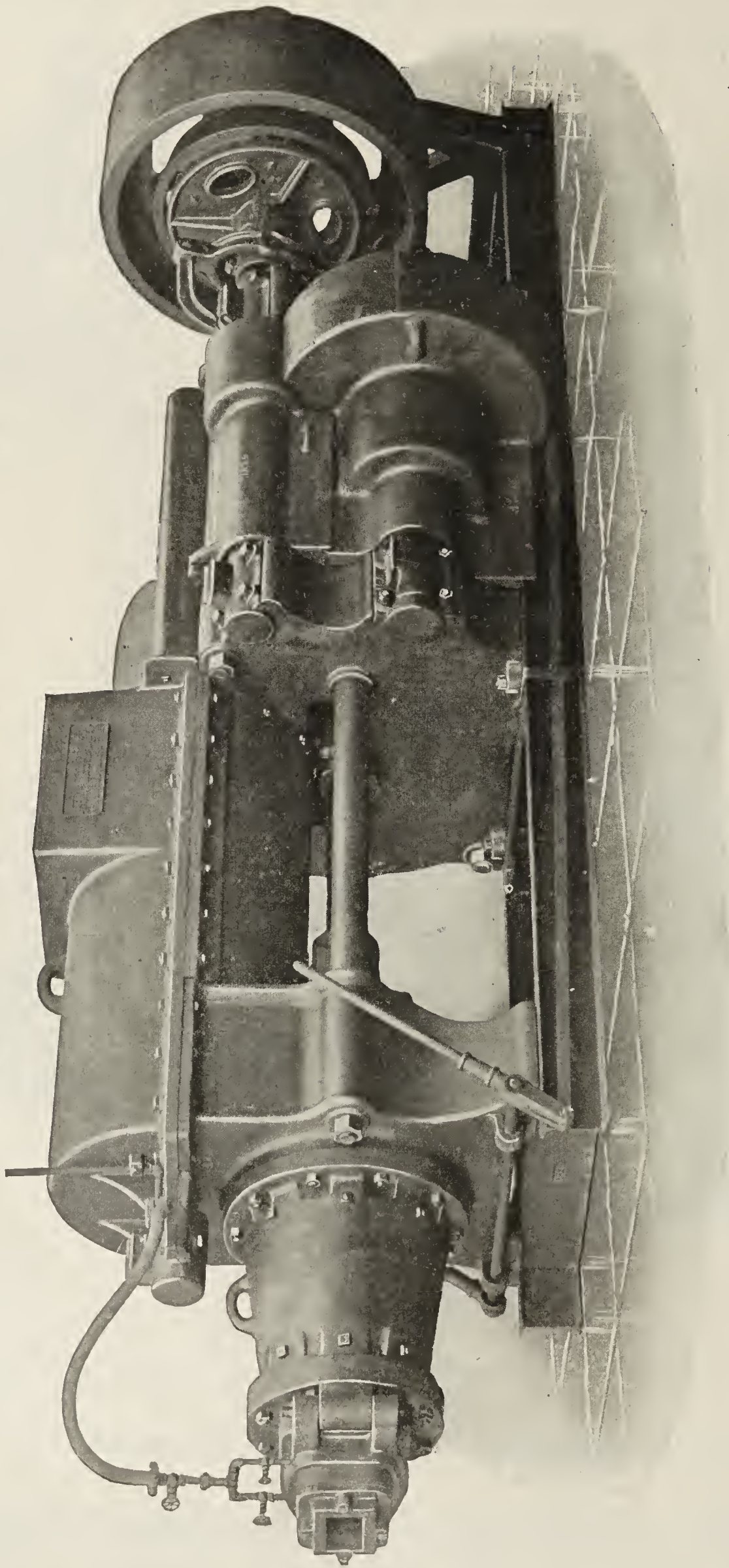
Our Piano Wire Screens Are Doing Excellent Work.

THE BONNOT COMPANY, Canton, Ohio.

Write for Circular No. 12.

Mention The Clay-Worker.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel 'I' beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

Size of hopper, 26-in. x 26-in.

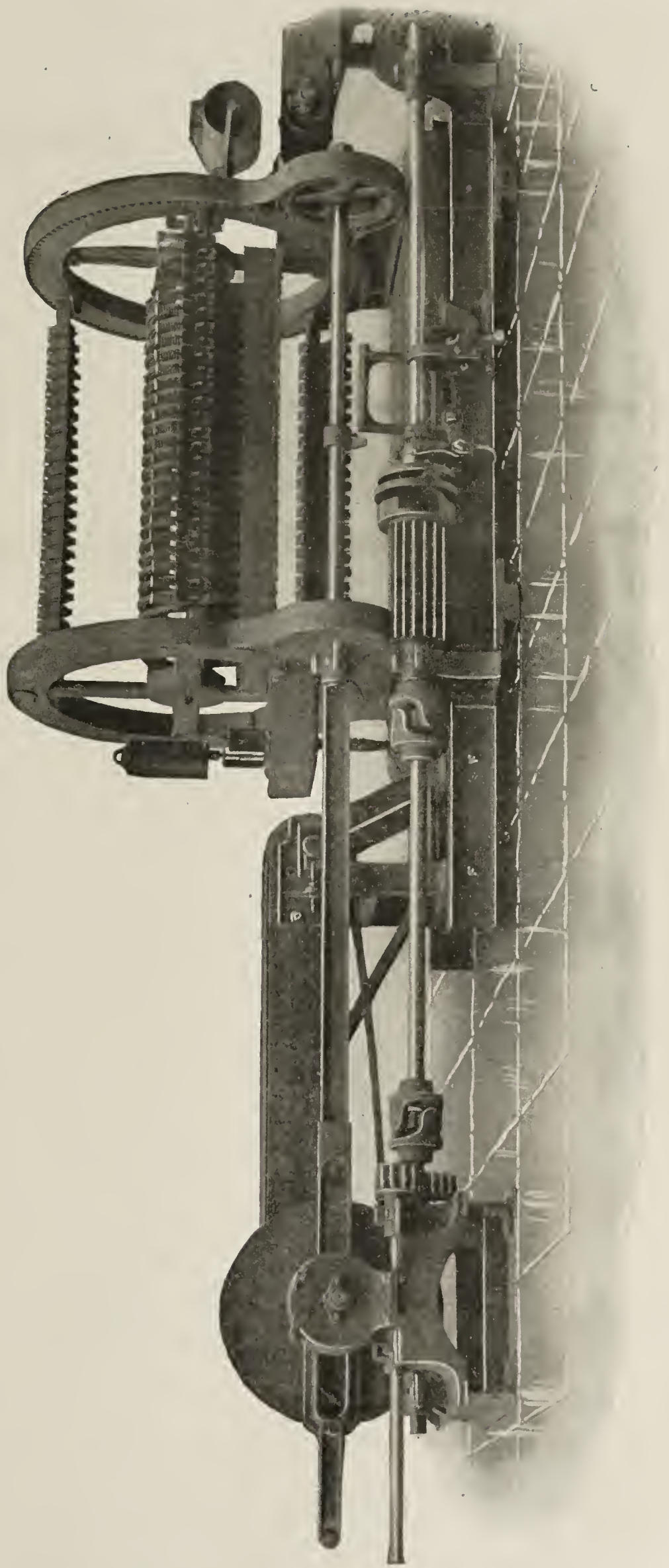
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



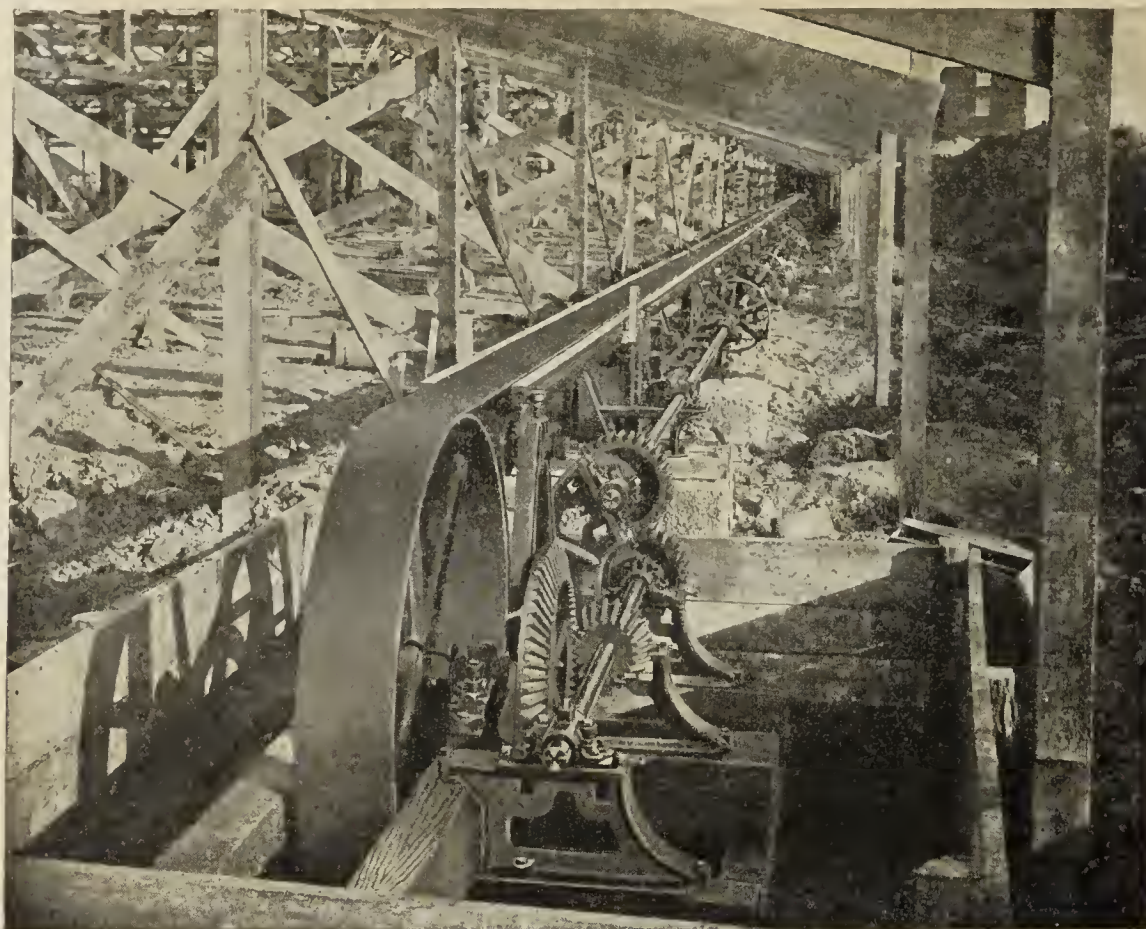
Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FRIESE & CO., Galion, Ohio.



Builders' Brick Company, Chicago Heights, Ill.

If it's "worth while" to save \$1.00 per M in the cost of manufacturing brick, it's worth while to investigate the

Scott Kiln=Drying System

of conveying and drying.

On a yard with an average daily capacity of 60M bricks for 260 days, the saving effected by this system will, at a low estimate, amount to over \$15,000.00 per year, when compared with the cost to operate any other of the most modern and economical systems known.

This saving is equivalent to a reduction of \$1.00 per M in the cost of making the bricks.

Shall we send you bulletin No. 213C?

American Blower Company

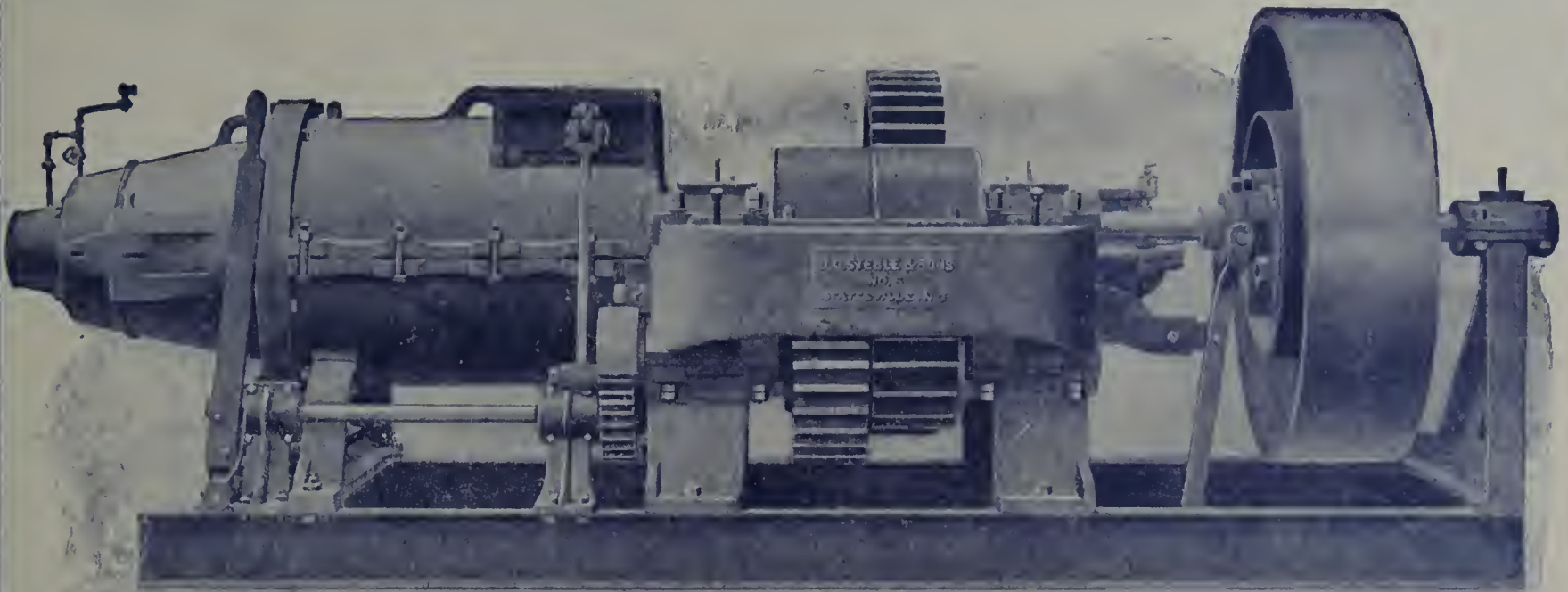
Detroit, Mich.

[LICENSEES ALEX A. SCOTT PATENTS]

141 Broadway
New York

1550 Marquette Bldg.
Chicago

1019 Empire Bldg.
Atlanta



**No. 5. CAPACITY 50,000 to 100,000
PER DAY.**

**Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.**

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen:—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

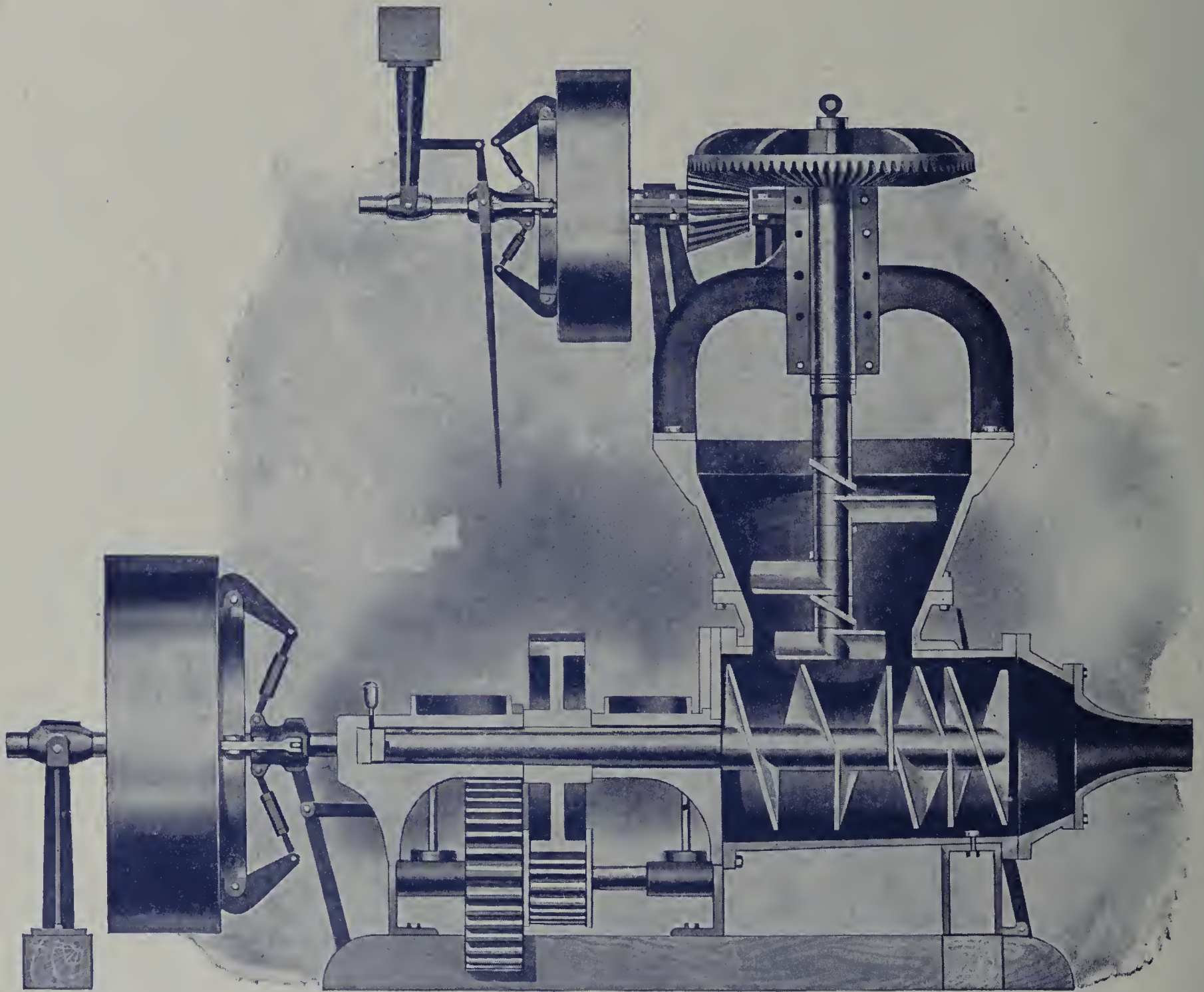
Success Brick Machinery Co., Memphis, Tenn., Western Agents.

OUR SPECIAL "ELI" BRICK MACHINE

LATEST IMPROVED.

Large Capacity. Runs Easy.

"Has all the merits of any machine and then some."

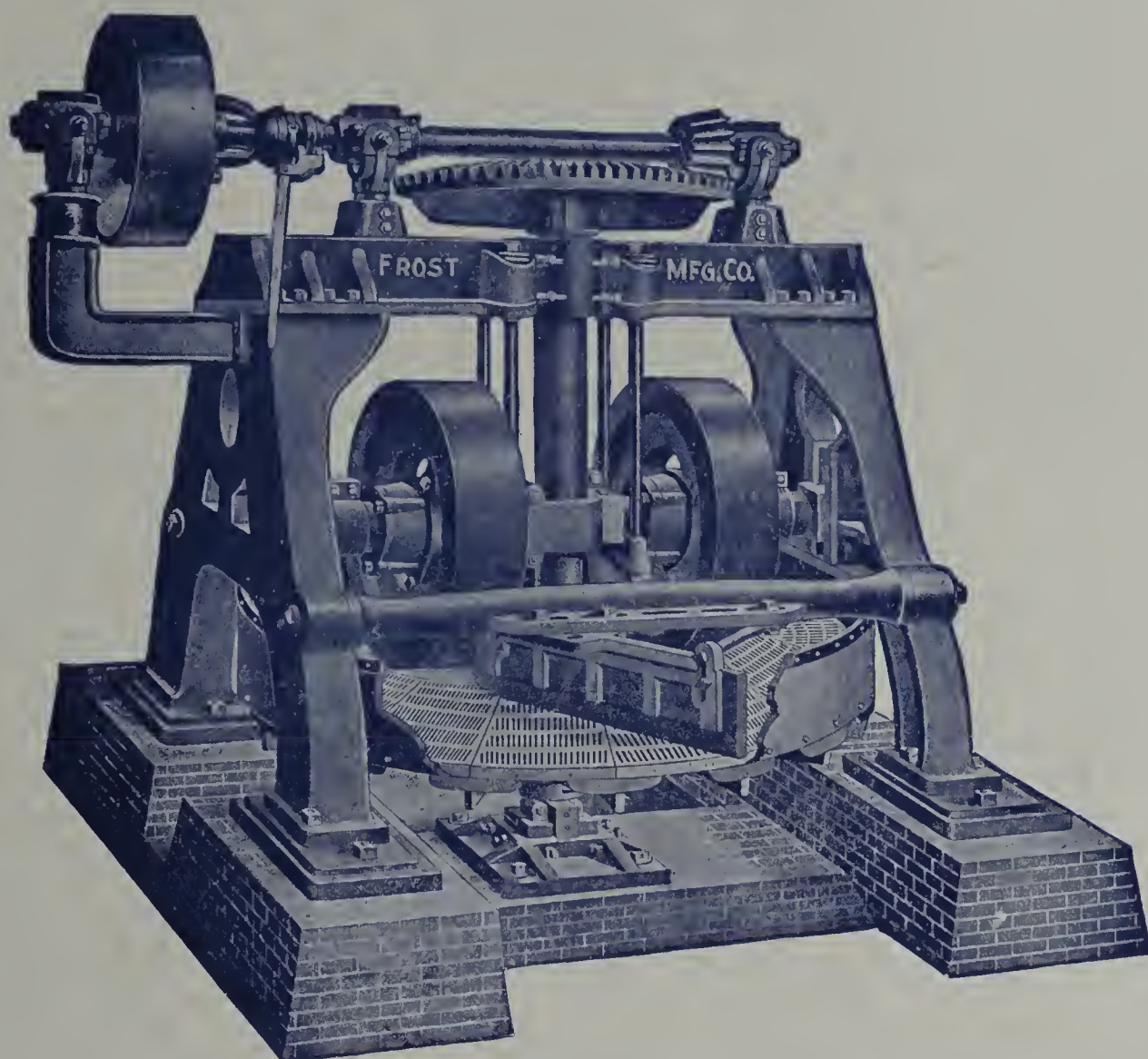


SPECIAL "ELI" BRICK MACHINE

Write for Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,
MORENCI, MICH., U. S. A.

FROST DRY PAN



When you buy a Pan buy a **FROST Pan**. We also build the **Highest Class of Engines and Boilers**—the kind that give satisfaction and operate economically.

Send for our Illustrated
Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.

SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN

After the fires are out, a kiln holding 200,000 bricks will throw off more heat than a 100 h.p. boiler would require for two weeks' operation. Why waste this enormous amount of heat when it can be successfully utilized for drying purposes in an

"A B C" DRYER.

Shall we send you Catalogue No. 159C?

American Blower Co.
Detroit Mich.

The Perfect Clay Screen in a New Dress.



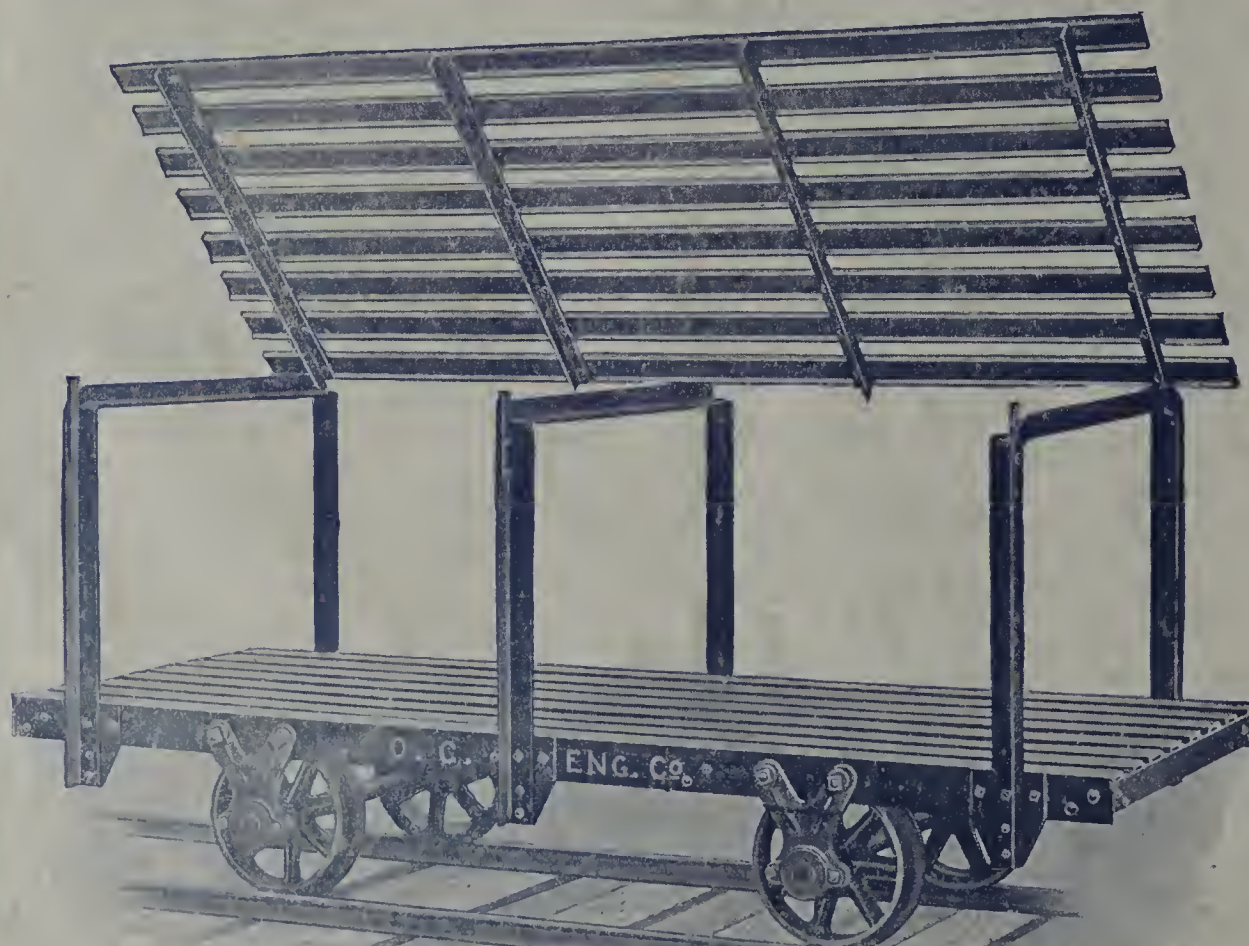
A piano wire plate that fits just the same as our perforated metal plates.

By using every third plate, you get more screening surface than is had with any other screen of this kind.

SPECIAL FEATURES. Short wires do not require high tension and are less liable to break. If a wire does break, take out the plate, put another one in its place. This can be done in an instant. If you want a piano wire screen without the frame and mechanical parts, four of our plates more than equal the area of any screen of this kind now offered. But with the mechanical features **THE PERFECT CLAY SCREEN** fills all requirements.

DUNLAP MFG. CO.,
Bloomington, Ill.

The Ohio Ceramic Engineering Co. CLEVELAND.



Our Improved No. 167
Double Deck Dryer Car
for Brick, Tile, etc.

Uprights outside of side rails.

Decks free from obstruction.

Easiest loaded car on market.

Top deck slats placed across if desired.

Length over all, 6 ft. 11 in.

Width over all, 35½ in.

Track gauge, 24 to 28 in.

Weight, 550 lbs.

Cap., 500 to 600 brick.

**TURNTABLES, TRACK
CARS, ETC.**

ck

THE CLAYWORKER

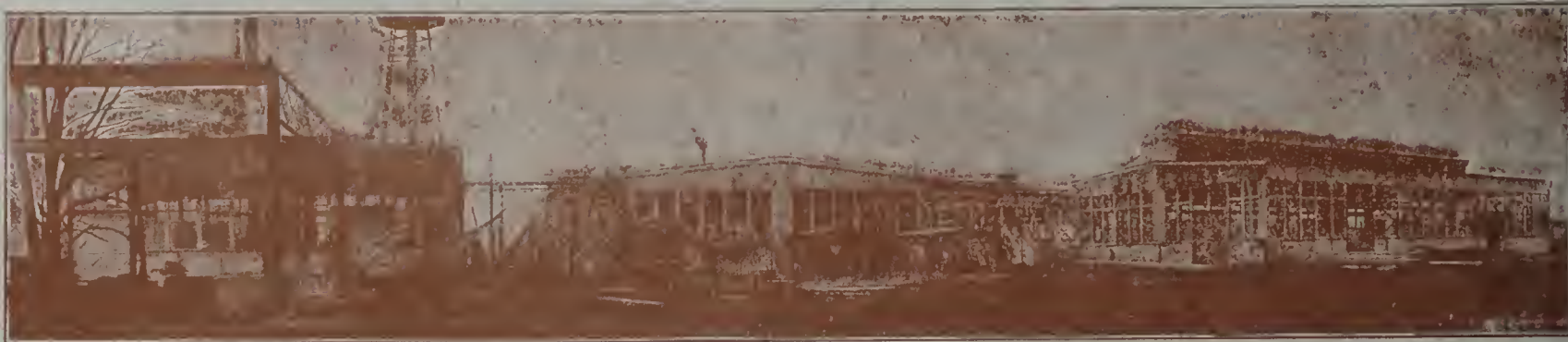
PUBLISHED MONTHLY BY
T A RANDALL & CO
INDIANAPOLIS..



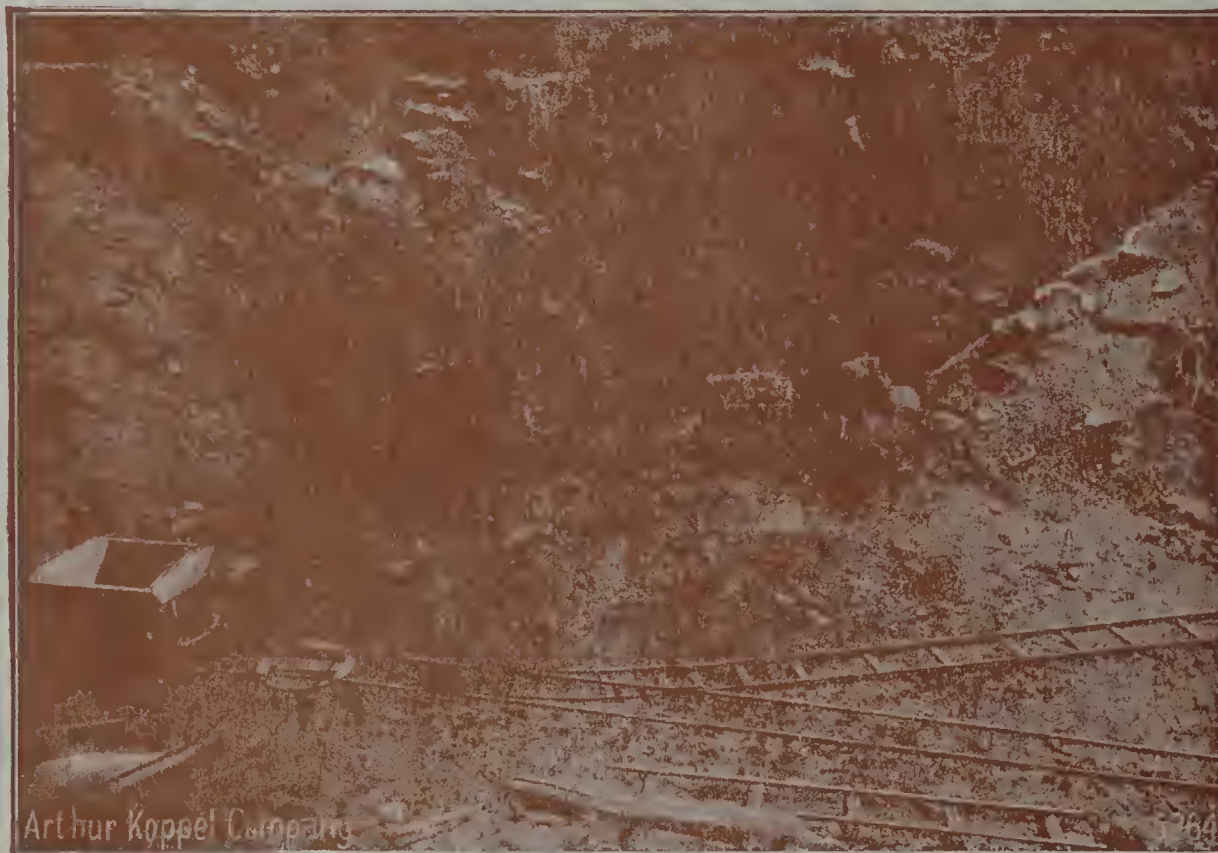
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OCTOBER, 1907.

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We Are Manufacturers and Consulting Engineers of
INDUSTRIAL and PORTABLE
— RAILWAYS —



This illustration shows the **CLAY MINES** of the National Fireproofing Co., Pittsburgh, Pa., with **KOPPEL'S COMPLETE INSTALLATION OF INDUSTRIAL AND PORTABLE RAILWAYS**, Portable Track and Switches, Turntables and Steel Dump Cars.

WRITE FOR CATALOG NO. 41

ARTHUR KOPPEL COMPANY

PITTSBURG
1607 Machesney Bldg.

NEW YORK
136 Morris Bldg.

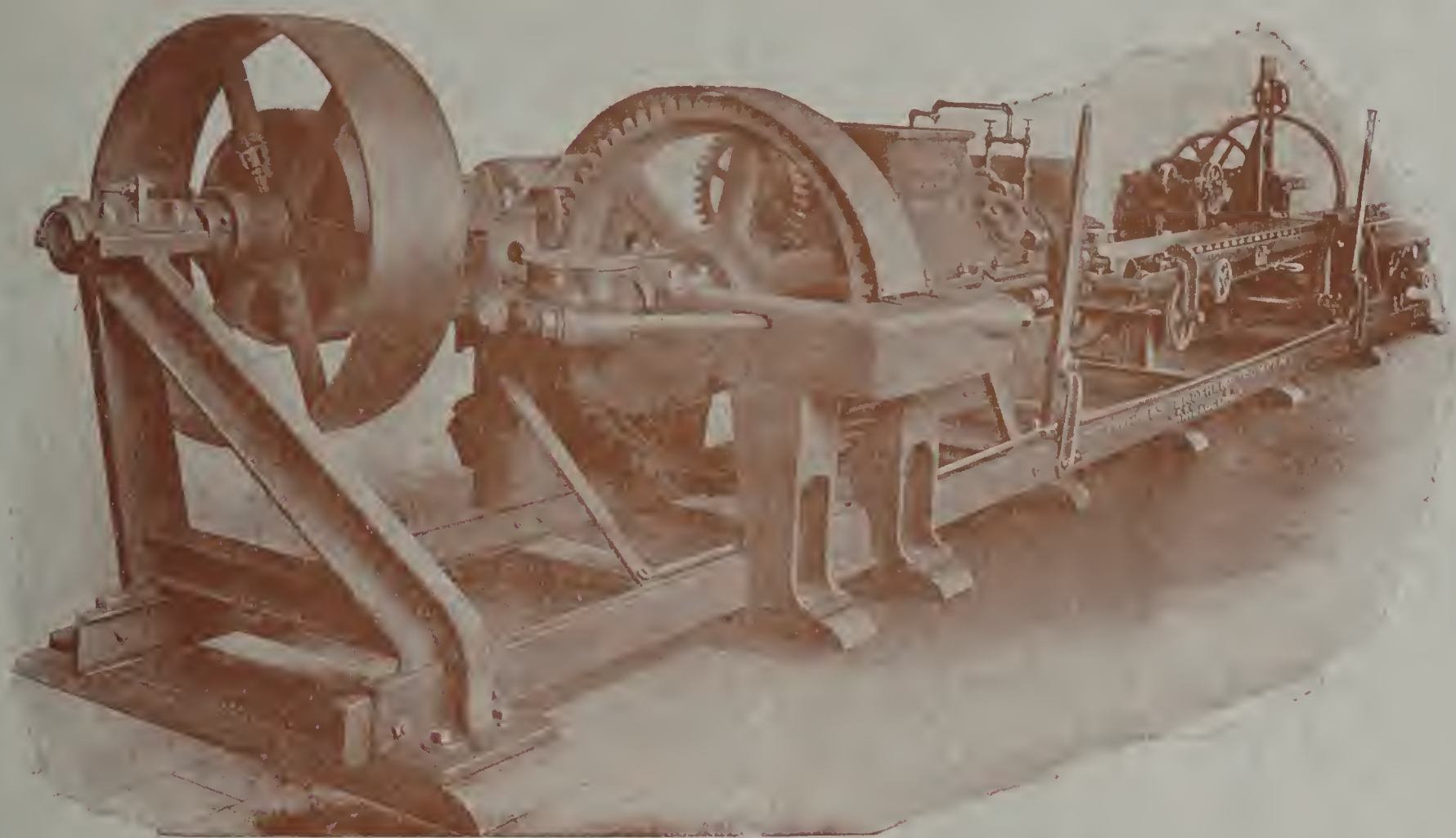
CHICAGO
1639c Monadnock Bldg.

BOSTON
53 Oliver St.

SAN FRANCISCO
1515 Chronicle Bldg.

THE NO. 10 CHAMBERS BRICK MACHINE

With No. 6 Automatic Side Cutter.



This is a new machine and embodies a number of novel and interesting features. The No. 6 Side Cutter has been tested to as many as 110 brick per minute, and is confidently guaranteed for a capacity of 40,000 bricks daily. It is a single wire rotary cutter with a down shear cut, cutting but one brick at a time and cutting them absolutely square and smooth. Provision is made for the escape of stones, should they come in the path of the cutting wire, and the flexibility of the wire does not affect the squareness of the cut.

Note the new gear frame and large diameter heavy gear of broad face. Observe how the end thrust is provided for, as well as the position of driving shaft and clutch pulley. No trouble to get at the journal bearings when necessary to rebabbit. Clutch pulley 44 inches diameter by 12 inches face. Driving Shaft $3\frac{7}{8}$ inches diameter. For hard work and a daily capacity of 20,000 to 40,000 bricks this machine is in a class of its own.

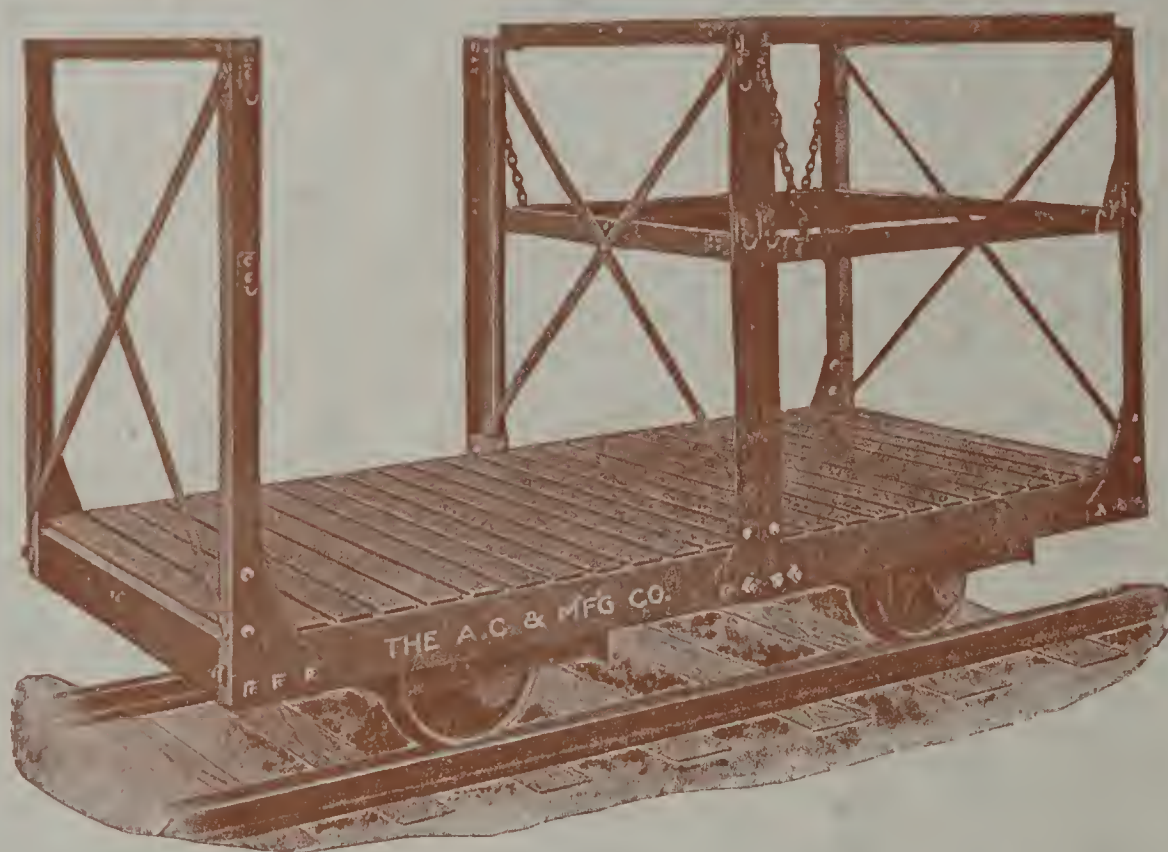
CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets, PHILADELPHIA, PA., U. S. A.

59 West Jackson Boulevard, CHICAGO.

SEE AD ON PAGE 417.

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 415.)

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



Jacob Buhrer's Technical Bureau, CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In Buhrer's Shortened Kiln (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in $1\frac{1}{2}$ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

THE HARRINGTON AND KING PERFORATING CO.



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,

CHICAGO, ILL., U. S. A.



YOU ARE MOST INTERESTED,

naturally, in the money-making propositions which relate to your own line of business.

In the brick business the most interesting money-making proposition on the market to-day is the

RODGERS WASTE HEAT DRYER.

It is simple and economical to operate and most effective in money results.

L. E. RODGERS ENGINEERING CO.,

Waste Heat Dryer Specialists,
Brick Works Engineers.

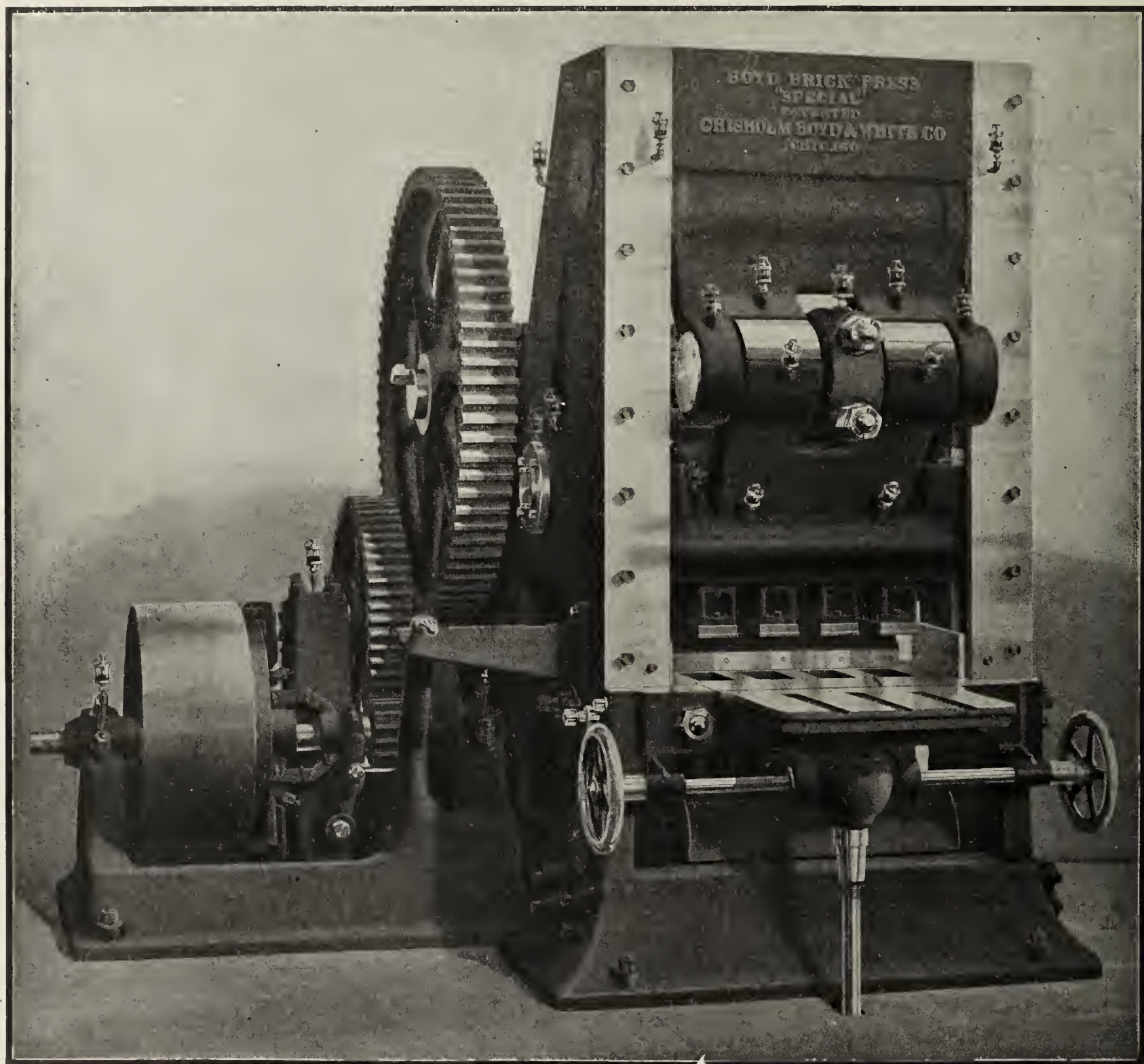
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Built in Two, Four and Six-Mold Sizes.



FOUR-MOLD SPECIAL.

BRICK PLANTS designed and complete machinery equipment furnished. Machinery and product guaranteed.

More Boyd Presses in use than all other Press Brick Machines combined.

The Boyd Press has great strength and endurance, great pressure and long dwell. Boyd Presses built 18 years ago are still in use and doing good work. Brick presses that last are the cheapest in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

Daily Capacity,
75,000.

WORKS:
Powell's Station, Tenn.
'Phone 1675, New.

KNOXVILLE BRICK COMPANY

DRY-PRESSED SQUARE AND SHAPES
AND COMMON BUILDING BRICK.

D. A. CARPENTER
PRESIDENT.
A. F. SANFORD
VICE-PRES.
E. L. WILLIAMS
SEC.-TREAS. & MGR.
J. W. REAGAN
SUPT.

OFFICE:
Rooms 107 and 109, Empire Bldg.

TELEPHONES:
367 People's; 925 Cumberland.

Knoxville, Tenn., July 9, 1907.

Messrs. Chisholm, Boyd & White Co.,
Cor. Fifty-seventh & Wallace Sts.,
Chicago, Ill.

Gentlemen:

The Four Mold Boyd "Special" bought of you in December, 1906, has been in operation about five months and is giving entire satisfaction. It is set up by the side of the old press, bought of you seventeen years ago, and at a glance the improvement is apparent in the stronger, heavier construction, to say nothing of the improved mechanical features.

The "Special" presses about a half-pound more clay than the old press into the same size brick, thus resulting in a much harder brick.

We wish to say that the seventeen-year-old Boyd Press is still doing excellent work and we are highly pleased with our experience with the Boyd Presses.

Yours truly,

Knoxville Brick Company
E. L. Williams
Mgr.

The Boyd Brick Press as built today is stronger, more durable, will last longer and make better brick than those built seventeen years ago. It was then the standard by which other presses were judged and is the standard now. Steady progress, merit and improvements have kept it at the front.

Leave cheap imitations and experimental machines alone and adopt the press with experience back of it. Brick Presses are not perfected in a day.

The Boyd Press is built in our own shops under our personal supervision and we are responsible for the quality of workmanship and material.

Avoid machinery built in jobbing shops by contract, which is generally let to lowest bidder, for such machinery will prove costly in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

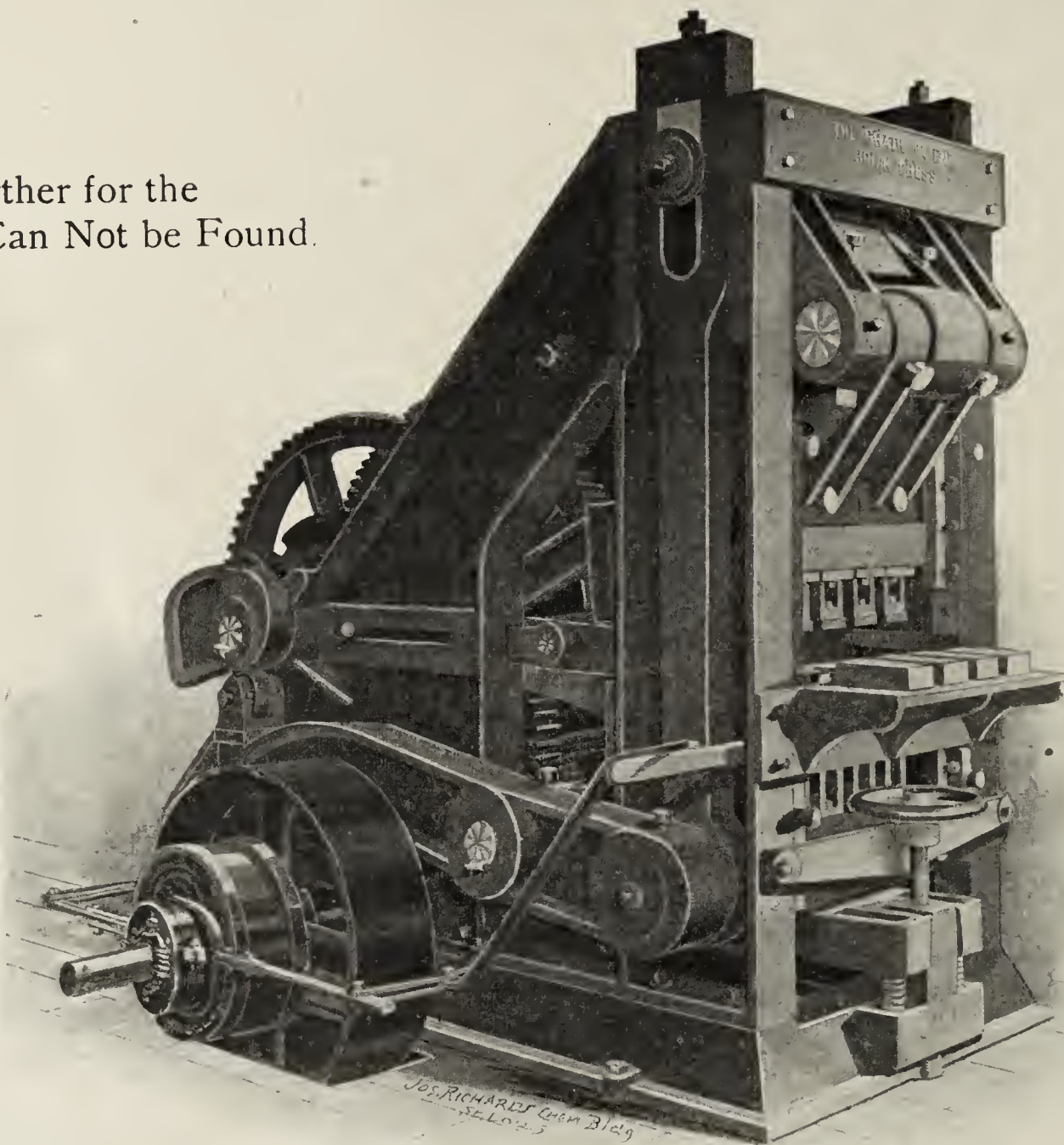
THE ONLY PERFECT BRICK PRESS

For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

FOUR MOULD MODEL.

Seek No Further for the
Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufac-
turer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

THE PRESS OF TODAY.

THE ALBERTA PORTLAND CEMENT CO.

W. P. Grath, St. Louis, Mo.:

[Copy]

Sandstone, Alta., Sept. 26, 1907.

Dear Sir—Replying to your favor of recent date regarding Grath Special press purchased from you, would say that after working your press alongside another well-known make, your press has proved itself vastly superior in every way; it is stronger, simpler, easier of adjustment, makes more brick, and of much better quality.

After a long experience with presses, having operated five (5) different presses each of different makes, I consider yours "THE BEST YET," in short, "AN IDEAL PRESS."

Wishing you the success your press merits

Yours truly, G. W. DELLER, SUPT.
Alberta Portland Cement Co., Limited.

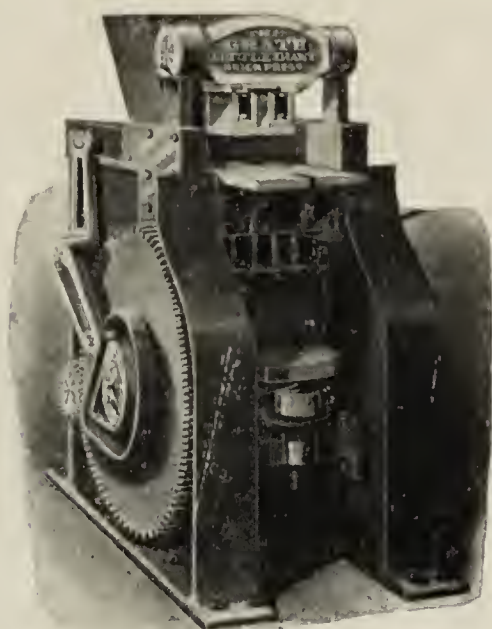
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

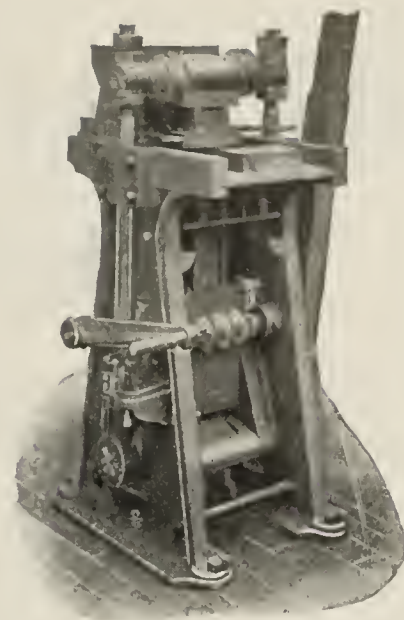
St. Louis, Mo., U. S. A.



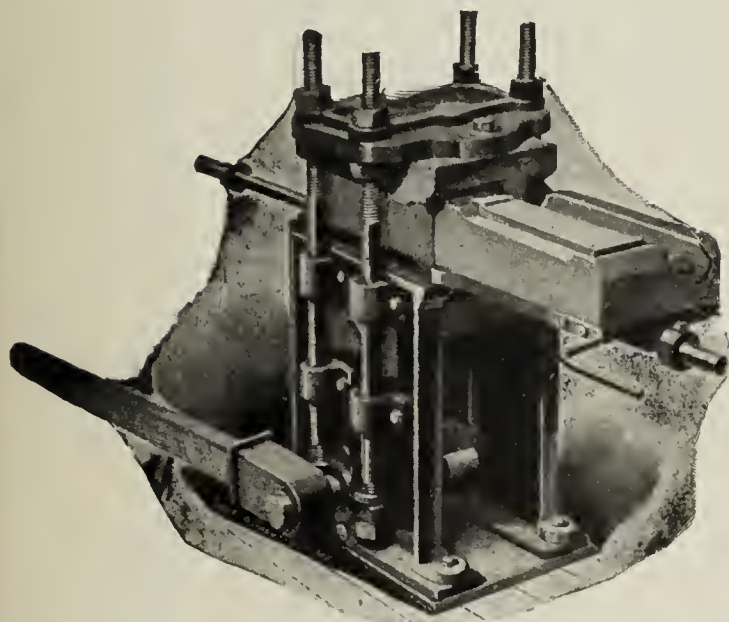
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



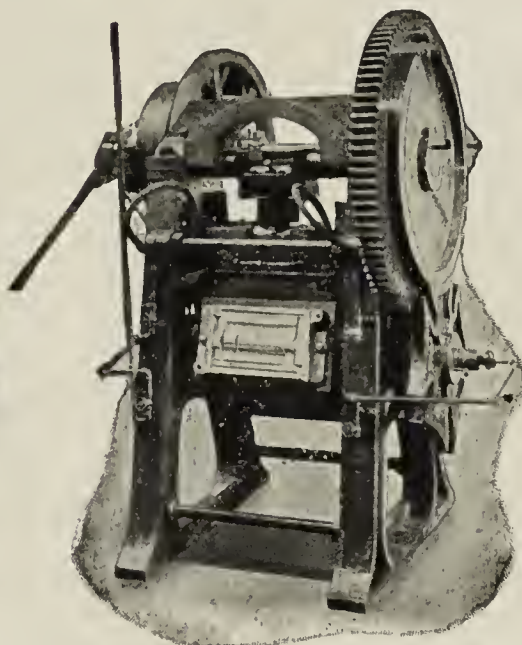
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



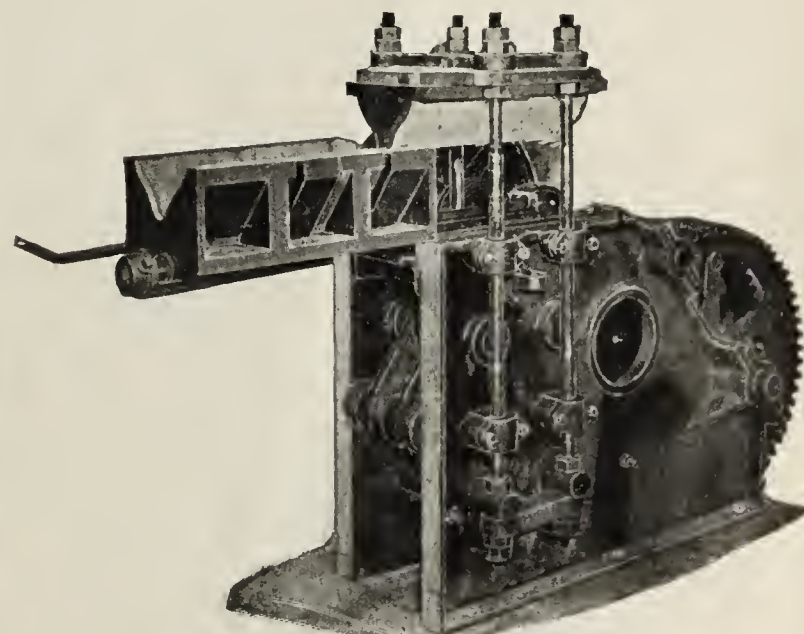
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

The New Grath Down-Draft Continuous Kiln.

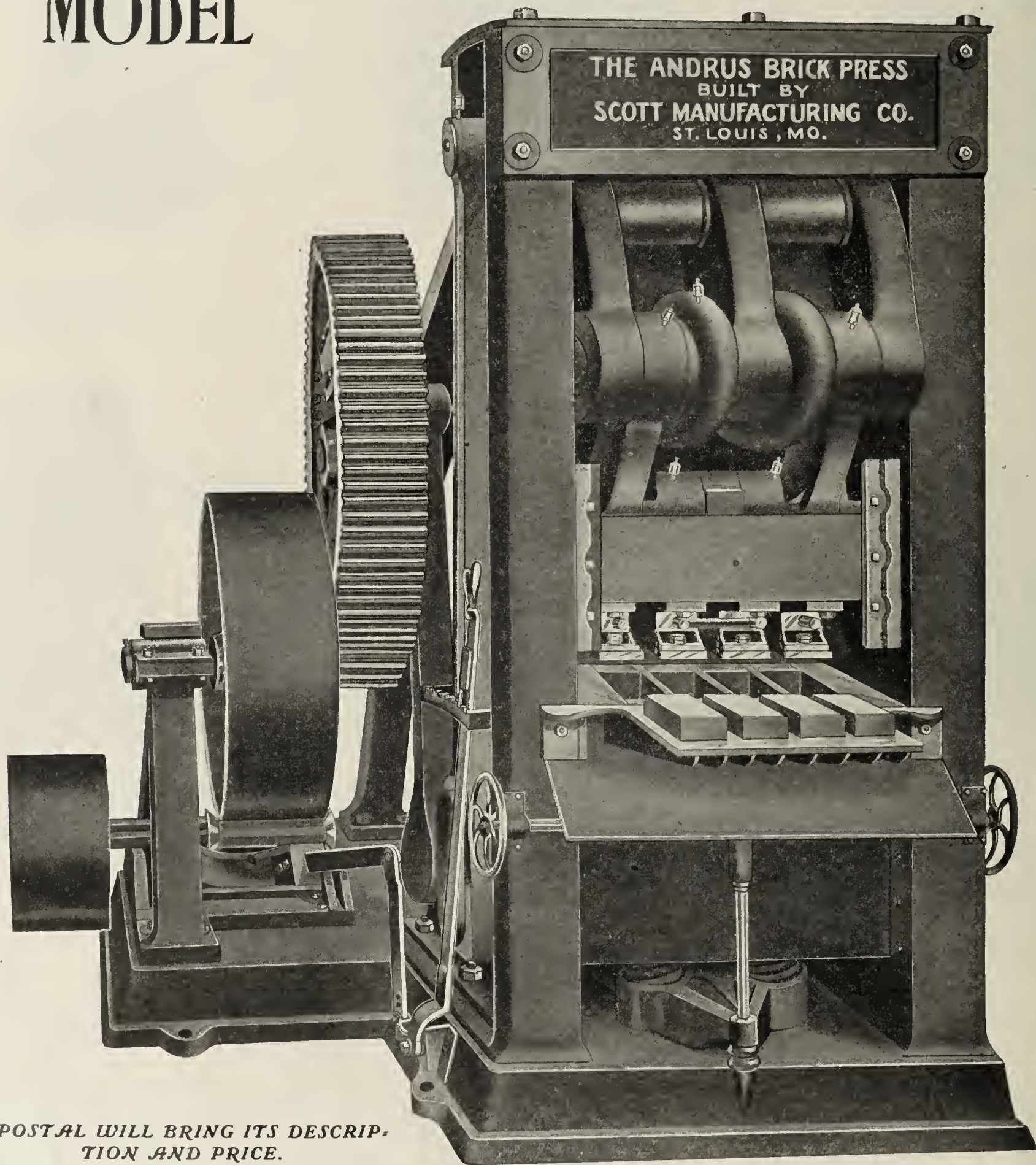
Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the **ordinary single** down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get **advantage** of all **waste** heat from your burning chamber, which you **lose** and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in **same** manner as the direct, through the furnaces up the bag and down through the ware. **Simple** and **sure** in operation. GUARANTEED.

Lieber's Code.
Cable Address,
GRATH, St. Louis.

Illinois Supply & Construction Co.
HOLLAND BLDG.. ST. LOUIS, MO.

Long Distance
Phone
Bell, Main 235.

OUR LATEST MODEL



A POSTAL WILL BRING ITS DESCRIPTION AND PRICE.

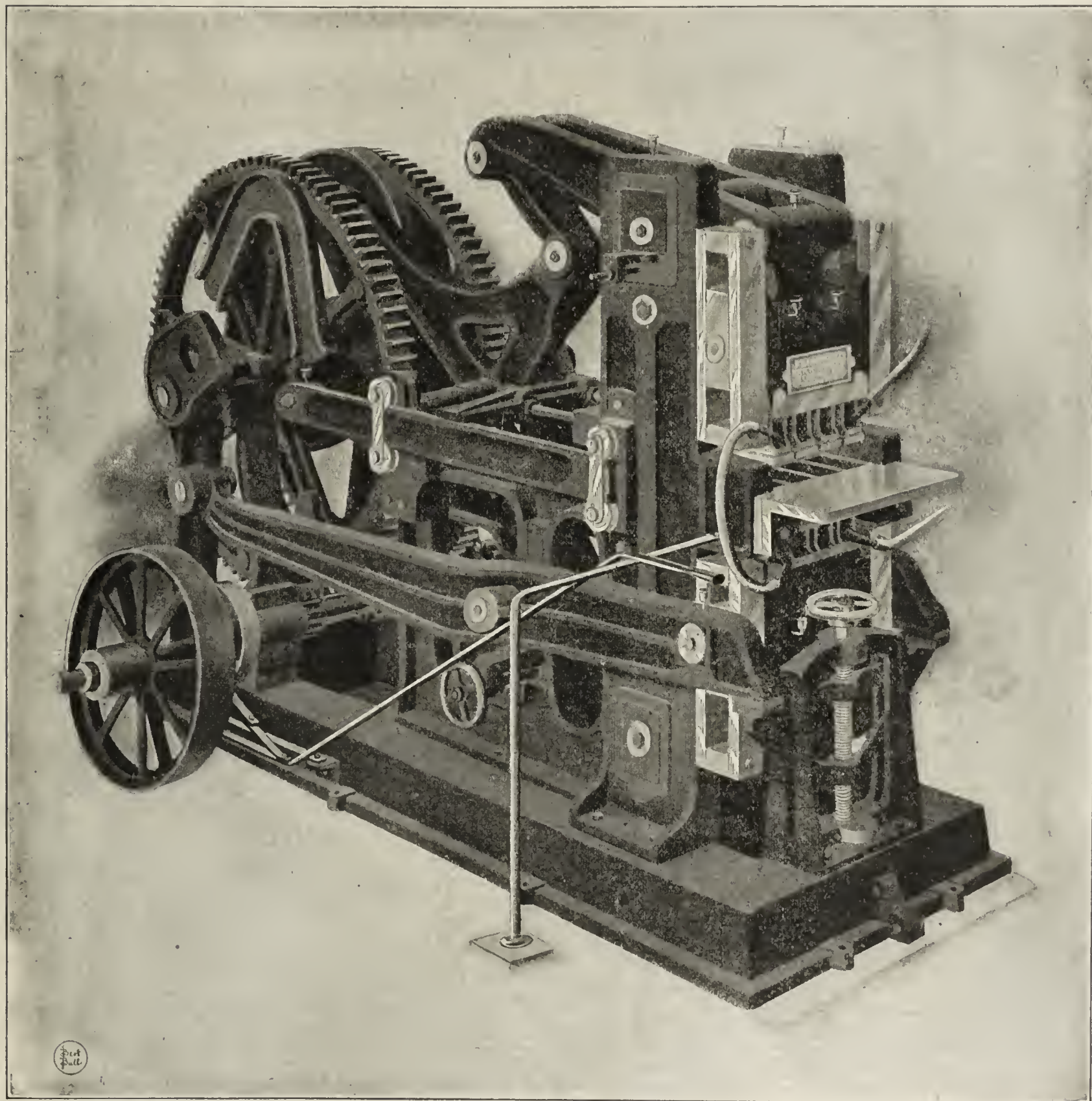
THIS IS THE PRESS THAT SCOTT BUILDS.

Scott Manufacturing Company,

421 Olive Street, St. Louis.

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.

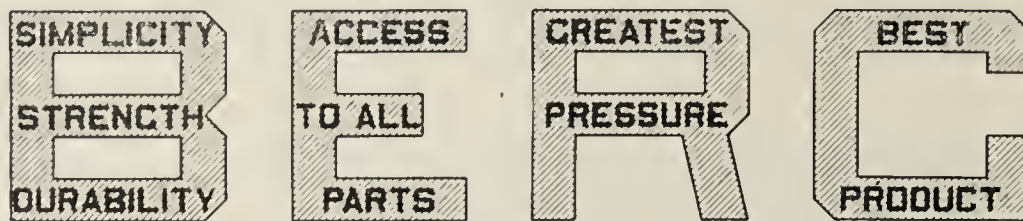


If you want an up-to-date Dry Press, one that will give you
RESULTS—See this machine in action.

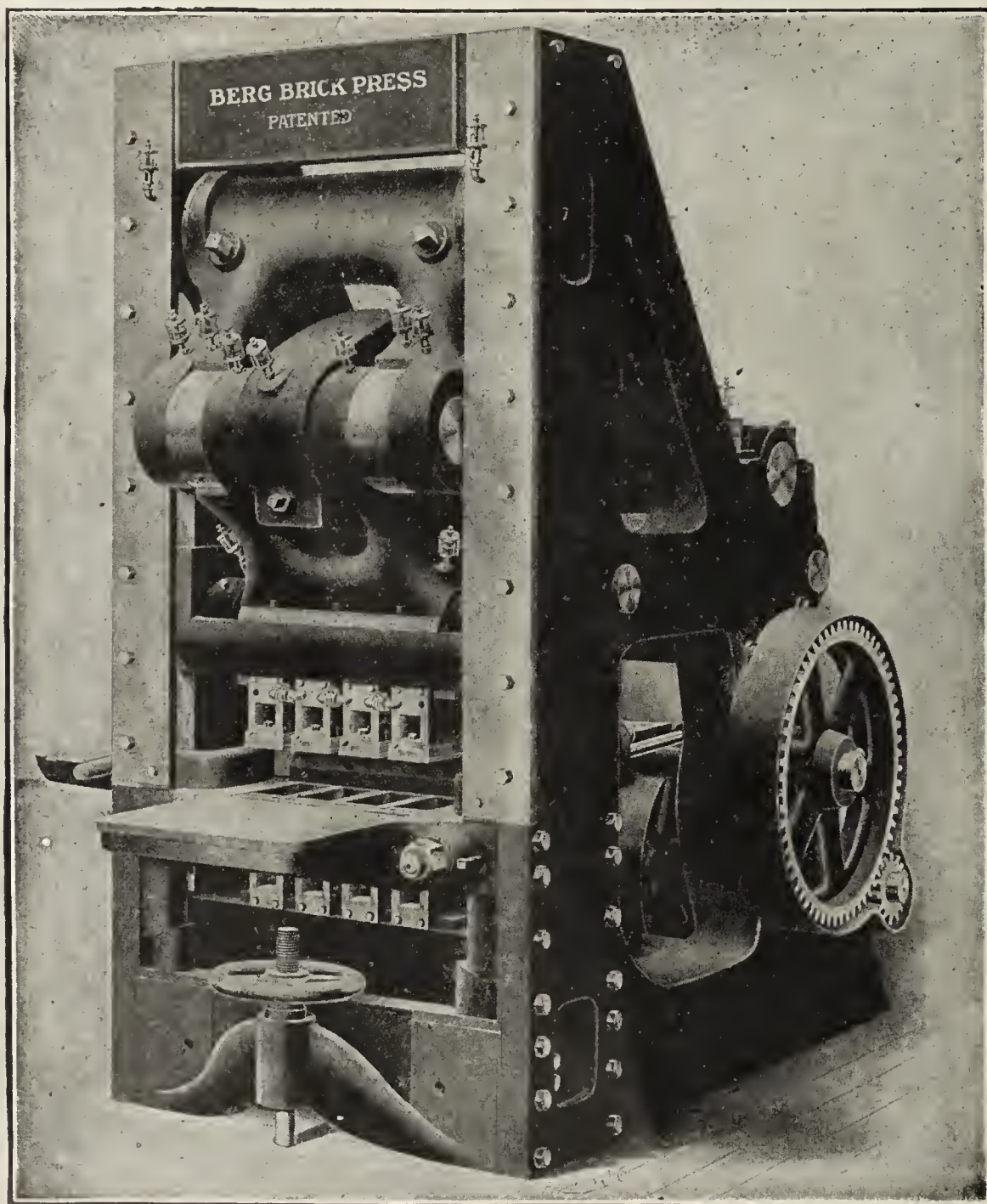
The Fernholtz Brick Machinery Co.,

Boyle Avenue and Old Manchester Road, St. Louis, Mo.

WHAT'S IN A NAME?



The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick-
makers, and which many OTHERS
have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship. Fully Guaranteed* as to its *Success*.

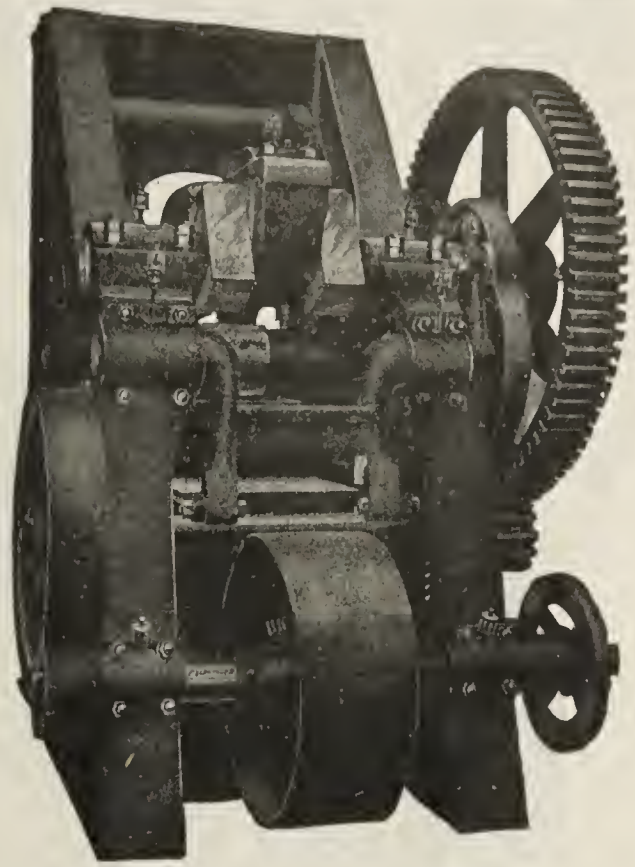
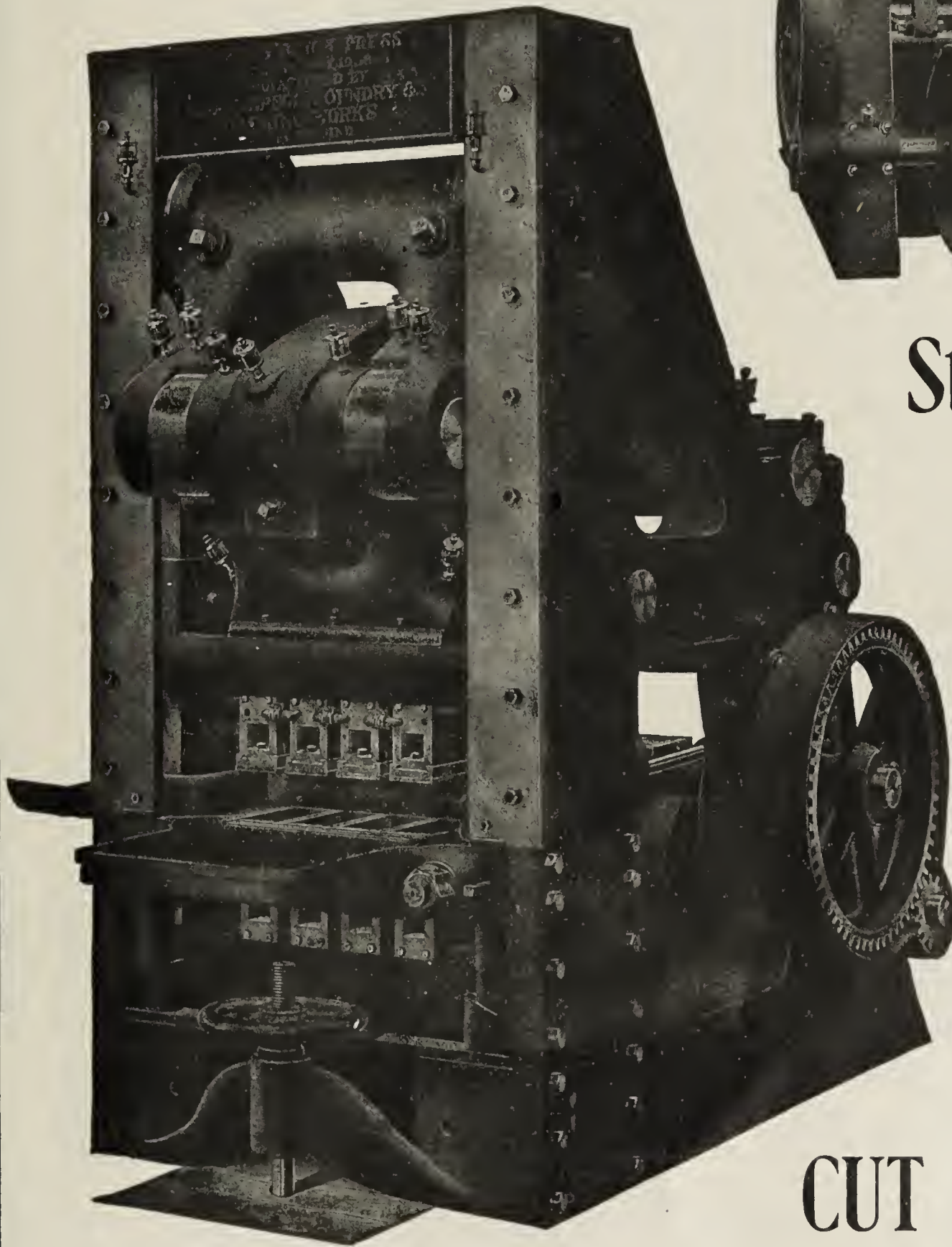
Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make **Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick** and **Fire Brick**. Correspondence solicited.

A. BERG & SONS,

Mention The Clay-Worker.

Manning Chambers, TORONTO, ONT., CAN.

New Model Berg Brick Press



Back View.

Still in the
Lead
and
One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

CUT GEARING

of either iron or steel, if desired.

Sold by

CHICAGO BRICK MACHINERY CO.,
Great Northern Bldg.
77 Jackson Blvd.
CHICAGO.

Manufactured and Sold by

Anderson Foundry & Machine Works,

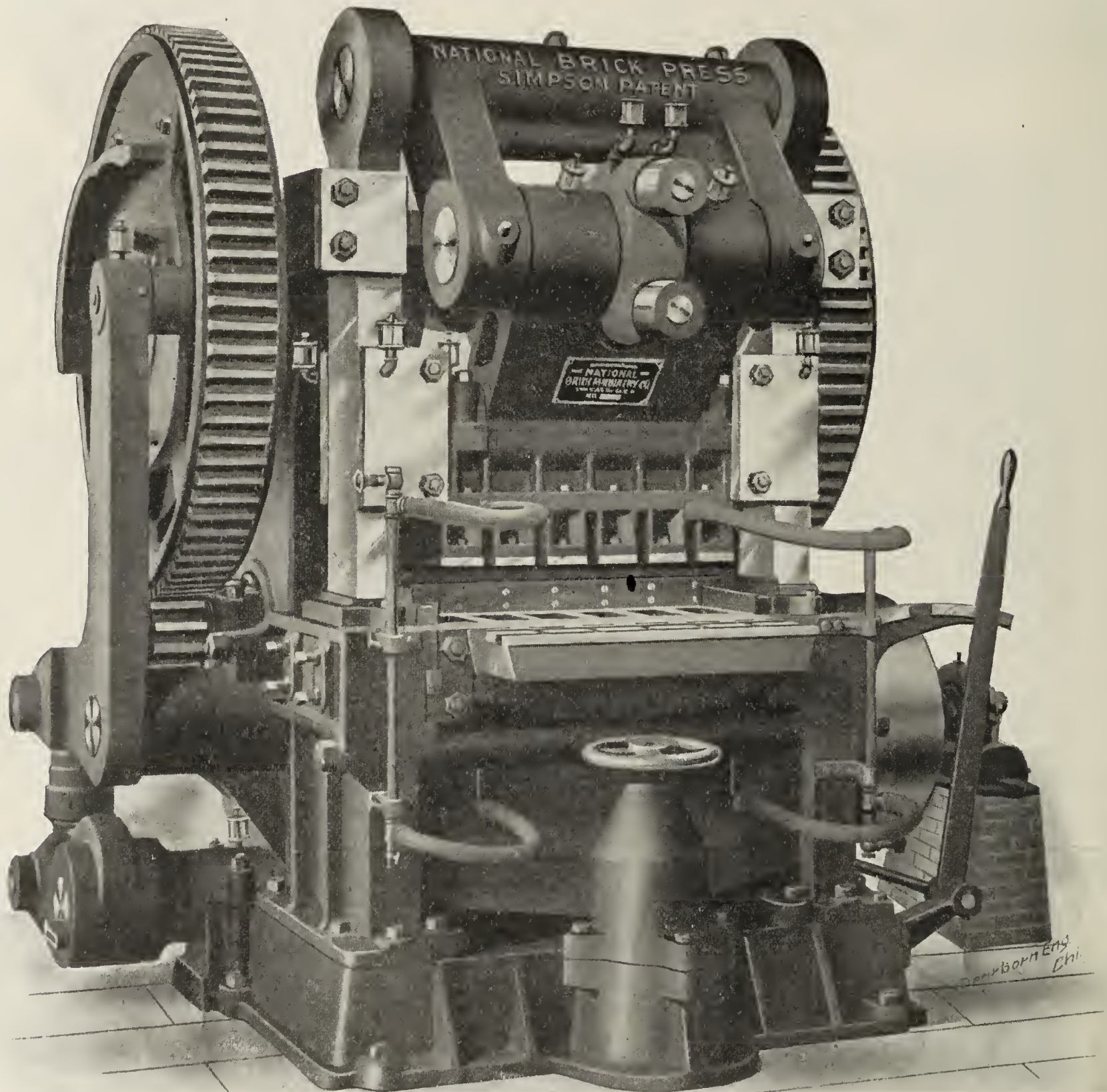
New York Office, No. 39 Cortlandt St.

ANDERSON, IND.

The National Brick Press

Simpson Patent

SIX MOLD



Read What Our Customers Think of It.

National Brick Machinery Company, Chicago, Ill.:

Rochester, N. Y., July 6, 1907.

Gentlemen—We beg to inform you that the new Six Mold Brick Press, Simpson Patent, which we recently purchased from your company, is turning out a very high grade of brick at the rate of 27,000 per ten hours. We find the press to be smooth running, strong and compact with its parts easily accessible, and in every way it is equal to all of our expectations. It has been installed beside our four Mold Model C Press which we understand was designed by the same inventor and which has been doing very satisfactory work for the past two years. It gives us pleasure to state that we are glad that we decided on a Simpson Press for the increased equipment of our factory.

Very truly yours,

ROCHESTER COMPOSITE BRICK COMPANY.

R. W. Holden, Treasurer.

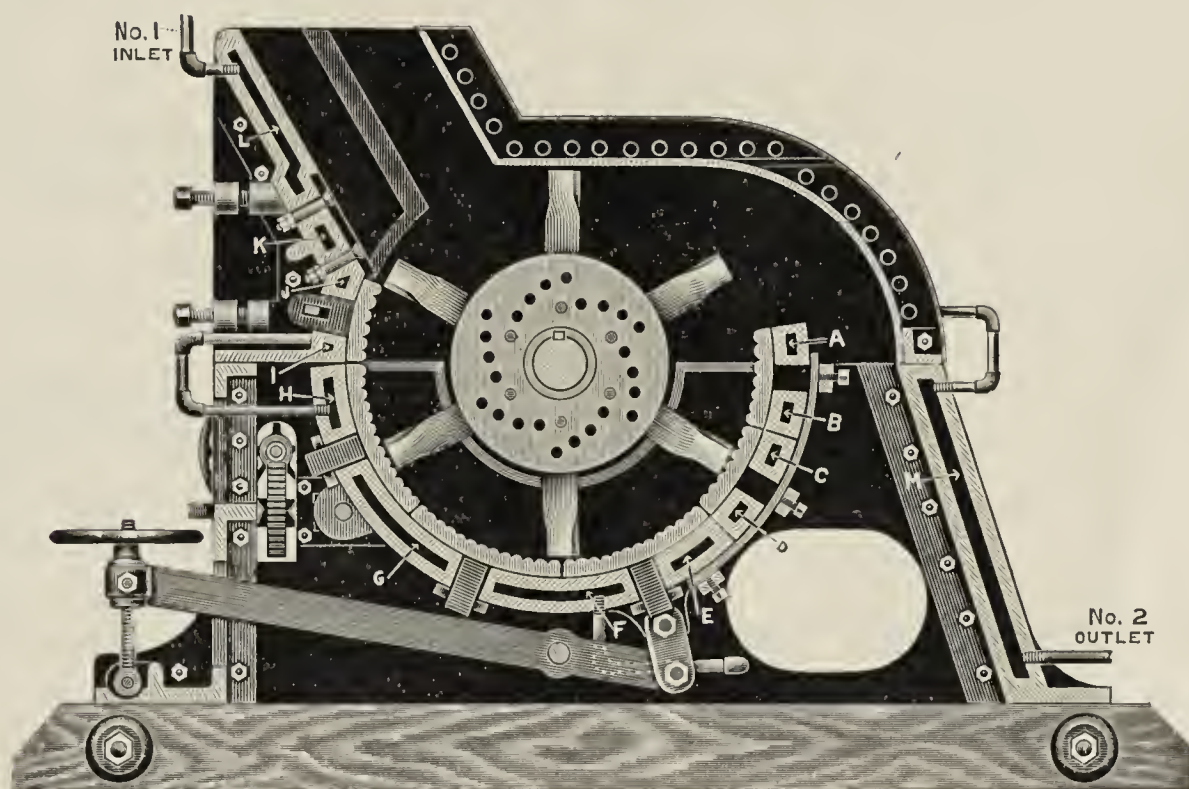
Built in Four, Five and Six Mold Sizes.

National Brick Machinery Co.,

General Office, Chamber of Commerce Bldg.,

CHICAGO, ILL.

JUST OUT! DECK SWEEPER.



We will guarantee this machine to reduce any clay or shale from the dry shed, from the shale bed or from the bank, in a satisfactory condition for making burned goods of any description at one operation.

For further information write to the

Williams Patent Crusher and Pulverizer Co.
St. Louis, Mo., U. S. A.

Write for Bulletin 21.

Over 1200 of the Williams Hinged Hammer Crushers and Pulverizers in daily operation.

The National Paving Brick Manufacturers' Association

Will send you free, upon request, any or all of the following booklets:

"Directions for Laying Brick Street Pavements."

"Why Should You Pave at All?"

"Why Vitrified Brick Street Pavements Are the Best."

"A Directory of Manufacturers of Vitrified Brick."

Address

WILL P. BLAIR, Corresponding Secretary, Terre Haute, Ind.

PRESTON BRICK COMPANY,

Manufacturer of

Vitrified Shale Paving Brick,

SEWER AND HARD BUILDING BRICK.

Hornellsville, N. Y.

JOHNSONBURG VITRIFIED BRICK CO.

Johnsonburg, Penn.

Street
Paving

Brick and Block.

Samples on Application.

SHAWMUT VITRIFIED PAVING BRICK WORKS,

Shawmut, Pa.

Alfred Yates, Gen. Mgr.

Vitrified Shale and Fire Clay Paving Bricks and Blocks.

Burned in Yates' Patent Kiln.

Samples and Prices on Application.

Kushequa Shale

**VITRIFIED PAVING BLOCKS, CHOCOLATE-RED
BUILDING BRICK.**

KUSHEQUA BRICK CO., Kushequa, Pa.

PAVING
BUILDING

• **BRICK AND BLOCK** •

SIDEWALK
FOUNDATION

The Barr Clay Co.

C. C. Barr, Pres. - Streator, Ill.

VITRIFIED PAVING BRICK.

A valuable treatise on the manufacture and use of
Paving Brick up-to-date. By H. A. Wheeler, E. M.
Mailed to any address on receipt of \$1.00.

T. A. RANDALL & CO., Publishers, Indianapolis.

THE COLLINWOOD-DECKMAN-DUTY COMPANY,

Manufacturers of

High Grade Paving Brick.

Factories at Collinwood, Malvern and Carrollton, Ohio.

Main Office, Rose Building.

CLEVELAND, OHIO.

Thurber Vitrified Paving Brick

and Pressed Building Brick of Superior Quality.

Made of the finest shale, absolutely free from lime.

Arthur S. Goetz, Agent,

Factory at Thurber, Texas.

Ft. Worth, Texas.

T. B. McAvoy, Pres. and Treas. John C. McAvoy, Sec. & Gen. Man.

McAVOY VITRIFIED BRICK CO., Philadelphia, Pa.

Is the largest and best equipped plant in the East for the manu-
facture of Paving Brick. All brick sold under a guarantee. Corre-
spondence solicited.

Office, 1345 Arch St., Philadelphia. Works, Perkiomen Junction, Pa.

The Danville Brick Company,

Manufacturers of the Unsurpassed

Danville Paving Block.

Danville, Ill.

LET US QUOTE YOU PRICES.



**The Best
Paving Block
Made**

**SIX FACTORIES
DAILY OUTPUT
400,000**

**The Metropolitan Paving
Brick Company &**

CANTON, - - OHIO

How to Properly Construct Brick Streets.

Drop us a postal and we will send you free of charge
a complete set of

DIRECTIONS.

TERRE HAUTE VITRIFIED BRICK CO.

Successors to
TERRE HAUTE BRICK AND PIPE CO.,
Terre Haute, Ind.

New York Brick & Paving Co.,

Manufacturers of

VITRIFIED PAVING BRICK,

Sewer and Hard Building Brick,

... ALSO ...

Berlin Vitrified Brick that Withstands all Acids.

OFFICE:
204 S. A. & K. BUILDING.

SYRACUSE, N. Y.

R. D. CULVER,
Pres. and Gen'l Manager.

L. A. CULVER, JR.,
Sec. and Treas.

The Wabash Clay Company,

MANUFACTURERS OF ALL SHALE

PAVING BLOCKS and PIONEER BUILDING BRICK.

Our leading brands are CULVER BLOCKS, WABASH STANDARDS,
"SPECIALS," for crossings on macadam streets, GUTTER BLOCKS,
COLUMBIAN SIDEWALK BRICK and PIONEER BUILDING BRICK.

Our material has for nearly fifteen years successfully stood the
heaviest traffic of Indianapolis, Terre Haute, East St. Louis and
dozens of other large cities of Indiana and Illinois. We ask inves-
tigation and comparison by those seeking the best paving material.
Samples furnished on application.

Office and Works at VEEDERSBURG, IND.

Clinton Paving Brick Company,

Manufacturers of the Highest Quality of

Paving Brick

Which are offered to the municipalities of the Cen-
tral States under positive guarantee as to wearing
quality. None better.

Prices and samples sent on application.

Correspondence solicited.

Office and Works: Clinton, Ind.

Do You Want Clay?

WE OWN AND OPERATE EXTENSIVE DE-
POSITS OF THE VERY BEST GRADES.

Fire Clays, Terra Cotta Clays, Kao-
lin, and Fire and Moulding Sands.

Have been in the business for TWENTY-FOUR
years, and are prepared to meet every reasonable demand.
Unsurpassed shipping facilities. Prices and samples free.

The BLOOMFIELD CLAY CO.,

(C. A. Bloomfield, Treas. and Manager)

P O. Box 413.

METUCHEN, N. J.

J. G. BUTLER, JR.,
President.

CHAS. M. CROOK,
Gen'l Manager.

Bessemer Limestone Co.

Youngstown, Ohio,

MANUFACTURERS OF

BESSEMER BLOCK,

An unexcelled repressed shale paver.

Correspondence solicited.

The Purington Paving Brick Co.,

of GALESBURG, ILLINOIS,

HAS the largest and best equipped plant in the United States for the manufacture
of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation
second to none, and this Company points with pride to its record for quality of
material and its methods of conducting its business.

Correspondence respectfully solicited.



“We are glad to have an opportunity to express our satisfaction with the Exhaust Steam Drier which you installed for us. This Drier has required practically no repairs since put in operation, and the exhaust steam from our engine has been more than enough to keep the Drier up to the required temperature, thus making it cost us very little to dry our brick.”

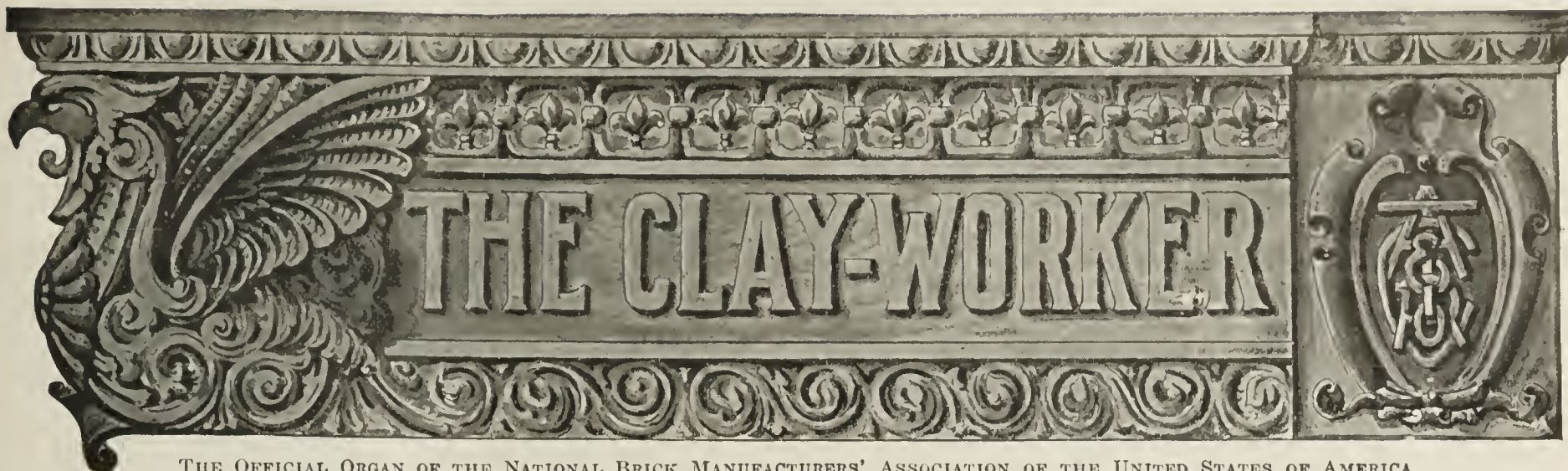
ACME BRICK CO.,
Cayuga, Ind.

The above is a fair specimen of the kind of letters we are constantly receiving from users of

THE STANDARD DRIER

throughout the brickmaking world. The Standard Drier is distinguished from others by the superiority of its New Heating System, as well as by its simplicity of operation. Complete descriptive catalogue and letters from many other users will be sent on request.

THE STANDARD DRY KILN CO.,
647 S. Penn. St., Indianapolis, Ind.



THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVIII.

INDIANAPOLIS, IND., OCTOBER, 1907.

No. 4.

Written for THE CLAY-WORKER.

WHY NOT ARTISTIC FACTORY BUILDINGS.

What Has Been Done by One Cleveland Concern in Erecting the Largest Cloak Factory in the World.

Stanley L. McMichael.

THAT IT IS NOT necessary to have a factory building built in an ugly manner, representing a big dry goods box or a prison, has been thoroughly proven in Cleveland, where the largest cloak factory in the world has just

artistic product and believe that an artistic factory will help us in so doing.

"We make women's garments almost exclusively. A man, of course, doesn't care a rap what he wears so long as it seems respectable. What man, unless he be an artist, ever thinks of the color scheme in his clothes? A woman is different. Great care must be taken to make the colors blend, and this we believe we are being assisted in by our new building.

"We have noticed ever since moving into our new plant a short time ago that the quality of our work has improved. I believe that our girls would not think of putting the colors together as they did in our old building. It is the building



Artistic Brick Factory of H. Black & Co., Cleveland, Ohio.

been completed for H. Black & Co. It is constructed entirely of brick and contains many artistic features usually absent from buildings of this character.

The factory, which is at Superior avenue and East Nineteenth street, was built with a purpose and is not a mistake. Realizing that surroundings count for much in influencing the employes of an institution, an effort was made to reflect in the building a type of beauty which might be expected from those who worked therein.

"In short," said Mr. Black recently, "we aim to make an

that has done this. You see, we are all influenced by our surroundings, more or less."

The new building occupies a frontage of a solid block, being 298 feet in length. It is sixty feet deep. The two wings at the end are three stories high, while in the center the height is two stories. About 1,200 employes, mostly girls, work in this large, roomy building. There is no crowding. Windows abound on every side, and the ventilation and light is perfect.

The new building has gone up in a semi-residential district, but owing to its attractive outline there has been no objection

on the part of the neighbors. Cleveland is the largest cloak manufacturing center in the world, consequently skilled help such as needed in designing and executing this work is in much demand. Black & Co. have found that since they got into their new quarters they can get the pick of the town in this respect, which is worth more than the extra cost of building an attractive factory structure.

A unique feature about the new Black plant is the mammoth water tower, which is really the most artistic of its kind in Cleveland. This tower is about twenty-two feet square at the base and tapers slightly as it rises to its full height of 135 feet. This tower is on a concrete foundation, but is of brick. The tank itself, with adjoining trimmings, is of cement.

This tank contains thousands of gallons of water, to be used in case of fire. Nearby is a huge brick cistern containing an equally large supply of water for the same purpose.

It is not likely, however, that this supply will be needed for the building is practically fireproof. The interior construction is of concrete, while the walls are of finely burned common brick, supplied from the brick kilns of George Gynn. It is maintained by the contractors who erected the building that prettier effects can be secured with this material than by using many other kinds of pressed brick. Light colored brick were used for window and door arches. The roof is of red tile to match the brickwork in the main structure.

The plant complete cost about \$250,000. Robert E. Kohn, a New York architect, who traveled in Europe extensively for the purpose of picking up ideas for the erection of a modern and sanitary factory, designed the edifice. Samuel G. Austin & Son, of Cleveland, were the contractors.

Working together in perfect harmony, this combination has produced a factory which may serve as a model of its kind to all the world. Certainly no factory should henceforth be a blot upon the landscape.

Written for THE CLAY-WORKER.

IMPORTANT DETAILS IN THE PRODUCTION OF VARIOUS CLAY WARES.

The Shoemaker and the Ashes.



SHORT TIME ago an item relating to the burning of ashes went the rounds of the enterprising press of the United States. Apparently the matter was published in good faith, but when later on it appeared that a stock company was taking the invention up, then the free press notices, upon the

face of it, appeared to have been a shrewdly contrived advertising scheme, especially so when it had been stated that the United States Government was going to instruct a number of its fuel experts to make a thorough test of the wonderful (?) invention and determine its value. As the whole ash-burning subject looked a little doubtful, THE CLAY-WORKER had the matter looked into, and if advisable prevent the readers of its publication from investing in a get-rich-quick scheme, for upon the face of the whole proposition the subject looked a little too good—getting something out of nothing. Ashes are incombustible; that is, they can not be burned, for all the heat-producing matter has been utilized and extracted therefrom, and nothing remains but a dead, inert mineral matter. However, most ashes contain more or less unconsumed fuel, dependent upon the care and attention of the attendant—thus introducing a personal factor or equation, irrespective of the published “ash-burning” formula or process, which is as follows:

Common salt 1 pound.
Oxalic acid 2 ounces.
Water 1 gallon.

Mix all together and when in thorough solution, dampen a mixture of one part coal and three parts ashes and the

resultant mixture or compound will be a better fuel than the pure, original coal. It is an admitted fact that ashes, per se, contain no more heat-producing qualities, but the coke or unconsumed fuel contained in the ashes does, and, if the ashes were sifted from such fuel and utilized as such, then undoubtedly a saving could and would be effected. At our home we sift all our hard coal ashes, and utilize the screenings for a secondary firing, and who would not when anthracite coal costs from seven to ten dollars a ton?

In looking up the matter as to the coal, the following data is submitted, taken in part from Barr, “Fuel and Its Combustion.” Youghiogeny coal is a coal of first-class recognized quality, as evidenced by the following statement:

ANALYSIS.

Fixed carbon	58.40
Volatile gaseous matter (hydro carbons) ..	35.00
Water (moisture)	1.00
Ash	5.60
	100.00

HEAT VALUES IN B. T. U.

Carbon, .584x14,544.....	8.494
Hydro-carbon, .35x20,115.....	7.040
Less heat lost in gasifying, .35x3,600	1.260
	5.780

Value of one pound of coal in B. T. U.... 14.274

Let us now assume that only the volatile gaseous matter has been consumed and all the fixed carbon left unconsumed, then the proportion would be as follows:

Fixed carbon (coke) ..	58.40
Ash (still the same) ..	5.60

64.40 as a unit of 100 per cent. or

Fixed carbon	91.25 per cent.
Ash	8.75 per cent.

Under ordinary conditions, that is, judicious firing, 90 per cent. of this fixed carbon is consumed, so the resultant ashes would be:

Fixed carbon	9.12
Ashes	8.75

17.87 as a unit of 100 per cent. or

Coke	51.04 per cent.
Ashes	48.96 per cent.

As above, one-half of this mixture is dead, valueless, inert material, and, therefore, is practically of no value, as no air to amount to anything could pass through the grates to support and induce combustion.

To get back to the advertisement of the “oxalic acid process,” it is stated: “Two tons of ashes mixed with 20 cents’ worth of this compound and one ton of coal will produce more heat than five tons of the best fuel.”

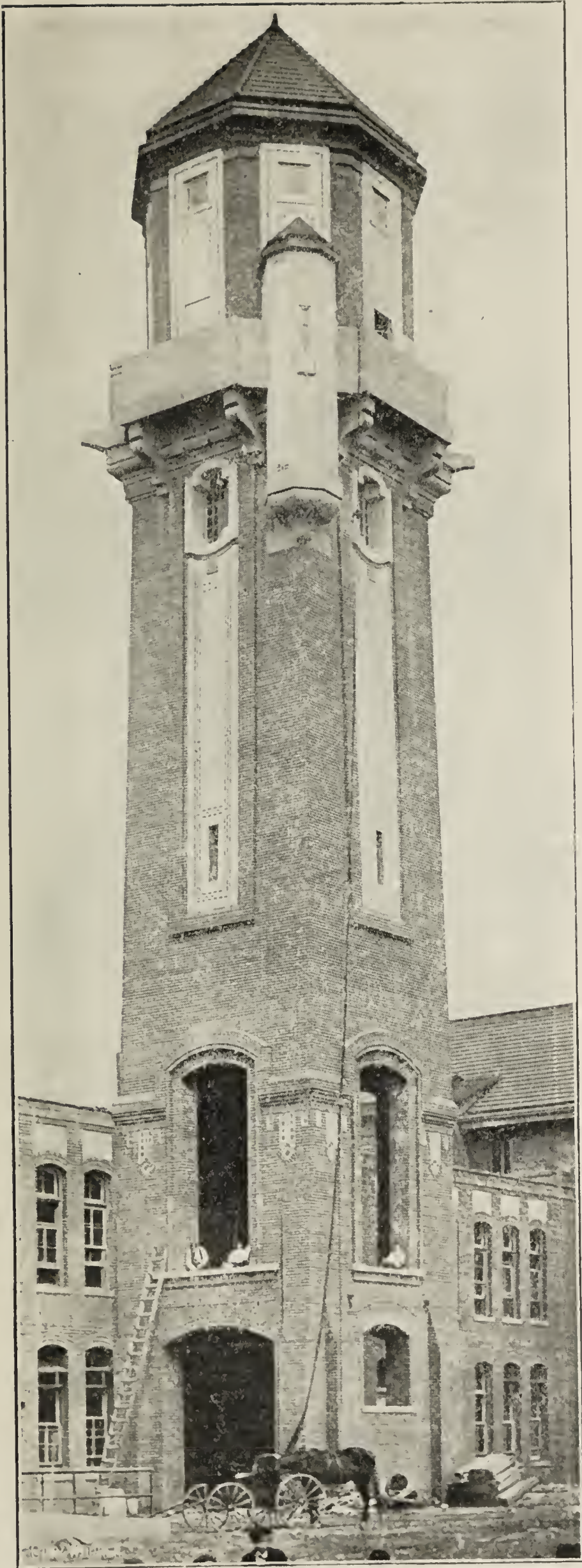
Upon investigation this statement resolves itself as follows:

2 tons ashes equal 2,000 pounds coke and 2000 pounds dead ashes.

1 ton coal equals 1,868 pounds combustible and 132 pounds ashes and moisture.

On the other hand, 5 tons coal equal 9,340 pounds combustible and 660 pounds ashes and moisture.

It is beyond ordinary reason to even think that 3,868 pounds combustible can and will give, even under extraordinary conditions, as much heat value as 9,340 pounds of combustible matter. Combustion is capable of producing no more heat than there is in the combustible part of the fuel, regardless of the fact whether burned fast or slow, if supplied with the proper amount of air; an excess cooling down the temperature and deficiency affecting incomplete combustion. The oxygen in the air, by its union with the fuel, is the means or agent by which combustion is produced. Why resort to chem-



Tower of H. Black & Company's Main Factory Building.

icals when air is all around us and can be had for nothing, and oxalic acid costs all the way from 20 to 40 cents a pound.

Oxalic Acid

has the following formula:



For our purpose we will assume that decomposition occurs along the line of combustion, with products of perfect combustion = $\text{H}_2 \text{O}$, 2 (CO_2) or 5 parts of oxygen necessary when only 4 parts are present in the oxalic acid, proving that there is not enough oxygen formed in the original salt or acid to effect perfect combustion.

Along the same lines re-combustion might take place with formations as follows: $\text{H}_2 \text{O}$ (water) CO_2 (carbonic acid) and CO (carbonic oxide); thus utilizing the four parts of oxygen, but the said formed carbonic oxide is a product of improper combustion, which needs additional air or oxygen to be turned into CO_2 (carbonic acid), a product of perfect combustion. Besides the oxalic acid contains 36 parts of moisture in a total of 216 parts, and the heat necessary to evaporate this water contains additional loss. The simple proposition is: Why use an expensive chemical that has practically only a small heat producing power and needs air besides the same as the fuel does itself, to effect perfect combustion?

Moisture and Salt.

The clayworkers who have had any experience with salt glazing know that there is no heat producing value in salt. To the contrary, it is apt to lower the temperature. Moisture is termed a detriment in determining the heat value of coal, in that it consumes heat to volatilize. Moisture in fuel, when put on top of a bed of coal, turns into steam and produces a cooling effect. However, when moisture passes through a bed of incandescent fuel deep or high enough, then the moisture is converted into marsh gas and carbonic oxide gas, which, when applied with air, furnish heat with the formation of moisture and carbonic acid.

The function of moisture passing through fuel in an incandescent condition is to transform the carbon into a gaseous condition, so as to be in the best possible state for undergoing combustion.

The coal proposition taken up at the beginning of this article referred to a first-class grade of coal, and for comparison the writer will take up a grade of coal which he used in Illinois to burn brick with, analysis of the fuel being:

Moisture	9.20
Volatile matter	45.89
Carbon	31.57
Ash, etc.	18.68
	100.00

And having a heat value of 10,143 B. T. U. for each pound of coal.

By following the same line of calculation with this coal as we did with the Youghiogheny coal we arrive at the following figures for a percentage of fuel in the ashes:

Unconsumed carbon	14.45 per cent.
Original ash (analysis)	85.55 per cent.
	100.00 per cent.

Or, in every ton of the primary ashes we would find 289 pounds of coke and 1,711 pounds of valueless ashes.

It can readily be seen that with such a low percentage of combustible fuel it is impossible to keep up combustion with the ordinary method of supplying air.

Popular Mechanics states the case in reference to anthracite coal in the following manner:

We will assume that hard coal ordinarily contains 10 per cent. of ash (by which we mean absolutely incombustible material) and the ashes from a well regulated furnace contain 25 per cent. of unburned coal, which is a liberal estimate. There would then remain 13 1-3 per cent. of ashes, of which

3 1-3 would be coal and 10 per cent. genuine ash. Therefore, the loss, if thrown away, in these ashes, is 3 1-3 per cent. of the coal used. In the form of a table this statement appears as follows:

Coal contains:

Combustible material	90 per cent.
Incombustible material or ash.....	10 per cent.

Ashes contain:

Combustible material—25 per cent. equals 3 1-3 per cent. of the coal used.

Incombustible material—75 per cent. equals 10 per cent. of the coal used.

So, if we advise that the method cited will enable us to burn all the coal in the ashes, and that is the limit of its possibilities, we may hope to save 1-33 of our coal bills.

From all the foregoing it will be seen that the amount of "real ashes" to be handled is in such an outrageously large percentage as against the percentage of fuel in the "new ashes" that it will be only a short time until the furnaces will be so full of ashes that combustion cannot take place, in that the bulk of fuel decreases while the ashes increase.

It is well to recollect that the cheapest fuel we have is coal, and oxygen is necessary for combustion, then use air as an oxygen supply, for air costs nothing. These miraculously



A Terra Cotta Panel.

successful compounds bob up every once in a while, but they seldom hold one for any length of time. The writer was treated to a scheme of wonderful effect twenty years ago, but it was found to consist principally of salt and zinc, and was subsequently discarded and abandoned. Bear in mind that there is a certain amount of combustion and heat in a given quantity of coal (a cheap fuel) and air is the cheapest oxygen supply, hence use these two cheap articles intelligently and you are then enabled to get all out of it that there is in it. Do not let adroit, ambiguous and clever advertising matter part you from your good money, but use good judgment in handling your fuel and you will do as well as any one else.

Written for THE CLAY-WORKER.

TWO BIG BRICK WATER TUNNELS PLANNED FOR CLEVELAND.

Two big water tunnels are projected for Cleveland, and work will probably be gone on with next spring. One is for the City Water Works department, and the other for a new power plant for the Cleveland Illuminating Company.

The new water works tunnel will cost in the neighborhood of \$600,000, and will jut out into Lake Erie from the West

Side, which locality it is planned to supply with water. At the present time the entire West Side is dependent upon the East Side Water Works for its supply. Should the capacity be cut down the West Side would be the first to feel the failure. At the present time two pipes, one a forty-inch and another a thirty-inch, supply the section west of the river. The section is building up rapidly, and already has a population of nearly 200,000 people.

The new tunnel will be 15,000 feet long. C. F. Schultz, water works engineer, accompanied by John T. Martin, his assistant, have been visiting eastern cities during the past month with a view to learning the newest things in brick tunnel construction, with a view to planning the new one here.

The brick tunnel now in use is 26,000 feet long, and was built several years ago at a great cost of life, there being several serious accidents in which a number of workmen



A Piece of Grotesque Terra Cotta Made at the O. W. Ketcham Plant.

were killed. The water works engineer declares that the specifications for the new tunnel will be made with a view to protecting the workmen as much as possible, as they will call for the installation of necessary safety devices. Three pumps at the Kirtland street station, which are not being used at present, will be installed in the new West Side station when it is put in operation.

When Schultz and Martin were in the east they were accompanied by Walter P. Rice, engineer for the Cleveland Illuminating Company, who was with them for the purpose of studying tunnel building also, as he may be called upon to let the contract for a new \$1,000,000 tunnel for that concern to supply a mammoth new power plant which is to be built on twelve acres of ground on the lake front near Thirty-seventh street. The new tunnel will not be gone on with until next year. In the meantime work on the power plant will be pressed.

Written for THE CLAY-WORKER.

THE O. W. KETCHAM TERRA COTTA COMPANY.

IN APRIL, 1906, O. W. Ketcham started the erection of a large terra cotta plant at Crum Lynne, Delaware County, Pa., along the main line of P. B. & W. division, Pennsylvania Railroad, just outside of Philadelphia. In June of the same year, before the completion of the plant, contracts were taken and work started, under difficulties, but without holding up the contractors.

Since August, 1906, the plant has been in operation and running full time. Some large contracts have been completed in Philadelphia, Washington, Baltimore and throughout Pennsylvania.

The main building of the factory comprising boiler and engine room, mixing and pug room, measures 100 x 250 feet, and is built entirely of fire-proof construction, hollow tile being used in walls and both tile and slag in the roof. The same supported by iron columns and girders.

The boiler and engine room measures 52 x 60 feet and is separated by fire-proof partition. It is up to date in every detail of modern steam engineering. A 130 h. p. Corliss engine furnishes all power. Water is obtained from private deep well and pumped by compressed air. The mixing and pugging of clay is done in a unique manner, only five men being required to pug fifty tons of clay in ten hours, i. e.

Written for THE CLAY-WORKER.

PUGET SOUND CLAY NOTES.



BUILDING SITUATION in the Puget Sound cities has been entirely satisfactory the past month. The demand for common brick is still very large, and prices of \$8.00 for Seattle and \$8.50 for Tacoma have been maintained throughout the month. Demand for face brick is still brisk, and prices are the same. The lack of cars for proper transportation is hampering many buildings, and the brick yards maintain a steady kick and complaint with the railroads in that respect. Coal has been raised another 25 cents per ton in price, and good kiln coal is now sold for \$3.75 per ton at the mines.

The Denny-Renton Clay and Coal Company have all their plants running full capacity. The Taylor plant has been making paving brick in order to help to fill the many orders which the Renton plant was unable to take care of.

The Builders' Brick Company, of Seattle, has started to build their new plant. W. C. Mitchell is the constructing engineer in charge. This plant will build several down draft kilns, and make sewer and paving bricks.

Alfred Abrahamson, who owns a large brickyard on the Duwamish, close to West Seattle, died suddenly recently. About a year ago his father died, and since that time the



General View of O. W. Ketcham Terra Cotta Company's Plant, Crum Lynne, Pa.

to bring raw clay from storage bins along siding into clay room ready for pressing.

The model and mold room measures 50 x 50 feet, and is fully equipped. P. and F. department measures 100 x 150, and has four platforms running the length of the room for pressing. After being turned out of the molds it is drawn on slat floor dryer, and when stiff enough to handle, is conveyed on cars into machine heated tunnel dryer. From this point the ware passes to the spraying, and receives a superficial coating of glaze, according to the finish desired. There is one muffle kiln, 25 inside diameter, with a capacity of about 100 tons; another smaller kiln about 20 diameter, and yet another for rush orders and experimental purposes.

From the kiln the material is taken to fitters department, and a separate fire-proof building 80 x 30 feet, where the terra cotta is laid out according to plans, numbered and prepared for shipments.

The entire output of the plant is devoted to the manufacture of architectural terra cotta, according to plans and specifications submitted by architect. No stock work of any kind is made. Quality of material and prompt delivery receive special attention. Contracts of various finishes have been filled.

The plant is under the supervision of N. J. Stephans, an Ohio State University man of good experience, and a member of the American Ceramic Society.

yard was entirely rebuilt and put in better condition.

The new yard of the Steele Brick Company, on Vashon Island, is now in full operation and their bricks find a ready market in Seattle.

The Northern Clay Products Company is building another large muffle kiln, to take care of their large terra cotta contracts.

Deposits of clay of a very fine quality have been found in the vicinity of Kennewick, and a corporation of local people has been formed to develop the clay beds and manufacture brick and sewer pipe.

At Hope, Idaho, W. A. McMurray has leased for the period of twenty years, to the Pend d'Oreille Clay and Mining Company twenty acres of valuable clay land. This company will at once erect a new plant, and start the manufacture of brick, sewer pipe, drain tile and other clay products.

The Superior Brick and Tile Company, of Snohomish, will at once commence the erection of a down draft kiln for the burning of red face brick and sewer brick. The city of Everett will use large quantities of both kinds of bricks, and the Superior people hope to supply the demand before long.

At Vancouver, B. C., a new sand lime brick company has been organized under the name of the Pacific Brick and Tile Company, with a capitalization of \$100,000. This company has already booked enough orders to keep the plant in operation for one year.

S.W.A.S.H.

HOW TO BUY POTTERY IN MOROCCO.

By George E. Holt, of Illinois.

(From the Glass and Pottery World, Chicago.)

IN SPITE of the cheapness of native Moorish pottery, ware of Spanish make finds a big sale in Morocco. This is due to two reasons, viz., that in price the Spanish article is as low as the Moorish, and the glaze is better, thus giving the dish longer life. The Moorish liking for gaudy colors is also gratified by the Spanish taste for the same thing, and although some of the dishes turned out by Spanish factories much resemble a kaleidoscope, or a comic valentine, in point of color, they are eagerly purchased by "el Moro."

The sale of Spanish ware is carried on like everything else in Morocco—in a gypsy-like, haphazard fashion. There may be two real "shops" in Tangier—I am sure of only one—where earthenware and china are sold as they are in America, but the customary way is for a Spaniard to get a shipment of, say, a hundred pieces from Spain, to spread them out upon the steps of a church, or upon the sidewalk, or in the road, paying a few centimos for the privilege of exhibiting his wares in that particular spot. A cross between these two forms, is the rude shack erected in the socco, or marketplace, of which I herewith show a photograph. I may say that the day following that upon which I took the picture, the shack was pulled down, with others, to give the Moors space in the socco, for their "powder-play" (this has been a month of feasts), but the ensuing day it was rebuilt, pretty much the same as formerly. It is rather amusing to think of a lot of shops being torn down and rebuilt in order to give a crowd of half-crazy Moors a space in which to ride about whirling their guns and burning powder, but there are lots of queer things in Morocco.

Most of the Spanish pottery sold here is glazed only upon the inside. The glaze is of good quality, but roughly applied, so that it wriggles down the outer side of the bowl, producing anything but a neat appearance. An example of this may be seen in the photograph, in the case of the dish leaning against the nearest corner post. The Moor in the picture is examining a dish with the intention of finding some flaw on the strength of which he may be able to beat down the price of the article a fifth of a cent.

The Moroccan merchant, whether he be a Moor, Spaniard or Jew, is open to the process known as "beating down." I may be mistaken in saying that every one is open to it, but my experience here, and the experience of others, has been that such is the case. Let me cite a couple of examples in the retail pottery line.

A couple of weeks ago a Moor, whom I have named "the perambulating junk shop," but whose real name is as euphonious as Mohammed el Khladar, shouted to me as I was standing upon the balcony of the hotel.

"Something fine," he said, at the same time pulling from beneath his jellah two articles of virtu—a colored vase standing perhaps a foot high, and a very peculiar pottery lamp, much resembling a candle-stock.

"Quato valore?" I inquired, which means, in Moroccan Spanish, "How much?"

The old rascal never batted an eye, and only for the smallest fraction of a second did he hesitate.

"Five dollars each," he said.

I smiled politely, and inquired whether his father had also been crazy.

"How much you give, then?" he asked, in rather fallen English.

Having learned from costly experience just a few things about the business principles of the Moors, I hesitated about as long as he had in making the first price, and then remarked:

"One peseta."

Inasmuch as one peseta is twenty cents, it was quite a drop.

The Moor made a few remarks in Arabic, which I fortunately was not able to understand—and I proceeded to light my pipe and look at the scenery away beyond the Moor. Finally, after standing first on one foot and then the other, undoubtedly wondering just how much the "dog of a Christian" would stand for (by the way, this same merchant tried to stick a knife into a Christian "infidel" one day in his enthusiasm for Mohamet!), he looked up and shouted: "You give one dollar, you take them." Then he smiled.

The Moor is a smooth creature.

"One dollar each?" I inquired. Then the smile faded. "Yes," he answered.

"Manana," I said, which means "tomorrow," and puffed up a pretty good fire in my pipe, gazing interestedly at nothing in the meanwhile and thinking of the time this same fellow had sold me a "keef" pipe for a peseta and a half. I then gave him two pesetas, he had no change, so he offered me another small article for a peseta. I accepted, and tendered him a half a peseta. He refused, saying that he meant a peseta more, or three pesetas for both articles. It's confusing. My reverie was interrupted by the words:

"One dollar and a half for both." I looked downward to find that my friend had lighted his long-stemmed Keef pipe to assist his mental faculties, and was now waving it slowly between the two articles, which he had deposited upon the ground.

"Porque," I said, "son no buenos," which I intended to mean that I didn't think much of his pots, and didn't see why



A Shopping Scene in Grand Socco.



A Typical Moorish House, Built of Bamboo and Grass.

I should buy them at any price. First he looked at me, probably to see if I was joking; then at the pots to see if he had been "stuck." Then he very apparently figured back to the cost price of the articles (a simple problem in Moorish arithmetic can be performed in an hour, if one works industriously!).

"You make price," he said.

The sun having gotten pretty warm, the conversation dry, and really wanting the vase and lamp, I did so.

"One dollar for both," I said.

"Come down and get them," was the reply.

And so having bought a very good specimen of a Rabat vase and an unusually scarce pottery lamp from the Atlas mountains, for one-tenth of the original price, I would not refuse the Moor's request that I add "Kawha" to the dollar. "Kawha" means "coffee," and is used also to denote the "peregorda," or ten centimo copper coin, for which coffee may be bought.

Reverting again to Fez pottery as seen in this peculiar land, I have obtained some pieces of ware a representation of which is here given:

The unglazed pottery is shown by the three large dishes at the bottom. The one in the center is about fifteen inches in diameter and about two inches deep. The design is in red, yellow, green, blue and black, and is very pretty, though lacking the contrast of the others. The dish at the right has a design outlined in black upon a reddish-brown ground, with which the dish was first coated, and then filled in with blue, yellow and green. Probably the best design of the three is that of the dish at the left of the bottom row. The ground enamel is of a redder tinge than in the others, which brings out the design better. The center figure is of red, green and black, outlined in black; the radiating arms are of red with stripes of yellow, black-bordered, running down the center. The designs in the segments are outlined

with a fine black line, and filled in with light blue and light green, dotted with white. The blue and green do not, however, cover more than a third of the red ground. The border around the edge is of blue, crossed with white. All of these dishes are covered on the back with red enamel. The small dish in the upper row is of the same style as the larger ones.

Were the enamel used of a good quality, Fez dishes would have a far greater value than they have, but in a few years the colors begin to peel off, although they retain their freshness, and then the design is spoiled. The enamel has no luster and is hardly as much enamel as paint.

DOWN TO BRASS TACKS.

There is a rather "slangy" but very apt and forcible expression with certain variations, but generally known as getting down to brass tacks, and several other synonymous terms meaning practically the same thing, among which there is one in reference to "getting at the meat in the cocoanut." Now while it may

sound rather out of place to apply slangy expressions to educational matters, there is a tendency among broad-gauged educators which nothing seems to so fittingly describe as to say that they are "getting down to brass tacks."

An example of this has been furnished us recently by Edwin G. Cooley, superintendent of the Chicago public schools, in an article for the Saturday Evening Post on "Common Sense in Common Schools." Mr. Cooley maintains that common schools should be more common. He doesn't think or intend by this

that the standard should be lowered, if regarded in the right way, but he says there is no denying the fact that our public



Moorish Pottery.



Spanish Crockery Shop, Grand Socco, Tangier.

schools are doing too much over-head shooting. He maintains that great harm comes from making too much of an object of the mere name of graduation, and that the latter days of schooling are shaped more with a view to carrying off the honors in this line than asquiring better equipment for winning after honors here in the world.

Unconsciously, perhaps, he pays a tribute to the trade school idea by citing an instance where a new high school graduate went directly to a factory, and the professor asks the question, what sort of an education had his schooling given him for the life upon which he was entering upon? His mother had helped him to get his education by taking in washing. Such a sacrifice was worthy of rich results but the actual results attained were four years Latin, two years Greek, two years French, two years mathematics and a minimum of English grammar and political economy.

The professor might also have added that the course included no training of his hands in the work he was to do.

Also, he says, that those who go this way, that those who go from the school to the factory, the stores, shops, and the streets are thousands to the tens who persevere to the university class rooms.

He says further, and wisely, that he cannot escape the

mass of the people through a course of study which will be of benefit to only a chosen few. The result is not only to put the mass out of harmony with their environments but it instills false ideas of the dignity of skilled work as compared with what is termed professional life; it causes us to lose sight of the fact that the greatness of the American nation is in reality, founded on its mechanics.

It is the skilled worker and the genius that creates the complicated labor saving devices, which makes this country great, and enables the manufacturers to compete with the world and pay good wages to their employes. We all know this and we should give it the recognition it deserves. Our failure to do this is in a great measure due to the false ideas we have gotten through our schooling system. Boys are taught in school that the higher ideals of life lay along the line of what is slangily termed the "white shirt calling," of being lawyers, doctors, dentists, and things of that kind, but, while all of these callings are honorable they are of no more importance from the standpoint of utility than brick laying, carpentering, or agriculture and various other callings which involve physical as well as mental training.

It is refreshing to note, however, that leading educators are manifesting the courage of their convictions and are



General View of the East Ohio Sewer Pipe Company's Plant at Irondale, Ohio.

conviction that there is a general tendency, so far as our common schools are concerned, to educate our boys out of the environments and vocational needs. The effect of this tendency is to give them a dislike for any calling which will not allow them to wear nice clothes and keep their hands unsoiled. After a lot more along this same line, Mr. Cooley maintains that utility should be the prime test in education; also he urges those in control of our public schools to put emphasis on the vocational studies, because the majority of the pupils cannot hope to enter professional life, and should, therefore, be trained by the shortest and most direct cut to fit themselves for the life of labor in stores, shops and offices. That is getting down to brass tacks in the right way. And more of the leading educators are not only taking to the idea, but seeking to advance it, until it looks like it shall reach that point where it is properly recognized that it is of more importance to properly train the mass of the people so as to equip them for the affairs of life than it is to get the standard of the schools higher with a view of giving greater finish and polish to the few that enter professional life.

Moreover, it is harmful to follow the false lead and put the

speaking out plainly on the subject. We have had further evidence of this tendency of getting down to brass tacks, also, in the development of the manual training school idea. So far it has only been a start in the right direction, a start which has proven so successful that it should and evidently will be followed up with great success. Maybe some day soon, the trade school itself will become not only a part but a prime factor in our public educational system, which it should have been long ago, or perhaps we were not ripe for it then. Now, however, it seems that we are, and that the trade school will not only grow in prominence but will add an influence to the dignity of this calling, which will in the near future make the calling of a skilled worker as widely coveted as professional callings have been in the past. Then will our young men become not only better skilled workers but better men, by virtue of the fact that they not only can, but will, take a pride in their calling, a pride which in the past has been often wanting.

It is probably better to be a knocker than to not be anything, but then there are so many other better things a man might as well be.

Written for THE CLAY-WORKER.

A FINE SEWER PIPE PLANT.

PLANS HAVE BEEN prepared for doubling the capacity of the plant of the East Ohio Sewer Pipe Company, the works of which are at Irondale, Jefferson county, Ohio. Although the firm has been in business but six years, its business has grown to such an extent that enlargement to all departments is an absolute necessity.

The company is now operating twenty-three kilns, varying in size from 34 to 36 feet inside diameter, all of which are of the down draft pattern. A portion of the plant is four stories in height, and it measures 300 by 90 feet, while an annex, which is to be built at once, will measure 100 by 60 feet and will be five stories in height. All machinery will be located in this addition.

A building 75 feet square is used for a boiler house, the firm operating four tubular boilers of 100 horse power each. The Hoppes heater is also used in this building. Three grinding pans, three tempering pans and two presses are kept constantly at work. Machinery in latest models is used throughout the property. From the time the clay is dumped

thick. The mine is the most economical to operate in the entire district, clay being mined almost 33 per cent. lower than in other mines in the district.

The operation of the plant is in charge of C. W. Aken, who has been associated with the sewer pipe business for many years.

Not only does the company own extensive clay acreage, but its coal properties are most extensive. The fuel used to operate the works is taken from the coal mines of the company, and already arrangements have been completed to mine this coal on an elaborate scale. The coal is to be mined by the long wall system, a new mode of mining in this section. Ten long wall electric mining machines have been ordered, and thousands of tons of coal a year will be taken from the property. Electric mining machines are also used in the clay mines. The clay and coal mines are in charge of W. E. Williamson.

The company is composed of eastern Ohio capitalists. Its officers are: President, William Banfield; vice-president, A. C. Houston; secretary, treasurer and general manager, Fred W. Owsney. Mr. Owsney is under forty years of age and has been associated with the manufacturing of sewer pipe for



One of the Large Sewer Pipe Presses in Operation.

into the pans no hand touches it until a length of pipe is taken from the large presses.

Scattered throughout the plant are hundreds of electric lamps, which have given the factory the name of being the best lighted of any throughout the Ohio Valley. The property is provided with 120,000 square feet of drying space, and to reach these floors two Marshall elevators are employed. There is also 19,000 square feet of kiln space.

Five new kilns are to be erected during the month, and as these will be 40 feet inside diameter they will be the largest of the group. The additions to the plant are to be built to either end of the plant, and by installing another Stevenson press enough pipe will be made to fill 240,000 square feet of drying floors. Although the company employs in all departments about two hundred men, additions are to be made in every department as soon as possible.

The clay mines of this company are the most remarkable in the eastern Ohio territory. There is not a drop of water in the mine, it being as dusty as the middle of a country road upon a hot summer day. The shaft is seventy feet deep and the vein of clay is seventeen and one-half feet thick. The roof of the mine is slate and the slate is thirty-eight feet

years. He at one time was an operator, having charge of a property at East Palestine, Ohio. He sold this business and then became associated with the East Ohio Company. His home is at Steubenville, Ohio.

FIRE CLAY DEPOSIT IN RHODE ISLAND.

A vast deposit of clay of the finest quality was recently discovered in Ashaway, R. I., and a company, known as the Ashaway Clay Company, has been organized for the developing of this resource and for the manufacture of brick and tiling. The clay has been carefully tested and it is shown that the deposit is large and of a very superior quality. A plant will be built at once to have capacity of 20,000 brick a day. Officers of the new company are: George L. Babcock, Plainfield, N. J., president; George N. Burdick, Potter Hill, R. I., vice-president; Frank Hill, Ashaway, secretary, and Earle J. Bottomley, Friendship, N. Y., manager.

The Irishman who thought that he could bridge the gap between the pier and the departing steamer in two jumps, and the man who tries to make an appointment with opportunity after she has turned away, have twin brains.—Ex.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS FROM CLEVELAND AND NORTHERN OHIO.

BUILDING OPERATIONS in Cleveland for the month of September, despite the condition of the money market, showed a substantial gain over the same month a year ago. When it is remembered that last year was a record breaking one in almost all of the large American cities and that this one has been hampered with panicky spells, the result is more than gratifying. For September, 1907, there were 690 permits issued for building, aggregating \$874,165 in value, as against 645 permits a year ago, representing buildings worth \$871,426.

The outlook for the fall and winter is fair. A number of big public and semi-public buildings are under way, while the volume of home building is unprecedented. After a season in which all kinds of brickmakers have been rushed to capacity a quiet spell will come as a sort of relief and enable the dealers to stock up for next season, the outlook for which is exceedingly bright as far as the brick building industry is concerned. It has been found in Cleveland that since the fire limits were extended and the new building code put into operation that the use of brick, particularly the hollow tile and pressed varieties, has been boomed.

The volume of brick building under way or finished up this season is very satisfactory. The new Hippodrome, costing \$1,500,000, is rapidly nearing completion. It is of steel, hollow brick and pressed brick. The new \$300,000 West Side Market House has also been commenced. A site was selected October 1 for the new contagious disease hospital for the city, which will cost \$70,000. It will be near the City Hospital. It will be largely of brick. Four different schools are under way, and a new technical high school is being constructed on East Fifth street. Next spring the new John Hay high school will be built, and four new grammar schools.

While many big schemes are retarded because the promoters can not get money at a satisfactory rate of interest, much building is going on. The new building for the Cleveland Trust Company has been finished at a cost of nearly \$1,000,000, and another structure to cost as much is being erected for the First National Bank. Several halls and temples for lodge organizations, built of brick, are nearing completion, notably the new Pythian Temple on East Fifty-fifth street.

One of the hopeful things about the building situation in Cleveland is the large number of dwellings which are being erected by the people who are to occupy them. Never in the history of the city has the number been so great. It is estimated that the year will see from 2,000 to 2,500 houses added to the city. This does not include several hundred terraces and apartment houses. Probably no city in America has so many apartment houses as Cleveland, and the number is being added to every year. Owing to the building code

they are almost entirely built of brick. Only one concrete apartment was attempted this season in Cleveland. While the big promoters are having a hard time getting money the home builders are going right ahead, for they have their bank accounts to fall back on.

The paving brick situation in Cleveland is entirely satisfactory. A most successful season is reported by the local manufacturers and distributors. Paving brick here is selling at \$19.80 f. o. b. city. This is considered a fair price. Much of the stock being manufactured in this neighborhood is being shipped directly into Cleveland and used here. The paving season will not close until the middle of next month, when it is expected that most of the jobs under contract will have been completed.

The paving brickmakers are already lining up for winter orders. While stock can be profitably kept on hand by the makers, a steady income is always welcome. Some of the smaller municipalities, finding they are held up during the summer months have signified that they will order during



East Ohio Sewer Pipe Company—Inside of Kiln Which is Partly Drawn.

the winter, storing the brick until spring and then having the stock on hand can start work whenever they please. This is a satisfactory method both for the maker and buyer, and is being followed more and more.

Work on the big intercepting sewer is likely to continue all winter, as it is being done in tunnel form under the city streets. Thousands of sewer brick are being used weekly in this big undertaking. The sewer has been building for five years, and will not be completed for another four years.

The common brick yards are not as busy as they were, but Mr. Bradley, of Barkwell & Bradley, distributors, says that the fall outlook is fair and that a good season has been experienced. Some of the plants will shut down next month for repairs. The common brick dealers say they have felt no effect from the use of concrete in the building industry, as the concrete for the most part replaces steel and not brick.

A good line of orders has been booked by the local pressed brick agencies. The Masons' Supply Company will ship 50,000 pressed Toronto and Kittanning brick to Bellair, Ohio, for a

building for Charles A. Warner. The same concern will supply 80,000 Kittanning pressed brick for the fine new store building for D. A. Frank & Co., at Marion, Ohio.

The Cleveland Builders' Supply Company will furnish 40,000 Darlington pressed brick for the new Millford school. The same concern will also supply 80,000 pressed brick for a fine new ten-story fireproof store building for the Bailey Company of this city, costing \$200,000. It will not be started until January 1, but the contract calls for its completion by August 1.

The Cleveland Hydraulic Press Brick Company is busy handling fall orders and making improvements to its plant at South Park. C. H. Lyon, of Dayton, selling agent for the Hydraulic Company at that point, was a visitor in Cleveland for several days during the past month.

Treasurer Zmunt, of the Newburg Brick and Clay Company, reports that his concern has more business than it can look after, and that orders are already appearing for next season. The company may install a waste heat system this winter

Owing to the opening of many allotments in the suburbs of Cleveland building has taken an impetus. In addition it has proven a good thing for the sewer pipe manufacturers and dealers. Much of the sewerage in these new districts is being done on a large scale, the allotment owners giving contracts for whole street, carrying the pipe inside of the lot line to satisfy tenants. The season's report on sewer pipe is consequently a very satisfactory one.

The Cleveland Furnace Company will require a big order of fire brick for the new furnace it proposes to install. Work has already begun on doubling the capacity of the already large plant. New docks are being built and another big furnace will be added.

The impression has gone abroad that much of the concrete work being done in Cleveland is not up to specifications as regards strength, since Building Inspector Lougee announced a few days ago that he proposed to call a meeting of the concrete builders with a view of asking them to discontinue the use of cinders in their structural work. Much of this stuff has been used, but how far it will affect the lasting qualities of the work nothing but time or a fearful catastrophe will tell. Suffice it to say, that the building inspector is in no mood as yet to permit of a change in the building code restricting the height of cement buildings to six stories or eighty feet.

A. BUCKEYE.

HUMOROUS LOGIC.

There seems to be two sides to the Congo question, a black and a dark-brown.

Arkansas has passed a bill prohibiting all speculation in futures. The next bill should be one prohibiting all reference to her past.

It is denied that the extreme cold April was caused by the attempt of Kansas City to corner the next Republican national convention.

If this prosperity continues long enough somebody is going broke. All the other fellows seem to be able to advance their prices the fastest.

As we understand it, the President is going to protect the

railroads from their worst enemy, themselves. Being no longer able to distinguish right from wrong, they evidently need a guardian.

Things have come to a pretty pass, politically. Our President has been openly accused of stealing Democratic doctrines, and now the Democrats seem inclined to get even by stealing the President.

Mr. Belmont predicts a check to our industrial prosperity. We hope that he will make the check a big one, and that we can cash it as easily as we have cashed other checks the past few years.

This is a queer old world. Chicago is known all the world over as a wicked city, and is still able to govern herself, while "Zion" seems to stand a pretty good show of becoming a ward of the Illinois courts.

An Associated Press correspondent tells of a spring which has just been discovered near Ada, Ohio, which flows water that is intoxicating. This all happened after the section voted dry, and only goes to show the danger of voting against liquor. If this correspondent had been able to get his regulation number of drinks no doubt he would have escaped "seeing things."



Molding Room of East Ohio Sewer Pipe Company.

for the purpose of utilizing the waste heat from kilns in drying out the brick.

The Newburg Brick Company expects to supply the American Steel and Wire Company with several million brick during the next year, as the big corporation is building an immense plant at Newburg, just outside of Cleveland. Over 100 acres has been purchased, and mills covering from ten to fifteen acres will be erected. They will be fireproof, much brick being used in their construction. It is said that from 50,000,000 to 75,000,000 brick will be required on this job alone. Work will begin next spring.

A new brick company is being talked of at Sparta, Ohio. John Crane, formerly connected with several Cleveland companies, is said to be promoting it. It is planned to manufacture common brick on a large scale.

The Government has decided to proceed with the work of constructing walls and installing the mechanical outfit, with the exception of elevators, in the magnificent new federal building at Cleveland. The walls will be largely of brick, and will be set during the winter. Large quantities of tile will be used throughout the interior.

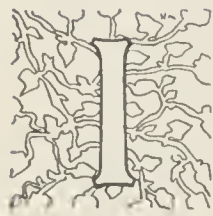
Written for THE CLAY-WORKER.

THE EFFECT OF HEAT UPON CLAY.*

SECOND PAPER.

By A. V. Bleining.

Ferrous Silicate.



IN TAKING finely ground sand, mixing it intimately with ferric oxide, and burning it in a kiln in which a reducing fire is maintained we shall find a ferrous silicate produced. Similarly, we find contained in clay some natural silicates which are, in part at least, ferrous silicates, and which would thus tend to impart to the clay a dark color. In some clays the quantity of such minerals present is considerable, and we would be compelled to burn them very carefully, indeed, if we wanted to produce a good, red color. Fortunately, however, most clays contain comparatively small amounts of unchanged ferrous silicate minerals, and hence we are usually able to carry out the oxidation of the iron in the clay without trouble as far as this constituent is concerned. Some common minerals of this type are horn-blende, augite, and mica. Though, perhaps, it is practically impossible to observe them in a clay without the aid of a microscope, their acquaintance can be made by observing the structure of the granite boulders which are scattered plentifully throughout our Northern States. The black or brown crystals noted on the surface of such a granite are mostly representatives of the families represented by the above three minerals. Since, then, the clays are derived from just such rocks as granite, it may easily be understood how the ferrous silicates got into the clay. In no case is the reaction of the combined iron in the clay so sudden as in the case of the free ferrous oxide, and hence not so disastrous. While the free oxide may combine with its quota of silica so quickly that the ware is softened and often distorted so as to ruin the value of the product, the combined oxide in the silicate promotes vitrification more leisurely.

Lime Compounds.—Nearly all clays contain greater or smaller quantities of lime, and there are two principal forms of the latter, the more important of which is lime carbonate. Chemically, the carbonate is composed of two substances, a solid which we know as caustic lime, and a gas, commonly called carbonic acid. Lime carbonate we know well in the shape of limestone, marl, marble, etc., and owing to its great quantity in nature it is not surprising that it appears in clays. In many clays it is detected by simply pouring a little muriatic acid on a lump of the material. The presence of the carbonate is at once indicated by the effervescence caused by the escape of the carbonic acid gas, which is displaced by the stronger acid. The more lime the clay contains, the more lively will be the sizzling thus caused, it being often like the noise made by a miniature soda fountain. Now let us examine the action of the lime carbonate upon the clays. As long as the carbonic acid remains combined with the caustic lime, or calcium oxide, as the chemists call it, no reaction will take place. However, when the heat is raised in a kiln, to about 900 degrees C., the gas is forced to leave, and there remains behind the quick lime. This at once begins to unite and react with the clay, and if enough of the lime is present and the heat is raised, the clay will vitrify and soon melt down to a slag. The peculiar part of this reaction is its suddenness. There is little time allowed between the vitrification and fusion, and unless the burner is skillful, and the kiln well designed,

trouble is bound to come. The writer has frequently observed that the time interval between the proper burning of the ware and fusion was not more than thirty minutes. That this makes it difficult, if not impossible, to burn vitrified products from such a clay goes without saying, though, of course, it is possible to produce ware which need not be vitrified. Even in this case considerable care must be exercised. Another peculiarity of such clays is that the color of the brick, etc., is changed from red to buff, by virtue of some reaction of the lime with any iron oxide present in the clay. This can easily be proven by taking some of the clay from which the buff Milwaukee bricks are made, extracting nearly all of the lime carbonate by treatment with dilute muriatic acid, and burning the clay. It will be found to burn red, showing clearly that the clay does contain sufficient iron to cause it to burn red, but that the lime caused the change to the buff color.

Another effect of the lime is to be observed when the carbonate is present in the clay not in a state of fine subdivision, as has been tacitly assumed so far, but in the shape of nodules or grains of larger or smaller size. These particles undergo the same decomposition on heating, but the resulting quicklime, owing to its occurrence in larger grains, can not unite with the clay completely, in fact, only at the surface. The interior of the nodules still remains quicklime. The consequences are evident. As soon as the brick is used or becomes moist the quicklime slakes. But the slaking of lime always means that it gets larger in volume, and if restrained, it is able to exert a powerful force which, in the case of the brick, means the destruction of the latter. In dealing with clays containing lime we are, hence, confronted by two possible methods of dealing with them. Either the lime nodules can be removed from the clay by means of some kind of a separator, or by washing, or the clay must be ground so fine that all of the lime grains are reduced to a state of division insuring its complete union and combination with the clay proper. Where the lime grains are too fine for separation by machinery the first process, of course, can not be adopted. In either case the process adopted must be followed strictly, and no intermediate method can produce good ware. Insufficient separation will cause bad ware just as poor grinding would do. Wherever the lime carbonate occurs in fairly large nodules or "lime kidneys," the cheaper way would certainly be the separation process.

Beside the carbonate we have another lime compound in clay, and this is the sulphate of lime. As the name implies, it is a combination of quicklime and sulphuric acid, just as the carbonate consisted of quicklime and carbonic acid. The sulphuric acid is much more powerful, chemically, than the carbonic acid, hence it is not so easily expelled from its union with lime. In fact, the breaking apart of the sulphate of lime does not take place except at quite high temperatures, which are beyond the reach of the red brick manufacturer. The result is evidently that the lime present as the sulphate does not bring about such a rapid vitrification and fusion as is observed with the carbonate, unless we employ some powerful agents for expelling the sulphuric acid. The latter, like the carbonic acid, is gaseous at the temperature of the brick kilns. The manufacturer of hard porcelain can use lime sulphate as a flux, because he employs a temperature greatly in excess of the heat a red brick is able to resist, and also because he can cause heavy smoke to pass through his kiln without injury to the ware, a procedure which hastens the dissociation of the sulphate to a great extent. This being the case, we can understand that clays containing iron oxide and lime sulphate in place of lime carbonate will not produce a buff color, but will remain red burning.

The lime sulphate may be originally contained in clay, as such, in the form of gypsum crystals, which are white, transparent and soft, and of all sizes, from the beautiful, well-defined specimen to the extremely fine grains which are al-

*A typographical error occurred in the first article of this series in the September CLAY-WORKER: The three lines at the top of the first column of page 251, having by error been transferred from beneath the third line from the top of preceding column—ED.

most invisible to the naked eye. Often we may find very little gypsum in the clay, though considerable lime may be present as the carbonate. Yet after burning, considerable lime sulphate may be found present. The question thus arises: Whence came this sulphate? The question is usually answered by examining the coal used. It will be found to contain sulphur in the form of iron pyrites. As we know, the sulphur of this compound burns to sulphurous acid, and this, during the earlier stages of the burn, is changed to sulphuric acid. On passing through the kiln this sulphuric acid gas finds an easy victim in the carbonate of lime. The carbonic acid is compelled to leave, and the sulphuric acid takes possession of the lime. This is the same action which would happen if we were to pour sulphuric acid out of a bottle upon limestone, that is, sulphate of lime is formed. Similarly, when a clay contains pyrites and carbonate of lime, the same thing will happen, resulting in the formation of sulphuric acid.

Sulphur.—Any one doubting the existence of sulphur in clay need only observe the white vapor arising from the stacks of most brick kilns, or, still better, test the odor of their fumes. They will be found to be stifling, with the characteristic smell of burning sulphur. At one shale-brick plant, with which the writer is acquainted, the quantity of sulphur escaping daily in the shape of sulphuric acid is about 36 tons, and the stack of the continuous kiln is constantly plumed with a cloud of white vapor. It is safe to say that the greatest part of this sulphuric acid vapor has come from the iron pyrites contained either in the clay or the coal, or both. The formation of this vapor is, hence, due to the burning of the sulphur, which is part of the pyrites, forming sulphurous acid. This, as it passes through the moist atmosphere of the kiln, will form the sulphuric acid. The pyrites are decomposed at about the time the chemical water is expelled, and hence then we will find the maximum amount of sulphuric acid present. As the heat rises, less and less of the sulphuric acid gas will be found in the fire gases, until finally but little sulphuric acid is evolved, owing to the fact that, of course, the amount of iron sulphite in the clay constantly becomes smaller, and also that after the expulsion of the chemical water of the clay most of the sulphur, whether coming from the clay or the coal, leaves as sulphurous acid, whose chemical activity is far less powerful than that of its relation. While the anhydrous sulphuric acid contains 32 parts of sulphur and 48 parts of oxygen, the sulphurous acid gas is composed of 32 parts of sulphur and 32 parts of oxygen. The sulphuric acid gas is extremely corrosive in its action, and has a most suffocating odor, while the sulphurous acid gas is lighter and has exactly the odor of burning sulphur, which, though pungent, is not as extremely suffocating as is the vapor of the more active compound.

In the presence of considerable sulphate of lime, and when the burning is carried on either at a very high temperature or with strongly reducing firing conditions at a lower temperature, the lime sulphate is decomposed into quicklime, which at once combines with the clay and sulphurous acid gas. As has already been indicated, the sulphurous acid can not form sulphuric acid at the higher temperatures, and hence escapes unchanged. The observant reader might wonder how the lime sulphate, which is a combination of quicklime and sulphuric acid, could be made to yield quicklime and sulphurous acid. This is due to the fact that carbon from the unburnt fire gases is a most potent agent in reducing even a strong compound like sulphuric acid to its lower stages, and it is only due to the fact that the sulphuric acid is reduced to sulphurous that it may be expelled. Without this reduction, that is, as sulphuric acid, it could not be caused to leave.

(To be continued.)

The Cigar Trust's advertising man says that 300 million dollars' worth of tobacco goes up in smoke per year. That's a fire loss that has to be charged up to the comfort account.

Written for THE CLAY-WORKER.

THE LOUISVILLE BRICK SITUATION.



THE BUILDING INDUSTRY in this city has been very much demoralized during the past several months, due to a strike among the carpenters and allied trades. This has been at last called off, in a way, but there are many of the varied trades that have as yet held out for their demands. Among those

who are out is the National Bricklayers' Association, and this involves about one-half of the bricklayers in the city, so that this condition alone makes it hard on the brick manufacturer.

There were to have been a large number of buildings erected here during the present year, but the labor troubles have done more than anything else to hold them in check; in fact, the people were really afraid to begin anything in the nature of big work because of the possible delays, and, perhaps, entire holdup of the work altogether. Practically all the larger work that was started was held up more or less, so that the summer has been very unsatisfactory, indeed, from the contractors' point of view.

The brick manufacturers have complained considerably, and now are of the opinion that there will be little or no work given out during the remainder of the year. Conditions now point to a very active year in 1908, however, and they are building hopes of then realizing some excellent business.

The Hydraulic Brick Company has only been operating with half force since June, the time when the labor troubles began here. They report that they have felt the trouble most keenly, and that they do not look for any improvement until next year. Mr. Dumesnil said that the year had been anything but profitable to them, and that the entire trouble was due to the labor difficulties. He said that at the present time only about one-half of the bricklayers were at work, and that meant a great falling off in business with them. He did not anticipate any improvement before next spring, but looked forward then to a very nice business.

The Louisville Brick Company has also felt the evil effects of the labor troubles here, and as a consequence have noted a material falling off in their business during the summer months. While the demand could have been worse, it was so small as to make a very decided difference in their business this year. The prospects were somewhat favorable for the future, but not the immediate future, however, as there would hardly be much building before next year.

The Southern Brick and Tile Company has not been so unfortunate as some of the other dealers, and Mr. Bishop said that they have been operating full time right along. The demand with them for both brick and tile had been very satisfactory, and they were still reasonably busy, with the prospects no less encouraging. This concern has a nice out-of-town trade, which accounts in a measure for their continued business where others have not been so active.

The Kentucky Vitrified Brick Company has had a very active business all summer, shipping their output into many sections of the South, where the vitrified brick street is being adopted. The demand has continued in a way that has been gratifying to them, and they have only the best reports to make as regarding conditions. Their brick is steadily finding an increasing demand, and their popularity is being attested in this way continually.

The Louisville Pottery Company report that the demand with them is satisfactory, though on account of the scarcity of fruit they have had a comparatively limited call for fruit jars. The other lines, however, have been as active as they could wish, and this has made the general business outlook satisfactory. They recently completed the installation of a new kiln, and have everything working well at their new plant.

The Burrell & Walker Sewer Pipe Co. has no complaints to make as to the demand with them. They are operating their plant on full time, and find the demand as being in every respect satisfactory with them. The outlook is favorable, and they are satisfied with the present conditions.

The P. Bannon Sewer Pipe Company has lately received some nice contracts, and are otherwise satisfied with the

business at present. They have had a very active demand and have no cause for complaint whatever. They are operating their large plant on full time, and that means that they are turning out considerable clay goods.

The Louisville Firebrick Works have been quite busy, but have noted a falling off in the demand during the past few weeks. Still they have enough to keep them busy, and are looking forward to a resumption of brisk business very shortly. Mr. Grahm, the president, who was injured some time ago by being run down by an engine near his plant, is doing nicely at Lake Toxaway, N. C., where he was taken, and is expected to return very soon and resume his duties. JOSHUA.

HAPPENINGS AT THE NEW JERSEY SCHOOL FOR CLAYWORKERS.

SOME QUITE important changes became effective with the beginning of the new college year at the New Jersey State Scientific School; chief among these is the new curriculum, which became operative. This new curriculum is the result of a year's patient study of the various courses offered at the college, and other sister institutions, by a committee of the faculty.

The more important of the changes are an increase in the proportion of hours devoted to the technical subjects and the introduction of two new courses of study; namely, a General Science Course and a Mechanical Engineering Course. The following is a brief outline of the revised four-year course in clayworking and ceramics, which is now offered:

- Mathematics—Algebra, trigonometry, analytics, calculus.
- Modern Languages—French and German.
- English—English literature, essay writing, declamation.
- Chemistry—General, experimental, qualitative and quantitative analysis, with special reference to the silicates.
- Physics.
- Ceramics—Properties and uses of clays, winning and preparation, manufacture of bodies, glazes, dryers, kiln, ceramic calculations.
- Elementary Mechanism.
- Elements of Electrical Engineering.
- Thermodynamics—Steam engineering.
- Draughting:
- Surveying—Summer field work.
- Geology.
- Mineralogy and Crystallography.
- History.
- Political Science.
- International Law or Ethics.
- Military Science.
- Military Drill.
- Laboratory Practice with the Chemistry and the Ceramics.
- The revised two-year course, briefly outlined, is:
- Chemistry—General, experimental, qualitative and quantitative analysis, with particular reference to the silicates.
- Physics.
- Ceramics—Properties and uses of clays, winning and preparation, manufacture of bodies, glazes, driers, kilns, ceramic calculations.
- Geology.
- Elements of Mechanism.
- Draughting.

Mr. George Bergen Ford, graduate of the Department of Clayworking and Ceramics at the New Jersey State College, has resigned his place as ceramist at the South Amboy Terra Cotta Company to accept a similar position with the Winkle Terra Cotta Company, of St. Louis, Mo. Mr. Robert W. Cobb, a classmate of Mr. Ford's at the New Jersey School, has followed in Mr. Ford's place at South Amboy. Mr. Cobb was formerly ceramist for the Standard Terra Cotta Company, of Perth Amboy, and more recently has been connected with the New York office of Sayre & Fisher Co.

Mr. Walter H. Wilson, of the class of 1907, of the Department of Clayworking and Ceramics, has been employed by the American Clay Products Company, of Forty Fort, Pa., as ceramist.

Plans have been accepted and ground will soon be broken for an Engineering Building to cost \$60,000. This will furnish accommodations for the Department of Civil Engineering, Mechanical Engineering and Electrical Engineering.

Written for THE CLAY-WORKER.

ATHENS PRESSED BRICK COMPANY, ATHENS, TEXAS.



CENTER of the clay industries of East Texas is Athens, in Henderson County. It is not a large place, but it has three plants—two brick works and a pottery, and the clays used by these three plants are so varied that they give promise of a much greater development of the clay resources of East Texas, a region hitherto almost untouched by exploiters of ceramic raw material.

The country around Athens is more like Georgia than like the Texas of one's preconceived ideas. Red hills, frequent springs and flowing runs and creeks, plenty of varied timber—all these indicate a region like the Middle Georgia fruit country, very different from the flat, black prairie, treeless and unwatered, which represents Texas to those who know the State only from descriptions of the cattle ranges.

But Athens is quite a typical Texas town, with its wide Court House square, in which all the wagons of the country-folk for miles around are gathered on the days when the court is sitting in the picturesque low white Court House. It is the junction point of two railroads, the Cotton Belt, running nearly east and west, and the Dallas-Beaumont branch of the Texas & New Orleans Railroad, which is a part of the Sunset Route. This gives the town a great advantage as a shipping point, for it is easy to reach markets by means of these two roads and their connections.

The Sunset Route, especially, interests itself in the industries along its line; and it was through the courtesy of the industrial agent of the Texas and New Orleans, Mr. H. P. Attwater, that I first visited, a year ago, the clay industries of Athens.

It was in a more recent trip, however, that the accompanying pictures were taken. The views here shown are snapshots of the plant owned and operated by Mr. C. H. Coleman, known as the Athens Pressed Brick Company. This company has been making brick for fifteen years, but the buildings shown in these pictures are new. About four years ago the plant was moved from the old beds to this more convenient location. It lies between the two railroads, with spurs from each, and is within an easy walk from the stations and the square.

Twenty acres of land, situated so conveniently, give ample room for the plant's present business and for a liberal increase. It is not necessary, with the town close by, to supply quarters for the hands—the only buildings needed, therefore, are the shops and sheds. The shop is a very nice brick building, with a galvanized iron roof, and is seventy-six by thirty feet. The clay-shed is seventy-six by one hundred feet.

For many years this plant has made building brick and face brick in several colors—buff, such as that recently used for the public school building at Tyler; mottled buff, and dark brown. These are made from the upper layers of the clay, which is lean and somewhat sandy, red and yellow. But twelve feet below these strata is found a very refractory fire-clay, fat, free from grit, and chocolate-colored. Of this, about a year and a half ago, Mr. Coleman began to make a fire-brick, which has already made a reputation for itself in Dallas and elsewhere. It compares well with the St. Louis Hydraulic No. 2, and the demand for it has been steady, at a good price.

Plow and drag scrapers are used to mine the clay, which is then hauled up in slip scrapers to the clay-sheds. A Chisholm, Boyd & White dry pan, capacity 15,000, is used. Grog is used only in the fire brick, which, like the face brick, is molded semi-dry. A perforated Harrington-King screen, 1-16x1½, and elevators, a Boyd Press with two sizes of dies, one a little larger for the fire-brick, complete the equipment.

There are three up-draft rectangular kilns, 21x60 inches

inside measure, with sixteen furnaces or "eyes." In these the brick are set "five over two," thirty-eight courses.

Wood is used for water-smoking and for burning, though recently some experiments with lignite for the latter purpose have been tried. The fire-brick, of course, requires an intense



View of the Athens Pressed Brick Plant, Clay Field in the Foreground.

heat, and Mr. Coleman estimates that he uses 160 cords of wood per kiln. The brick is so refractory that a common building brick, made from the Dallas shale, placed at the top of the



General View of the Athens Pressed Brick Company's Plant.

kiln, where the heat was insufficient to burn the Athens fire-clay properly, melted to a sirapy yellow glaze!

An Atlas, 75-horse-power, heavy duty slide valve engine,



The Picturesque One-Story Courthouse, Athens, Texas.

and an Atlas 100-horse-power boiler, run at 80 pounds pressure, are in use. Oil is the fuel used under the boiler.

Twenty-two men are employed. ETHEL HUTSON.

Written for THE CLAY-WORKER.

TEXAS BRICK MANUFACTURERS MEET.

THE MID-SUMMER CONVENTION of the Brick Manufacturers' Association of Texas, which was held at Dallas, Texas, September 11, was largely attended, and much interest was taken in the proceedings. The meeting was presided over by President C. R. Sherrill, of Corsicana.

The program of the convention consisted of papers on a number of subjects of interest to clayworkers and a general discussion of the various topics treated. The reports of those present showed that the building industry in Texas is thriving, and that there are no indications of a lessening of the demand for brick.

Leon Keeble, of Elgin, Texas, read a paper on the subject: "Best Clamp Construction for Common Brick." His paper contained some valuable ideas.

Another subject that is of the greatest interest to brick manufacturers throughout the country at this time was treated ably in a discussion, which was participated in by J. M. Harry, of Dallas; Thomas Miller, of Rusk, and C. R. Sherrill, of Corsicana. It was on the subject of "Cement Block and Reinforced Concrete Competition." While the concrete industry in Texas has not reached the proportions that it has in some other parts of the country, it is growing rapidly. Concrete block buildings are being erected in many of the cities and towns of the State.

"The Advantage of Association Work" was the subject of a paper which was prepared and read by William Weatherford, of Ferris.

J. J. Gledhill, of St. Louis, Mo., read a paper on the subject of "A Modern Brick Plant; Its Advantages and Construction." He pointed out the benefits that the use of modern brick-making machinery and equipment bring to the making of brick.

A. R. Harwood, of Gonzales, read a paper on the subject: "Water Smoking and Drying Brick by Waste Heat from Up-Draft Kilns."

There was a general discussion by those present of the subject "System of Keeping Cost of Production." The ideas and suggestions advanced in this discussion were of much value to those in attendance at the meeting.

"Texas as a Field for Clayworking Industry" was the subject of an able paper by W. G. Sneed, of Austin. Mr. Sneed is familiar with the clay deposits of the State and he pointed out the wonderful development of the clayworking industry that might be brought about by utilizing the product. Some of the Texas clays have been pronounced by experts to be of exceedingly high grade.

David Duff, of Ferris, Walter Bennett, of Millsap, and T. G. Cole, of Ferris, participated in a discussion on the subject of "The Best Method of Handling Material to Grinding Machine."

The Texas Brick Manufacturers' Association was organized about a year and a half ago. Its officers are: C. R. Sherrill, of Corsicana, President; T. G. Cole, of Ferris, Vice President; Kal Swartz, of Corsicana, Second Vice President; J. M. Harry, of Dallas, Secretary and Treasurer. The next meeting of the association will be held in Corsicana some time in February, when delegates will be selected for the National Brick Manufacturers' Convention.

W. D. H.

WAIT AWHILE.

Daughter—What! Mother, do you mean to say that I must marry that horrid Mr. Jones? I hate him, I detest him, I despise him!

Mother—But, my dear, you can tell him all that after you are married.—Ex.

Written for THE CLAY-WORKER.

BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE.

"The Truth Hurts No Sound, Reliable Material."

THE NEW, enlarged edition of "Burnt Clay Products in Fire and Earthquake," published by the Brick Construction Association of Los Angeles, Cal., for use as an argument against concrete construction, is a finely illustrated compilation and deserves the hearty indorsement of all brick manufacturers, who should co-operate with the publishers in circulating among prospective builders this valuable advertisement for clay products.

The Brick Construction Association was organized for the purpose of promoting the use of brick and tile and clay products in general, and has as members the largest and most influential manufacturers of burnt clay products on the Pacific Coast.

The manufacturers have expended a great deal of money in getting up this valuable publication, and find their labors have not been without results. The object of publishing the second edition is to have the clay products manufacturers in all sections of the country purchase a quantity of copies and distribute them gratis among architects, builders, engineers, bank directors, loan associations, etc.

The book was first published for distribution in the earthquake district alone, with the thought that should 3,000 copies change only one building from concrete to burnt clay they would be fully repaid for every dollar invested in the books. So successful was the first edition, however, that the association decided to distribute the pamphlets throughout the States, using as their mediums all the important brick manufacturers in the country. The following prices are quoted, which include mailing:

In any quantity up to 100, \$1.00 each; in 100 lots, \$75.00 per 100; and in 500 lots, \$250.00.

The cover to the pamphlet is beautifully decorated by means of an attractive allegorical design in four colors. The ninety-six interesting pages are bound together by a strong white cord. There are eighty-five illustrations used as evidence of the reliability and superior character of brick as a building material and of its ability to endure successfully, even such a tremendously appalling test as the San Francisco calamity, with honest and intelligent construction. The illustrations are made from actual photographs, and not only are the good qualities of brick shown, but also the defects of stone, concrete, reinforced concrete and frame construction.

"Burnt Clay Products in Fire and Earthquake" also includes the official report of the investigations made by F. W.

Fitzpatrick, executive officer of the International Society of Building Commission, on behalf of that society, the United States Government, many technical journals, etc.; the report of Dr. Nakamura on the San Francisco calamity, and several reports on reinforced concrete failures, including the Hotel Bixby disaster of Long Beach, California.

The accompanying illustration is taken from "Burnt Clay Products in Fire and Earthquake." This view is of the Alexander Hotel, a building on Geary street, west of Powell, which is eleven stories high, ten of which are only twelve-



Alexander Hotel, Geary Street, San Francisco. Note the Excellent Condition of the Brick Work After Fire and Earthquake.

inch walls. It withstood the hottest fire in San Francisco, being next to the San Francisco News Company's building, which was filled with magazines and periodicals. It shows the excellent condition of the brick work after the earthquake and fire.

We urge all clayworkers who have not purchased a copy of this book to do so at once, writing the Brick Construction Association, 707 Lankershim Building, Los Angeles, Cal.

You will not only benefit the clay interests of the country by pushing this good thing along, but you will help your own business to rise to greater prosperity.

FT. DODGE, IOWA, CLAY NOTES.

THE POTTERY plant of the Fort Dodge Stoneware Company, which was destroyed by fire two years ago, will be rebuilt by a home company. The plant at the time of the fire was the property of the Western Stoneware Company, commonly known as the trust. Just previous to the fire the company ordered five cars of clay from the mine of the Plymouth Clay Products Company, which experiment had proven far superior to the clay which the company had used in their plant for the past forty years.

When it was definitely learned that the Western Stone-

tracted to the clay adjacent to the city, when the Plymouth Clay Products Company, of this city, sent a quantity of clay to Red Wing to be burned and otherwise tested. They soon began a quiet investigation on their own account and are now thoroughly convinced of the quality and quantity of the raw material to be had, and their purchase of clay land is the first step in what will be another large sewer pipe factory for this city.

The clay is secured below the gypsum rock taken out by the stucco mills, and is a vein of ten feet. Its quality is unusually pure and there is no waste. Shortage of clay at Red Wing will have a tendency to rush their plans along so that next spring will witness activities along the building line. By that time the Plymouth Clay Products Company will be turning out sewer pipe, and the plant of the Lehigh Brick



Searching for the Dead and Wounded in the Ruins of Reinforced Concrete Building of Bridgman Bros., Philadelphia, Pa., Which Collapsed July 10th, 1907. Four Men Killed and Twenty Injured.

ware Company would not rebuild here, a number of home capitalists began the work of interesting capital and it is now assured that a company will soon be incorporated, which will have for its object the construction and operation of a large pottery. Details of the plans of the company and the name it will be known by, are lacking, but the plant is assured Fort Dodge.

Red Wing capitalists have secured enough clay land near Fort Dodge to enable them to operate a large sewer pipe plant for a long term of years. It will be a rival to the Plymouth Clay Products Company, which is just completing its buildings in this city. The Red Wing people were first at-

and Sewer Pipe Company, recently organized in this city, will be completed.

The firm of James Campbell, of Lehigh is a successor to Campbell & Straight, which was organized in the year 1901, and twenty acres of land purchased at Lehigh, Iowa, in the valley of the Des Moines River, eighteen miles from Fort Dodge. A plant with a capacity of 40,000 brick per day was erected and completed during the fall and winter of the same year. The following spring the firm began business, employing thirty-two men. In the winter of 1904 Mr. Campbell bought Mr. Straight's interest in the company, and it has since that time been operated under his name.

The clay pit is an open one, entirely free from lime, and one of the finest in the state. Tile from four to eighteen inches, brick and hollow blocks of all sizes are made. Omaha, Nebraska, is an extensive customer on hollow blocks in preference to Sioux City and other makes. The present output of the plant is from 50 to 90 cars of brick and tile per month. Thus far the season has contributed a large number of orders which are keeping the plant up to capacity every day. The firm is looking forward to a large demand for tile, owing to the general movement among Iowa farmers to tile out their low lands. Each year more tile is being put in, and the plants over the state are not slow to note the increase. Mr. Campbell is always equal to the occasion and is making arrangements accordingly.

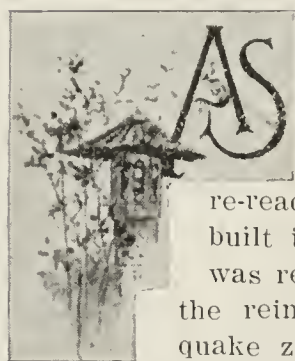
J. E. D.

Written for THE CLAY-WORKER.

SOME FACTS ABOUT REINFORCED CONCRETE.

By F. W. Fitzpatrick.

Reprint from Fireproof Magazine.



A RULE, if one waits long enough he is apt to get at the real facts in almost any case. "Murder will out," you know, is the old adage. So with concrete, for instance. We have read and re-read how all of San Francisco was being rebuilt in reinforced concrete, that nothing else was recognized there. We have also read how the reinforced concrete buildings in the earthquake zone stood the awful test of shake and fire. How very many there were of them and all that sort of thing. Now, as far as the fire was concerned, I was there right afterward and know of my own knowledge just what concrete did and have told you in these columns all about it. If there were any more concrete buildings in the path of that fire than I saw and reported, then they must be subterranean ones and not discernible to the naked eye reinforced, in my case, with the very best of German field glasses. But since reconstruction has begun I have not kept closely enough in touch with work there, other than that in which I was directly interested, to be able to say just what was and what was not being done. So that the report of Engineer William Ham Hall, of San Francisco, on the reinforced concrete buildings there, in the July issue of the California Architect and Engineer, is most newsy to me and noteworthy. He says, for instance, in commenting upon the number of reinforced concrete buildings being put up that: "Considering the fact that prior to the quake reinforced concrete construction was not provided for in the San Francisco building ordinance and that not one complete building of that class had ever been permitted here, this is a remarkable showing." He farther enumerates four reinforced concrete structures that existed before the fire anywhere in the earthquake zone, only one of which was in San Francisco, and goes on to say that "these were the notable structures of this material within the range of the great earthquake and that not one was a good example of a complete reinforced concrete building."

Further, he summarizes the new work and shows where seventy-six concrete buildings are completed or under way, four of one story, eleven of two stories, twenty-one of three stories, eight of four stories, seven of five stories, nine of six stories, eight of seven stories, seven of eight stories, one of nine stories and one of ten stories. But about half of these are being planned by independent architects, most of the work being done by construction companies furnishing plans and everything themselves! The entire amount involved in these buildings is but \$6,178,000, and their average height is but four and one-half stories. Again he says that "the architects most prominent before the public, by reason of the notable

buildings with which their names have been in the past connected, are not prominent as architects of reinforced concrete buildings.' . . . Again we find in the list of owners of reinforced concrete buildings few or none of those who by public repute rank among the most extensive real estate owners and improvers of the city."

Thousands upon thousands of buildings were destroyed in the fire, nearly \$300,000,000 worth. What do these seventy-six amount to in replacing that loss? And yet, we have been led to believe by the glowing accounts of concrete journals and producers that San Francisco had gone completely daffy on reinforced concrete and was building of nothing else!

A still later private report tells me that even of these seventy-six buildings, several are not exclusively reinforced concrete, but have some columns or girders or beams of steel, while all of the great new structures are steel-frame buildings, the Palace Hotel, the Phelan Building, the First National Bank, the Eyre Building, the Welsh Building, the Sachs, Addison, Head, Alta Investment, the Gunst, the Hughes, Metropolis Bank, the Alaska Commercial, the Public Library, etc., etc.

It adds that in most of these tile partitions are being used, but concrete filling between the floor beams. This latter being done not from any objection architects and engineers have to using floor tile, but simply because the freight rates from the East make the importation of that material almost prohibitive, while the local manufacturers find a greater profit in making ornamental terra cotta than floor sections. Therefore the architects have to resort to concrete floors as a necessary but not preferred expedient. "None of these reinforced concrete buildings," says this report, "are at all imposing. They are mostly on the warehouse order and in almost every case have far exceeded the estimate of the contractors, all the way from 30 to 100 per cent., and to-day most of the people who have built buildings of this character would think it over several more times than twice before they would do it again."

News of the collapse of several concrete buildings while under construction has evidently reached San Francisco too. At least, I judge so from the naivety of an ad. I recently saw in one of their journals. This particular construction company, proclaiming the virtues of a special reinforcement, seems to recognize that collapse is quite the proper caper and ordinary. In boldest face type it says, "the falling of a building while in process of construction with our reinforcement is an utter impossibility, and herein we stand ahead of all other reinforced concrete systems!!!"

One of the hardest jabs the reinforced-concrete-or-die advocates have had of late was the Geological Survey Report. It shows that the government, like all other intelligent organizations, recognizes the adaptability and excellence of reinforced concrete under certain conditions, but deprecates its widespread use in unskilled hands and points out the effects which are bound to follow. And, mark you, this is not a secret report that has been wormed out of the government archives or anything of that kind, but a paper that has been specially prepared for the press and voluntarily handed out to the newspaper representatives, sent to them all over the country and can be interpreted in no other light than as a timely and paternal warning. It is rather lengthy for me to quote here, but a sentence or two will show its general import.

For example, its opening paragraph reads, "The recent collapse of a number of reinforced concrete buildings with loss of life and of several hundred thousand dollars, has brought forcibly to the attention of structural material experts the need for an immediate revision of the building regulation of the great cities of the country. It is declared that inattention to this new material on the part of the officials of municipalities and the haphazard manner in which it is being handled by some contractors have led to a most serious problem and will result in more disasters unless there is a remedy at

once." In this report Mr. Richard L. Humphrey, a geological survey expert, and himself an officer of a cement company or association (and, therefore, deserving great credit for being so frank), declares "that the danger of collapse of concrete structures exist in nearly every important city in the United States."

"I have examined carefully nearly every one of the buildings that have collapsed in the past year," says this same expert, in that report handed out to the press via the United States government, "and in every instance the fall of the structure has been due to carelessness in construction. From what I have seen of other concrete buildings in process of construction I am satisfied that the same errors are being repeated and that further collapses will surely come unless the officials of the cities take the question in hand now. This danger of careless construction confronts nearly every city of the country, and IT IS A MIRACLE TO ME THAT MORE CONCRETE BUILDINGS HAVE NOT COLLAPSED." (The capitals are mine.)

". . . It is a comparatively new material, and until its properties are fully known and appreciated, the greatest safeguards should be thrown about it. There is a prevalent idea that it can be used by unskilled laborers. This is an error which has led to serious consequences. While it is true that unskilled labor can be employed to a large extent, concrete construction requires the same care and attention to details that is demanded by first-class construction with other materials. . . . In order to meet this problem squarely, every city in the United States should revise its building laws in such a manner that either the owner or the contractor of a concrete building shall be compelled to employ a competent inspector, whose duty it shall be to follow every detail of the construction, from the beginning of the foundation to the completion of the roof. . . ."

I feel decidedly honored that the government should have suggested the latter expedient as one that would greatly lessen the danger of collapsing buildings, for it is one that was first advocated in these very columns a couple of years ago, at which time, however, other government experts found much fault with me, termed me an "alarmist," etc., etc. It all simply goes to show that the great mass of people are pretty sensible after all, and, regardless of how daffy they may all seem to go over some craze at one time, they are certain to settle down, little by little, to a sane and safe way of assigning each thing to its proper place. I remember well how some years ago, when I called attention to the very careless manner in which some of the concrete apartment houses here in Washington were being built, the city building inspector was the first one to rush into print arraigning me for attacking this wonderful construction and declaring emphatically that all the buildings were perfect, that he had personally inspected them and could vouch for them, etc., etc. That same man now states, in a comment upon this government report, concerning concrete buildings, that "with the present force he can not thoroughly comply with requirements and perform a perfect service. At least a hundred serious accidents have been avoided by their (inspectors') efforts and several hundred violations of regulations have been discovered, and in nearly fifty cases the offenders punished. But with only eight men, I can not hope to prevent all accidents, where several weeks must elapse between visits to buildings."

So with modesty most touching and without any vain-glorious assumption, but merely in most earnest and friendly spirit, do I urge my readers to never put down anything they see in *Fireproof Magazine* as purely alarmist matter. They must note, as time goes along, that what may have seemed so has been a real and present peril, and the safeguards we have advised have become most necessary and are now, though late in the day, advocated by other and higher authorities. The dear reader must know that in these columns we

never ring a false alarm, and whenever we unfold and suggest anything that we deem it desirable to do, it behooves the reader, if he be wise, to hasten and do just as it has been set forth, yea, even to the minutest detail

NOTES FROM THE ILLINOIS CLAYWORKERS' SCHOOL.

The Ceramic Department of the Illinois University this year has an enrollment of twenty-one students, a gratifying increase in attendance of six over that of the past year. This is, indeed, a remarkable showing, taking into consideration that the school is now starting on its third year.

The foundation stones were well laid by Professors Rolfe and Purdy, and the two years' work of the latter in building up the department to what it is to-day deserves much praise.

Prof. Bleininger entered upon his work this year in a manner most acceptable. First of all, he took unto himself a wife, and has settled into a comfortable home at Champaign. Most of his summer months were spent in making preparation for this year's school work and starting a line of experimental work which, when completed, will be a repetition of his good work along other experimental lines. Two of the most important problems he has taken up are: "The Study of the Firing Conditions of Various Kinds of Kilns," and "The Study of the Viscosity of Clay Slips."

The Ceramic Department has never before started with such an auspicious beginning, and it augurs well for the future of the ceramic school.

Prof. Bleininger has an excellent staff, as two well known ceramists have cast their lot with him and have taken up active duties in instruction. Mr. R. T. Stull and Mr. Herford Hope are the two new faces to be seen at Illinois this year. Mr. Stull has a position as instructor, and besides taking a share of the regular instruction, specializes in the field of terra cotta manufacture and chemical stoneware, handling the technical problems of these industries—such as method of molding, shaping and glazing. He has been actively engaged in these industries for a number of years and comes to the university well recommended.

Mr. Herford Hope is assistant, and besides helping in the laboratory, specializes in pottery manufacture, taking up all the various branches of the industry and all the practical steps in the processes.

Prof. Bleininger carries a large part of the lecture work, and gives the foundational courses, uniting the whole to a consistent course of studies. He has a great deal of research work under way, such as are needed in throwing light upon the various leading problems of the ceramic and cement industries.

Some of the studies being taken up other than those already mentioned are: Study of the Various Types of Stoneware Glazes, by R. T. Stull; Drying Curves of Certain Clays and Shales, by Prof. Bleininger and Mr. Herford Hope; Volume Changes Brought About by the Addition of Various Minerals to Clays, by Prof. Bleininger and Mr. J. K. Moore.

With such an able corps as Prof. Rolfe has about him the success of the Ceramic Department at Illinois University is assured. The people of Illinois may be justly proud of the possession of such an institution.

THE ORIGINAL ARKANSAS TRAVELER NEVER DREAMED OF THIS.

According to newspaper reports, diamonds are being unearthed down in Arkansas. We knew that state had a great wealth of resources and also that it is bound to distinguish itself, but it used to be satisfied with pearls from its rivers. But it is now evidently going to go that one better and furnish diamonds from the hills of Pike County—unless some newspaper man has been having a dream. And, in fact, the foundation for the report is in the press sheets of the U. S. Geological Survey.

Written for THE CLAY-WORKER.

MEMBERS OF THE N. B. M. A. HAVE A DELIGHTFUL
TIME AT THE SEASHORE.

A Philadelphia Building Brick Plant—President Conway's New
Continuous Kiln—A Cure for the Smoke Nuisance.

THERE WAS BUT ONE disappointment at the midyear meet of the National Brick Manufacturers' Association at the Jamestown Exposition and that was the slim attendance. A wave of activity, unusual for the early September season, seems to have overtaken brickmakers generally throughout the country and as a result many who had planned to meet with the faithful at Newport News found at the last moment that they could not spare the time for the trip. That they missed a most delightful outing is putting it quite mildly. Those who did get there

feature of the Exposition entitles it to more consideration than it has received at the hands of the clayworkers of the land, few of whom, relatively, have visited it. The brick buildings are more than creditable, they are handsome and imposing, and have been an effective object lesson in the beauty of brick architecture to the thousands of well-to-do people who have seen and admired them. It is safe to predict that the thoughts of those of the visitors who may intend to build will turn to brick rather than to other building materials. Red brick predominate, these are laid in white mortar mostly, with imposing white columns of the colonial style at entrances. The color scheme and general effect is really charming.

We were surprised to find that the Exposition exhibits were much more interesting and instructive than the general press reports have indicated, while the amusement features are all that could reasonably be expected. Only the blase



Clay Bank and Plant of William Conway, President N. B. M. A., Philadelphia.

thoroughly enjoyed every hour of their stay. The weather was fine and Hotel Warwick proved a most comfortable rendezvous, so much so that had time permitted, every participant would gladly have stayed an indefinite period. Nowhere in the country is there a more ideal place for such a pleasure trip at all seasons of the year, and in September it is at its best. The very atmosphere of the locality is conducive to recreation. There is absolute freedom from the hustle and bustle of our ordinary everyday life and the trips back and forth by boat were alone worth all the time and trouble incident to the journey.

The Exposition itself is exceedingly interesting. Especially so to brick manufacturers. Never before in this country have the main buildings of a national exposition been built of brick as are most of those of Jamestown. This one

sightseer, or those who wish to appear overly travel-wise, would find much to criticize in the great show, and there are many features that delight the eye and afford unmixed pleasure to the average mortal seeking information and recreation. So at least it appealed to those of us who met there at the appointed time, and without exception "Good-byes" were said reluctantly and with the wish that we might prolong our stay.

One of the most delightful events of the meet was a fishing party composed of the official members present and their wives and—Treasurer Sibley was not present. A staunch launch well stocked with bait and tackle was chartered at the Chamberlin Pier, and, chaperoned by President Conway, the party put seaward. The water was sun-kissed and shimmering, not "shivering," as on that former occasion

when the N. B. M. A. clan gathered at the Chamberlin. We had gone but a short distance when we encountered a procession of ponderous, wallowing porpoises. It appeared as if they had been apprised of the official party's presence and had arranged an informal exhibition for our especial benefit, and it was all the more enjoyed because wholly impromptu. After a crafty maneuver by the dark-skinned pilot, anchor was cast and the party proceeded to inveigle the shiny, flippity-floppity denizens of the deep-blue from their native element. Success crowned the efforts to the extent of nearly a half hundred fish of a half dozen varieties in the course of an hour's time. The secretary added to his reputation for luck by catching the first fish twice; Vice President Gregory achieved the distinction of making the largest catch, landing thirteen, besides the proverbial big one which got away. President Conway drew a blank, and though he pretended to fish diligently, did not get a bite, not even catching a cold. The ladies each

hope to appear dignified in the eyes of those of us who saw his extremities protruding from either end of a fantastic bathing suit. An attempt to get a snap shot of him, his wife, and Mrs. Randall as they emerged from the surf, bedraggled and happy, resulted in a broken camera and a blurred film. Were we happy? Whenever another midyear meet occurs those of us who gathered at Jamestown will again answer "present," Providence permitting.

President Conway's New Continuous Kiln.

On the return journey a day's stop was made at Philadelphia, and despite the drizzling rain, camera in hand (not the one that was broken), we hiked out to President Conway's building brick plant just to see his new Haigh continuous kiln. The plant is easily reached by taking a Market street trolley car and getting off at Fifty-eighth street, from which point the tall stack may be seen a couple of blocks distant. This



President Conway's Remedy for the Smoke Nuisance—A Haigh Continuous Kiln.

landed several, Mrs. Gregory being the luckiest; for once Mrs. Randall did not live up to her reputation in the fishing line, but despite this voted the expedition an unmingled pleasure, and it carried unanimously, even the skippers voting in the affirmative.

At Atlantic City the party was joined by Charles A. Bloomfield, who had been detained at home by matters of state, but who with several hundred befezzed Shrimers from Jersey and the surrounding territory, with brass band accompaniment, added to the general color scheme and gaiety of the board walk. The surf bathing was simply delightful, and a view of Vice President Gregory in his decollette beach attire was of itself alone worth the price. In the years to come he may, and we trust he will, preside over the deliberations of our annual convention with due dignity, but never again can he

tall stack represents a large investment and great satisfaction to Mr. Conway, for it is a means of relief from a smoke nuisance which threatened to cause serious trouble. His yard is in a well-settled residence district, and the dense black smoke from the old-time kilns proved so annoying to the nearby flat dwellers that legal proceedings were threatened. The continuous kiln and the tall stack have solved the problem, for at no time can scarcely a trace of smoke be seen coming from the stack, which towers nearly a hundred feet above the tallest building of the neighborhood. Our readers who are threatened with the smoke nuisance trouble may find relief by following the example of President Conway.

Exemption from troublesome litigation is not the only benefit President Conway is realizing. The kiln has been burned around twice, and a material lessening in fuel bills is already



Clay Under Shed Which Is Obtained From Excavations in the Neighborhood of Plant.



Dumping a Load of Clay Into the Hopper Above Conveyor Belt.



Discharge End of Martin Steam Dryer.



The Old Way of Burning—Why the Neighbors "Kick."



Mr. Conway at Entrance to Kiln Chamber.



Side View of Continuous Kiln.

RAINY DAY VIEWS OF THE BUILDING BRICK PLANT OF
WILLIAM CONWAY, PHILADELPHIA.

noticeable. The stack is 135 feet high. It is octagon-shaped at the base, the foundation being thirty-five feet over all. The flue is seven feet in the clear at the base, and five feet six inches at the top. The stack cost, all told, something over \$3,000. The accompanying views give the general appearance of the kiln. It is thirty-three feet in width over all, and is composed of twenty-eight chambers having an average capacity each of 28,000 brick. The yard occupies one full city block, and there is yet a large quantity of clay remaining though the yard has been in operation a number of years. As is the case with many of the Philadelphia plants, a large per cent. of the brick are made from clay hauled in from the neighborhood. Wherever excavations have to be made for cellars or other purposes, the clay is hauled to the nearest brickyard. At the time of our visit brick were being made from this "borrowed" clay, which is stored under an immense shed built for the purpose.

The clay is finally hauled in carts and dumped into a hopper-shaped bin, the bottom of which is movable and controlled by a twist of the wrist of the workman in charge. When a fresh load of clay is to be dumped in, the opening is closed by the turning of the wheel seen in the accompanying picture, much resembling the handbrake on a freight car. By reversing the operation, the bottom is opened and the clay is allowed to fall on an endless belt and carried to an immense Chambers clay crusher. The clay then goes to a Martin soft mud machine, the tailings being carried back and again passed through the crusher. From the Martin machine, in connection with which they use a Potts mold sander, the brick are dumped on steel pallets and these placed on endless cables running entirely through the drying tunnels. The latter are steam-heated. There are two of them 145 feet in length. The brick have to be dried very slowly to avoid cracking, but by careful management this is accomplished, the brick made one day being ready to set the next day, then the brick are again placed on the cable conveyor and run to the delivery end of the dryer, where wheelers slide them from the pallets six at a time on to their barrows and wheel them into the kiln. The latter is fired with slack coal. The kiln is a combination of side and top-firing. Most of the fuel goes into four-inch openings in the top of the kiln, the coal being handled with a little scoop shovel, just wide enough to fit into the opening. It holds about a quart of coal, and it is surprising that such intense heat can be generated and maintained with so little coal.

Mr. Conway makes no pretense of having a show yard. He is just making good common building brick, the best he knows how, and any reader of THE CLAY-WORKER who wants to know more of the modus operandi of the yard will be cordially welcomed there at any and all times.

CEMENT PRODUCTION OF 1906.

According to a late press bulletin of the United States Geological Survey the total production of cement in 1906 amounted to 51,000,445 barrels, valued at \$55,302,277. This was an increase over the production of 1905 of nearly eleven million barrels in quantity and something like \$19,000,000 in value. Classified according to character the production was as follows:

	Barrels.	Value.
Portland cement	46,463,422	\$52,466,186
Natural cement	4,055,797	2,423,170
Puzzolan cement	481,224	412,921
Total	52,000,443	\$55,312,277

These figures are reported by the United States Geological Survey in a bulletin on an advance chapter from "Mineral Resources of the United States, Calendar Year 1906," and are somewhat greater than those given in the preliminary statistics of production issued by the Survey early in the year,

the difference being due to the fact that some of the returns were received too late for use in the first statement.

The marked increase in the value of production for the year 1906 over that of the previous year was due largely to the fact that prices showed some improvement during the past year. Cement prices in 1905 were depressingly low, and they are none too high yet for a fair profit in the business, but they are considerably better than they were. The natural cement industry seems to be gradually dying out.

There is to be noted also a gradual increase in the amount of puzzolan, which is being pushed steadily because it consumes the waste products of iron and steel factories.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



EARLY EVERY BRICK manufacturing plant in the State of California has been running at its full capacity all this season, and a number of new companies have recently begun operations. The result has been an immense production. The slight slackening up of brick construction work in San Francisco late in the summer and the lack of heavy inquiries have helped to keep prices of common brick very low. They are now almost the same as before the fire, common red brick bringing from \$8.50 to \$10.00 per 1,000 delivered on the job in San Francisco. Cutting of prices has prevailed to a large extent under these circumstances and one of the prominent price cutters has recently become financially embarrassed.

Construction work, however, is now going on with redoubled vigor, and the brick situation is growing more encouraging. Many new contracts have been let for the erection of high-class buildings, and the outlook is for a considerable increase of new work. The car strike has virtually been declared off and this has helped to smooth other minor industrial disturbances, with the result that everything is again working without friction. Several plants are taking steps to enlarge their capacity and, though the demand is as yet below the output, the activity among the manufacturers shows an anticipation of increased consumption. The California Promotion Committee reports that the building permits for the month of September amount to \$4,113,732, an increase over August amounting to \$1,142,732, and making the total building permits granted since the fire reach the enormous valuation of \$85,335,477. The proportion of brick buildings is large, and there is a great deal of this kind of construction going on outside the city where statistics are not obtainable.

The position of structural terra cotta and face brick is already strong, and prices will undoubtedly climb as the consumption becomes greater. Pressed brick are now in good demand, commanding a price of \$42.50 per 1,000 for the light shades and \$30 for red. The Mechanics' Bank, now in course of construction, is using this class of material, as will also the Spears Assurance Building. N. Clark & Sons have the contract for furnishing large quantities of pressed brick for these buildings.

The plant of the Alexander Brick and Terra Cotta Company, situated at South San Francisco, was closed on September 24 on an attachment for \$17,000 filed by the C. W. Raymond Company, of Dayton, Ohio. This firm filed the suit of attachment on the plant and output because of the Alexander Company's refusal to accept a portion of the new machinery ordered. The attachment throws sixty-five men out of work. With the filing of the suit other creditors started filing similar ones. There is also a lien against the company for laborers' wages of \$6,000. The plant is one of the largest in the bay shore district, having a capacity of 100,000 bricks a day.

H. H. Peterson is rapidly improving his plant at Holtville, near El Centro, Cal. The brick machinery is being installed

and will add to the daily capacity by 25,000. It is estimated that the improvements will cost in the neighborhood of \$7,000.

A report of interest to the brick dealers of the Northwest is to the effect that the well-known firm of Day Bros., Seattle, is about to establish a brick plant at Shelton, Wash. The plant is being erected on an extended scale, and will include the best and most modern machinery.

Ensign Bros., of Salt Lake City, associated with prominent business men of that city, are said to have obtained possession of valuable clay beds at Cedar Fort, near Lehi, Utah, and will put up a brick plant there.

R. A. Burrows, an expert kiln builder, formerly of Pittsburgh, Pa., but now of Richmond, Cal., has completed a kiln for the Pacific Coast Pottery and Terra Cotta Company, at San Jose, Cal. The plant will be one of the largest on the coast, and will aid materially in increasing the output.

The Bay View Brick Company has levied a fourth assessment of 5 cents per share in order to raise funds for necessary improvements.

C. H. Gunn, of Marysville, Cal., is about to establish a factory for brick and blocks for building purposes. The plan is being backed by other substantial citizens of the community and gives promise of permanency. A plentiful supply of sand, which fills the Yuba River bottoms, is easily obtainable and the scheme should be successful.

The City Council of Santa Monica recently adopted an ordinance declaring the necessity for an election to vote bonds in the sum of \$150,000 for the septic tank, and works for the disposal of sewage, to be built of brick; also, for a 1,600-foot pier to carry the sewer out into the ocean. An additional sum of \$10,000 is to be voted for a second incinerator.

The members of the Sunset Boulevard Improvement Association, of Los Angeles, have taken up the question of paving that Boulevard. It was decided a few months ago to pave this boulevard with vitrified brick, but since that action was taken prices for this class of paving have been advanced materially. Many of the property owners believe the work can be done at a much lower figure than the big paving companies have been charging for similar work, and hence asked for delay. A resolution asking for an award of the contract at a figure not higher than 27 cents a square foot was voted down. Work has now been postponed until next spring, when it is thought prices will have become lower. Several independent firms are considering the question of entering the Los Angeles paving field and competing with the three big concerns which now have a practical monopoly of the work.

A second deal is now pending in Salt Lake City involving the establishment of a brick plant. The proposition is distinctly an Eastern enterprise, and involves the expenditure of something in the neighborhood of half a million dollars. The plant is to be erected on a site that has practically been selected in the vicinity of Salt Lake. It is planned to manufacture firebrick, art tile, sewer pipe, porcelain brick and kindred products.

The United Materials Company, established since the fire and managed by P. W. Rochester, is now installed in handsome offices at 10 Third street, San Francisco. The company will act as selling agent for the Stockton Fire and Enamel Brick Company, Fresno Brick and Tile Company, Monterey Brick Company, Port Costa Brick Works, and California Brick and Clay Manufacturing Company. The principal lines of brick handled by this firm are face, fire, enamel, hollow, sand-lime and klinker brick.

The United Materials Company has sold 100,000 red pressed brick manufactured by the Los Angeles Pressed Brick Company, for use in the reconstruction of the original San Francisco Chronicle Building, on the corner of Kearney and Market streets. The eleven-story steel frame has been erected, making the structure two stories higher than before the

fire. The new Chronicle Building, which adjoins the old building on Kearney street, has been completed, and is seventeen stories in height.

The Bank of Italy Building, on the southeast corner of Clay and Montgomery streets, has been finished. It is an eight-story structure, of which the lower two are finished in handsome white granite facing. The upper six stories have white terra cotta facings, which match very well with the granite and give the entire building an imposing appearance. The contract is in the hands of Gladding, McBean & Co.

The Stockton Fire and Enamel Brick Company is a new manufacturing concern, which is just getting started at Stockton, Cal. The plant has at present a capacity of 25,000 fancy brick per day. James Hyslop, the manager, who was formerly with the Carnegie Brick and Pottery Company, is making a specialty of fine enamel brick. Messrs. Jackson, Nelson and George Wheatly, all prominent business men of Stockton, are among those in the enterprise. The clays used are shipped from Lincoln, Valley Springs and Ione, where the company controls large deposits. The United Materials Company, of San Francisco, of which P. W. Rochester is manager, is the selling agent for the products of the new plant.

San Francisco, Ca., Oct. 5, 1907.

SUNSET.

Written for THE CLAY-WORKER.

HERE AND THERE IN NEW JERSEY.

BRICKMAKING on the Hackensack, at Perth Amboy, and other important manufacturing centers is practically over for the season. Along the Hackensack it was agreed that production should stop on October 15, and that agreement was virtually carried out. A few yards were obliged to continue longer, owing to complications which they could not avoid. But by the time this is in print the season will be substantially over. The early frosts have come, not as freezing weather, but as sharp, white frosts, which herald the ice and snow. The season has been good, demand has been active and prices have been well maintained. Of course, the price is made by New York, which means that it is virtually controlled by the Hudson River manufacturers.

Not much surplus will be left in the yards after late deliveries are made. The immense structural operations now in process of completion in New York and all the important cities of New Jersey are sufficient to absorb about everything that is left. Some yards will have a few brick for early deliveries next spring, but the quantity will not be as heavy as it has been some years, and the outlook for disposing of them at good prices is promising.

New Jersey brickmakers have had their share of unprofitable operations during the past few years, but, according to the best information obtainable, though they are rather chary about making statements, this season has yielded a reasonable profit. It hasn't been quite so much as it was the previous two years, but it has been sufficient to create favorable conditions among makers and to lead them to think that the worst period of their industry is over and that in the future they will be able to obtain a fair profit for their make.

Building operations in Newark have continued active well up to the close of the season, and contracts let within the past two weeks have aggregated more than those let during the previous two weeks, showing that there will be little cessation, even though the weather may appear to be against such operations. A good many brick flats are to be constructed this winter, and the contracts indicate that builders are determined to have the best that can be produced.

Englewood is discussing paving. A considerable proportion of the residents want brick, and it is reasonably certain that the wishes of some of them will be respected. The desire seems to be general, and under present circumstances there can be little doubt about some brick being laid.

Mayor Linkrout, of Hackensack, is advocating some per-

manent paving on the main streets, and says that he believes that brick meets the requirements better than any other variety which could be obtained. The paving of Main street five years ago with brick made such a favorable impression upon the residents of the town that it would not be difficult to obtain an appropriation for more brick pavements in the near future.

A. L. B.

Written for THE CLAY-WORKER.

FAILURES IN CONCRETE.



IN THE JOURNAL of the Western Society of Engineers, for August, the question of how to prevent failures in concrete construction is discussed at considerable length by Dr. W. Michaelis, Jr., W. M. S. E. In presenting his views on the merits and limitations of cement and concrete Dr. Michaelis says that he takes neither the side of the manufacturer nor the consumer, but endeavors to point out what can be expected of cement and what not.

It is an interesting paper all the way through; too lengthy to be given in detail here, still there are some points which it is desirable to go into a little more fully.

One leading point made and one which is evidently the main focus of the discourse is that there is a need of more stringent regulation of building operations in relation to concrete construction work. This is a point that has been made and persistently backed by numerous writers who are conversant with the subject, and in some of the cities efforts have been made at formulating regulations which will safeguard in some measure the construction of buildings out of concrete, but evidently not realizing the gravity of the situation none of them seem to have made building regulations stringent or specific enough.

"The manufacturer frequently greatly exaggerates the advantages of cement," says Dr. Michaelis. "According to him there is hardly anything in the building line that can not be made out of concrete. On the other hand, the engineer and architect, who are frequently not acquainted with the intrinsic value of cement, with its physical and chemical properties, frequently make unreasonable demands and misinterpret the failures in concrete construction that unfortunately so often occur. To my mind, the best and surest way to advertise cement, to recommend concrete construction, and to give the engineer and architect confidence in this modern building material, would be to minimize the dangers of failure as far as possible by proper building ordinances, which would compel the contractor to handle the material in a prescribed way and to make proper tests.

"Concrete is a wonderful material in the hands of a skilled contractor and has many advantages over other building materials; but it is the unsafest of all materials, if it is handled by an inexperienced, careless and dishonest builder.

"I shall only dwell in a general way on the wide possibilities of concrete construction and point out a few cases where concrete can not be used.

"Concrete offers great resistance to compression, but only comparatively slight resistance to tension. Therefore we can make use of plain concrete in cases where it is subjected chiefly to compressive stresses; for instance, in foundation work, walls, piers and columns. In all other cases where it has to resist tensile stresses, as in girders, beams and floors, we have to reinforce it with steel of high tensile strength."

After giving some good advice as to the best method for reinforcing concrete and how it might best be used in certain kinds of foundation work, he says that concrete can not be used in all kinds of work, as there are certain limitations to its use. In some parts of the country where cement is

very expensive and sand can not be obtained, it can not be used, and in others the high cost of lumber for forms excludes concrete construction. This latter point becomes more and more serious all the time, because of the cost of wooden false-work, and the labor cost of installing and removing it amounts sometimes to more than 50 per cent. of the cost of the structure. Another point is that the erection of a concrete structure takes considerable more time than the erection of a steel structure, at least if it is done with care and if all parts are given plenty of time to set before removing the form. This is a serious item in the cost of the building, in the case of a large office building or a hotel in which time is always money.

There have been cases, however, where buildings of concrete were put up in a short time; but, says Dr. Michaelis, such practice is dangerous.

On the question of the quality of cement now, and the possible improvement in the future, Dr. Michaelis says:

"Cement will not be improved in the future; we have arrived at the limit of its good qualities. In making this statement I refer to Portland cement, of which every builder in this country thinks, whenever the general term 'cement' is used." Why can Portland cement not be improved? In order to be able to answer this question, I must remind you that Portland cement is a product obtained by calcination of an intimate mixture of finely pulverized limestone and clay or shale, and that it consists of calcium silicates and calcium aluminates. Clay and limestone may be mixed in all possible proportions, but the result from a chemical standpoint will never be anything better than our present commercial Portland cement. Then, if the chemical composition of Portland cement can not be improved, can not its physical properties be altered, can not it be more finely ground? Yes, this latter can be done, indeed, but it would not be of any practical value.

"Recent investigations have proven that of our Portland cement only from 30 to 40 per cent. possesses cementing properties at all; the remaining 60 to 70 per cent. represent inert material. Until a short time ago you could read in cement literature that the cement remaining on a 200-mesh sieve is too coarse; that is to say, has no hydraulic properties, and that everything that passes through the 200-mesh sieve represents the active part of the cement. To-day the 200-mesh sieve exists only for the manufacturer in order to enable him to grind his clinker always to a fineness required by the specifications. The experimenter, however, can no longer make use of so coarse a screen as the 200-mesh sieve. He divides the cement into that part which remains on an 800-mesh screen, which is inert (about 60 to 70 per cent.), and that which passes the 800-mesh sieve (about 30 to 40 per cent.), which is cement proper. Of course, an 800-mesh does not exist. It would have meshes 1-1,600 (one sixteenth-hundredth) of an inch wide and would consist of wire gauze of the same thickness. In order to obtain this fineness the imaginary sieve is replaced by a process of decantation or elutriation in a current of alcohol of a certain velocity, which separates the fine from the coarse and leaves the grains that measure more than 1-1,600 (one sixteenth of a hundred) of an inch under the microscope.

"If the manufacturer would grind his Portland cement to this extreme fineness or even only a fineness between the 800-mesh sieve and that of the commercial cement to-day, say to 70 per cent. passing an 800-mesh sieve, the resulting product would be so quick-setting a cement that nobody would be able to use it in practice. A neat or a sand mortar briquette may be made of it possessing a strength several times higher than the strength obtained from Portland cement of the present fineness, but this is only under the assumption that the mortar be gauged with the water less than a minute. If the gauging should be continued for several minutes, no strength higher than the ordinary cement can be obtained.

This is due to the quick-setting qualities of the calcium aluminates in the Portland cement. No addition, however great, of any retarding element, can prevent this. So finely ground a Portland cement, therefore, could not be used in actual practice where, under the best conditions, a quarter of an hour is required from the time of mixing the concrete until it is stamped into the forms or molds. I have frequently made such experiments with cement of extreme fineness separated from the coarser particles by an air current, for instance, with cement that had been collected on the top of a 30-foot ventilating tube over grinding machinery, and from these experiments I know that such Portland cement will never fulfill the demands of engineers and architects that are looking for a cement of higher crushing strength than our present Portland cement. Architects rightly wish for both economic and mechanical reasons to disuse reinforcement in concrete columns. As long as they make use of Portland cement for this concrete, they will have to design columns of enormous proportions if they want to omit reinforcing bars or spiral reinforcement."

After giving in this connection descriptions of a new cement made in the old country known as iron-ore cement, Dr. Michaelis goes on to say that Portland cement, as a rule, is uniform enough and tested thoroughly enough before being shipped that in very few cases is the manufacturer to blame for the failure in concrete building construction. "In most cases," he says, "the builder is to blame," and it is because of this fact that he insists upon the need for more stringent building regulations, which would cover not only designs and methods of reinforcement and other architectural points of this kind, but also providing for making sure the work has had time to set before the forms and supports are removed. He gives it as his opinion that many of the failures in concrete construction could be materially lessened if not entirely prevented by better building regulations, and on this point probably every one will agree. The main question is that of what constitutes better building in the matter of concrete construction. Also, if it comes to the point of insuring the safety of cement construction they would have to be so stringent that the matter of the erection of concrete structures would not only take more time, but would be more expensive than to erect one of steel or brick. Sometimes it looks like we have to go a long way around to arrive at a point that is near and that might easily have been seen at the start. We go wild over a new idea and then have to go through a sort of evolution to get back home again, when there was really very little excuse for starting off on the idea. But when people have once started off on a new idea and go wild over it, it is certainly refreshing to see them all head for home again to the better known and more reliable building materials of steel and brick and give them proper consideration.

WE CAN STILL FEED THE ELEPHANTS.

The man that says the circus is on the wane doesn't know what he is talking about and has not read the last government bulletin on the peanut in international commerce. It is somewhat refreshing to get hold of as light a thing as a peanut bulletin among the heavy data of the government statistics, and it is quite interesting to note that despite the fact that this country's production of goobers is twelve bushels a year, there is very little exporting done, while the imports have grown until this year they will aggregate a million dollars. West Africa and the East Indies are the principal sources of the outside peanut supply. From the French colony Senegal, on the west coast of Africa, there came last year 300,000,000 pounds; while British India furnished 200,000,000 pounds. It is funny what an important thing the little peanut can become in international commerce.

Written for THE CLAY-WORKER.

FAILURE OF BITULITHIC PAVEMENTS.

Exaggerated Claims of Durability Prove Deceptive—Any Cheap Coal Tar Pavement Would Last As Long.

THE IMMORTAL LINCOLN announced a great principle when he said, "You can fool all of the people some of the time, you can fool some of the people all of the time, but you can't fool all the people all the time." From time immemorial history has verified the truth of this statement. Our captains of industry have time and again been compelled to recognize this principle, but occasionally we are treated to a spectacle of some ambitious promoter who apparently thinks himself smart enough to fool all of the people all the time. It is only a matter of time when such deluded mortals are taught a needed lesson in common honesty and made to realize that deception is not a good business asset.

This, to the writer's mind, is the case of the much-advertised bitulithic pavement, which has been touted as the most durable pavement yet offered to a supposedly gullible public. Its promoters have tried to convey the impression that this pavement has the virtues of all other pavements and none of the faults, and apparently believing that they could fool all the people all the time, they have expended much time and capital for the purpose of quickly introducing bitulithic pavement. It seems now that they were wise in striving for quick action, for bitulithic pavement is proving to be anything but durable in the test of actual use.

A Cheap Coal Tar Pavement.

To paraphrase a familiar quotation: "A coal tar pavement by any other name will rot as quick." Wherever coal tar has been used as a cement for binding mineral grains together in the construction of a roadway, it has in time invariably been affected by water and proven short-lived. Notwithstanding this fact, many cities throughout the country are being induced to lay pavements which are in fact nothing more than tar macadam, and these pavements will prove none the more durable because they have been given a hifalutin name.

Municipal officers who have the welfare of their commonwealth at heart will do well to investigate thoroughly the promoter's claims before incurring large indebtedness for supposedly permanent improvements. It is doubtful if a single instance can be cited where a bitulithic pavement has been down more than a year or two on a street or roadway subject to even moderately heavy traffic without requiring extensive repairs.

It is claimed that one of the first pavements laid by this patented process was put down in a New England town. It was made so soft, and purposely so, that shortly after the street was opened to traffic a fire engine got stuck in it in running to a fire. This fault was remedied in a measure by rolling in a lot of chipped trap rock. Doubtless the seeker for information will look in vain for a record of this particular pavement in the literature of bitulithic promoters. It is further stated that the particular stretch of pavement referred to was laid at a cost of over \$2.00 per square yard.

Is Bitulithic a Waterproof Pavement?

One of the much-heralded points of merit about the bitulithic pavement, especially in the beginning of its promotion, was that no concrete foundation would be required because the six inches of crushed stone, rolled and poured with coal tar, especially when the stone was mixed in graduated sizes, would make a better foundation than concrete. This was widely advertised as one of the greatest merits of the bitulithic pavement, especially as the coal tar would resist

the attacks of water and therefore the foundation would remain intact and unaffected.

Any one familiar with the use of coal tar in the construction of pavements knows that the bitulithic pavement could be laid at a good profit at \$1.25 per square yard, whereas the "Trust" is charging from \$2.00 to \$2.50 per square yard. This means that a dollar or more per yard goes into the promotion fund used for "educating" councilmen and other city officials necessary for furthering the company's ends, and to pay for the numerous junketing parties conducted by the "Trust" around the country for the purpose of showing city officials some of its pavements, usually brand new pavements, though often times they are claimed to be old pavements.

Any city engineer who is familiar with the cost of concrete construction knows that a concrete base made with crushed stone and the best quality of Portland cement costs a great deal more than the tar base or tar macadam pavement mentioned. By the use of florid literature, exaggerated claims, and fallacious arguments, "The Bitulithic Trust" is enabled to get two prices for a cheap and ordinary coal tar pavement, and so "fool some of the people some of the time,"



and pick up the nails he dropped, but now it is cheaper to save the workman's time and lose the nails. Do you see the point?

The story is told that Thomas A. Edison always buys and wears a cheap watch. When anything gets wrong with it he throws it away and buys a new one. Thus he is saved the time, cost and worry of repairing his timepiece. Sometimes there are exceptions to the rule. Clerks are now ordered to save twine in untying bundles. A few years ago this twine was thrown away; now it is carefully saved. This is because jute and hemp have doubled in price. Therefore it pays to save the old twine.

Economy in the use of time has become one of the greatest factors in the industrial world. This is because labor counts as so much money, and every penny of it must be accounted for. To be successful in any sort of industrial or mining enterprise a man must take all these points into consideration if he would be successful.—Exchange.

A CONCRETE COLLAPSE IN FRANCE.

IT SEEMS that after all concrete collapses are not confined to this country. We find in L'Illustration (Paris) illustrations from which the above are copied, showing the effects of the collapse of a building at Lille (France), which



Ruins of Concrete Building at Lille, France, Which Collapsed August 20—Courtesy of Fire Proof Magazine.

but there will soon come a day of awakening and then these promoters will have to seek new fields of operation.

BURTON.

ECONOMY IN WASTEFULNESS.

It may sound strange, but oftentimes it pays to be wasteful. Or the proposition might be stated this way, that some kinds of economy are wasteful. Which recalls the ancient adage about "saving at the spigot and wasting at the bung-hole." It is a fact that it is often cheaper to throw a thing away than to save it. Millions of dollars worth of ores containing gold and silver are annually thrown away by our big mines. This looks like wastefulness, but it isn't—it is the best kind of economy. If the operators stopped to get the gold out of the low-grade ores the mines would not pay dividends. Consequently the low-grade ores go to the dump. This is only one instance. There are many others. As a matter of fact, carefulness is no longer the factor it used to be. The youth who stopped to pick up a pin on the sidewalk is no longer the type of thrift he was said to be by the story books. The active man of to-day values his time too highly to stop and pick up a pin unless he actually needs a pin at the time. Formerly a workman on a ladder was taught to go down

occurred August 20. It is a flour mill owned by Mde. Despretz, 60 by 120 feet, and seven stories high. At the time of its failure the walls had been completed and the reinforced concrete floors finished. At the above date the wooden centers had been withdrawn from these floors and just at noon-time the four upper stories gave way and in their fall carried down all the lower ones. Five workmen, seriously hurt, were immediately removed from the debris, and it was estimated that thirteen others were dead, buried under the twisted iron and broken concrete. No particulars of the construction are attainable.—Fireproof Magazine.

GOT RESULTS.

Stockson.—One day last week old man Gotrox bought a lot of those "Do it now" signs and hung 'em around the office. Bond.—How did the staff take it?

Stockson.—Almost unanimously. The cashier skipped with \$30,000, the head bookkeeper eloped with the private secretary, three clerks asked for an increase of salary, and the office boy lit out to become a highwayman and got as far west as Pittsburg before he was caught and disarmed.—Judge.



Glaze Kilnwash for Muffles.—Pure red lead mixed with water is often used for kilnwash for muffles. When the kilns are used for glaze burning it is, however, better to add to the red lead a few ingredients which will give the wash a better body. A mixture of 65 parts of red lead, 20 parts of feldspar and 15 parts of kaolin has given good results.—*Keramische Rundschau*, No. 31, 1907.

Rational Analysis of Kaolins.—According to published report of the Testing Station for Chemical Industry in Vienna, the following tests were made on kaolins:

	Zettlitz.	Excels'r.	Pilsner.	Meiszen.	China.
Clay substance	98.82	98.90	94.89	98.09	94.25
Quartz	1.02	....	2.90	9.92	1.26
Feldspar	0.16	1.10	2.21	0.99	4.49

—*Baukeramik*, No. 24, 1907.

Glazed Roofing Tiles.—In answer to a question why glazed tiles will show irregularities in regard to the glaze thickness, we find that this is mostly due to a separation of the glaze. The glaze has a tendency to settle, and the heavy particles will settle first. In order to overcome this it is necessary to stir the glaze contents all the time while glazing is done. If the tiles are only dipped an occasional stirring will be sufficient to give the tiles a uniform coat of glaze. Another remedy which will prevent separation is the addition of soda or saltpeter in quantities of one to two per cent.—*Deut. Topf & Z. Z.*, No. 60, 1907.

Holland Clay Pipes.—A genuine Dutch industry is the manufacturing of clay pipes in Gouda. The industry is very old. In the old Town Council records of the fourteenth century there is made mention of the name of Dirk Goedewaagen, which firm is still in existence to-day. The clay pipe industry of Gouda is world-renowned, and while we find many brands made in England, Germany and Ireland, the product of Gouda is always preferred. For the manufacturing of these pipes a good clay is essential. The clay which the Dutch people use is imported from Germany and England. The annual consumption amounts to three million kilos. The clay is prepared by pugging, and sometimes washing. The pipes are partly rolled by hand, and partly finished in the mold. After the pipes are dry they are placed in the kiln, and burned for about twenty-four hours. The firing is usually done with peat to about 1,000 degrees centigrade. The pipes have a white color. Before packing they are rubbed with a soft flannel, which gives them the necessary polish. The pipes are sorted, and go by different names, according to localities in which they are the best known.—*Tonwaaren fabrikant*, No. 17, 1907.

Testing of Bricks.—Building Inspector Rassow, of Greifenberg, has had the following tests made of brick. Crushing test showed that—

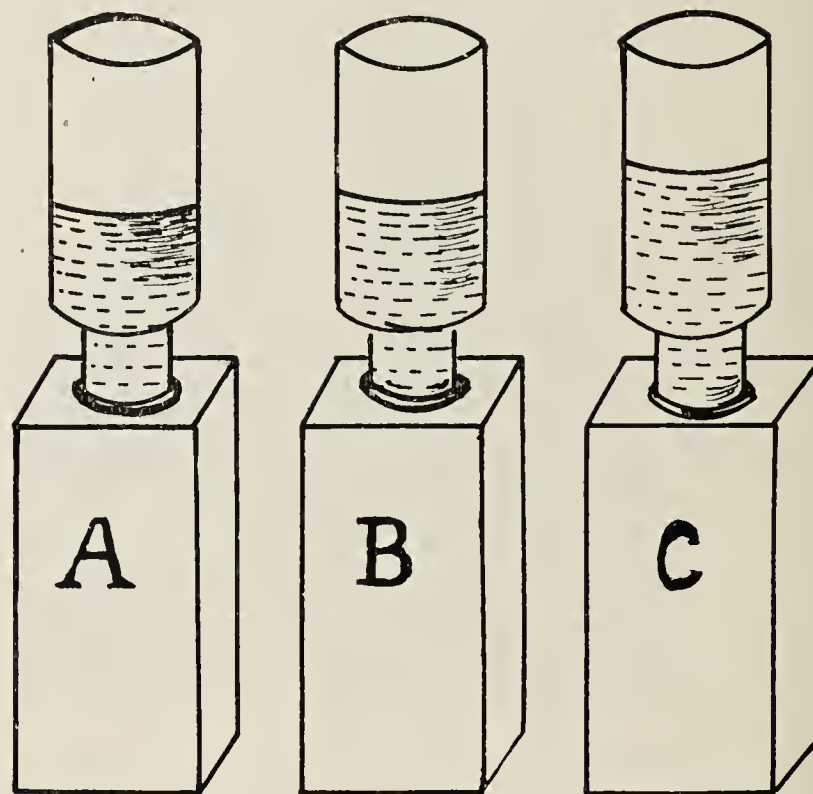
	Kilos per square centimeter.
Neckermunde brick	102
Greifenberger brick	64
Gutsziegelei	124
Sand lime brick	96
Cement brick	44

Tests were also made to find the absorption of the different bricks. The bricks were put on end in a pan with water,

and after a certain time the height of the wet parts was measured. Clay brick showed 12 centimeters, sand lime brick 6.5 centimeters, and cement brick 16 centimeters.

Another test was made to find data in regard to the conductivity of heat. Pieces of the same dimensions were heated on the underside by a coal-oil lamp, and on the top side was placed a thermometer. Readings were taken every five minutes until the thermometer showed 60 degrees. After twenty minutes iron showed 48 per cent. increase in heat. Cement brick 33½ per cent., sand lime brick 27 per cent., clay brick 11½ per cent., and oak wood only 1½ per cent. The temperature of 60 degrees was reached in twenty minutes for iron, thirty minutes for cement, thirty-two minutes for sand lime brick, fifty-two minutes for clay brick, and for oak it was just a trifle longer, but was not determined exactly.—*Keramische Rundschau*, No. 29, 1907.

Absorption Tests for Bricks.—The absorption of bricks is often questioned, and especially at the yards. Quite often the man in charge does not know exactly how great the absorption is, and the customer is given a wrong impression of the stability of the bricks. The results of schools and testing stations are found in books, but there is also a great difference between different grades of bricks. In order to make a successful test within a short period without many appliances the following illustration speaks for itself.



Simple Absorption Tests.

The three bottles are exactly alike and filled with water. The level of water in the bottle will be lower or higher according to the amount of water which the bricks will absorb. The advantage of such a test speaks for itself. A glance at the illustration will show that the brick C absorbs the smallest quantity of water, and that the difference between the bricks A and B is not very great.—*Tonind. Z.*, No. 81, 1907.

Bonding Material for Fireclay Products.—For the manufacturing of fireclay products clay and kaolin are usually used as bonding materials. Their use has been required on account of the ease with which they are formed, and retain the molded shapes in burned state. The only objection is that on account of the great amount of clay substance the fusibility is decreased. This defect is also increased by the fact that just the high resistance materials, like magnesia and other oxides, form with clay easy fusible combinations. Three requirements are necessary for a bonding material. First, the molding property, then the ability to retain its shape, and lastly, fire-resisting qualities. The use of organic substances for bonding materials, like flour, starch, dextrin, and glue are

all right, while they will give bodies which can easily be formed, and also after burning they will show bond as the ash of these materials will in a certain way bind the burned ingredients. Waterglass is often used, also boracic acid and borax glass. However, these ingredients will also reduce the fire-resisting qualities. It has been demonstrated that with the use of these organic bonding materials, burnt or calcined magnesia, pure alumina, krunidium, chromate of iron, and other ingredients can be formed, and burned to a satisfactory product without the use of clay as binding material.—Sprechsaal, No. 29, 1907.

Lead Question.—At the annual convention of the German Association of Ceramic Manufacturers a report was made by the committee appointed to investigate the lead poison question. The main results of the work of this committee was that the government has declared that no law be presented nor passed until the manufacturers are first fully given a chance to present their side of the case. Lead glazes can not be spared to-day in the ceramic industry. The leadless glazes have so far not proven a great success; they are not as brilliant, and in some instances they are no good for color effects. Dr. Heinecke, director of the Royal Prussian Porcelain Manufactory, stated that leadless glazes are not as brilliant as lead glazes, and the application of lead glazes in the ceramic industry should not be restricted by law.—Deut. Topf. & Z. Z., No. 54, 1907.

THE PRODUCTION OF GYPSUM IN 1906.

The production of gypsum in the United States during the year of 1906, according to the figures of the United States Geological Survey, shows the remarkable increase of something over 47 per cent. in quantity as compared to the figures of the previous year. This rapid development in gypsum is due probably to the popularity of what is known as hard wall plaster, for which purpose gypsum is the main ingredient, though there are various other purposes for which it is largely used, such as cement plaster, flooring plaster, stucco, etc. The base for all these is gypsum, and naturally the increase in the use of such plasters enlarges the demand for gypsum, and this has led to the extensive development of gypsum mining, as shown by the above comparison. It is safe to say that this will continue, because there is a tendency to build with brick, stone and other durable materials, which carries with it a most general inclination to use the best plaster to be had. There is also quite a lot of gypsum used in making interior and exterior ornamentations of one kind and another, and other work of this class under the general head of stucco.

An interesting use to which gypsum is put, especially in England, is what is called the Burtonization of beer. The reputed excellence of certain British beers, notably those of Burton and Newark, is attributed to the presence of calcium sulphate in the natural water used in their preparation. It is figured that over 350,000 pounds of gypsum are annually consumed in Burton beer, and other brewers not having water with gypsum in it buy large quantities and add it to their waters to get the same effect.

Gypsum is produced in seventeen States and Territories, besides Alaska, and, in connection with the mining, there are, near the places of production, facilities for calcining and grinding it.

Michigan ranks first among the States, New York second, Iowa a close third, followed in the order by Texas, Ohio, Oklahoma, Kansas, California, Wyoming, Virginia, Nevada, Oregon, Utah, New Mexico, Colorado, South Dakota, Alaska and Montana.

A man can spend so much time trying to please everybody that he don't have enough left to properly attend to his own business.

Written for THE CLAY-WORKER.

REVIEW OF CLAY PRODUCTS STATISTICS OF PAST YEAR.

SOME remarkable facts are gleaned from the U. S. Geological Survey Report of the clay products of our country for the past year. Ohio is still the leading clay State, manufacturing 19.26 per cent. of the total value of clay products of the United States. Pennsylvania ranks second, with a percentage of 13.52; New Jersey third, with 10.78, and New York fourth, with 8.62. Illinois furnishes 7.85, Indiana 4.44, Missouri 4.16, and California 2.71. All the remaining States fall below 2 per cent; South Dakota being the lowest with .04 per cent.

New York State furnishes the greatest amount of common brick, totaling over 1,500,000,000, and getting on the average \$6.00 per 1,000. Illinois is second in the common brick market, but gets next to the lowest price for its brick in the whole United States (\$4.79 per 1,000 on the average). Kansas being the lowest in price, receiving only \$4.38. Wyoming with a production of 6,000,000 annually, gets the highest price—\$9.69—due to small production and high freight rates. South Dakota, with a smaller production, gets a lower price, \$8.93. Ohio is fourth in the production of common brick, Pennsylvania topping it at a double figure.

Ohio is the leading paving brick and block State, having a total of 202,978,000 to its credit in 1906 and commanding on an average a price of \$9.63. Idaho and Nevada commanded the highest price of \$26.50, while Oklahoma received the lowest—\$8.00 per 1,000. Illinois was second in production, getting \$10.69, a better price than Ohio. Pennsylvania, Kansas and Missouri follow Illinois in rank of production in the order named.

Pennsylvania leads in the production of front brick, making over 151,000,000, Ohio ranking second with a total of 65,000,000 less. The former receives on an average \$11.66 per 1,000. Washington, Oregon and California command the largest price, Washington getting \$27.66. Pennsylvania also leads in fancy or ornamental brick, with Ohio a close second.

Iowa as usual is the leading drain tile State, having a total value of \$1,721,614. Ohio ranks second, with Indiana and Illinois following closely, all other States being far below in production.

In the value of sewer pipe Ohio again leads, with Mississippi second, Pennsylvania third. In architectural terra cotta and also fireproofing, New Jersey is in a class by itself, towering above all other States. New York is second in these two lines.

Ohio leads in hollow building tile or block, with Iowa second, Indiana third, New Jersey fourth. These four have the field about to themselves.

In the production of tile other than drain tile, Ohio leads, with New Jersey second. These two alone produce 50 per cent. of the total value. Kentucky is third. In the production of stove lining Pennsylvania and Massachusetts are head and shoulders above the other States.

Pennsylvania had a total of over 374,000,000 of firebrick, getting \$18.29. Ohio was second, Missouri third. Montana commands the highest price—\$44.68—while Michigan is low with a price of \$10.05. Pennsylvania leads the brick and tile States, with Ohio second, but the Buckeye State is in a class by itself in the production of pottery, having held that position for years. New Jersey is the second State in the production of pottery.

The production of common brick for the year 1906 was much larger than in 1905, with a slightly smaller valuation. The production of vitrified paving brick or block was much larger and commanded 38 cents more per 1,000 last year over 1905. The front brick market was larger, but sustained a loss in price.

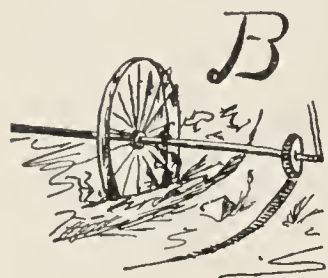
Fancy or ornamental brick, drain tile, sewer pipe, architectural terra cotta, fireproofing, stove lining and tile other than drain tile, or hollow building, all had an increase in output, but hollow building tile or block suffered a loss. Firebrick had a large gain, totaling over 770,000,000 for the year, or a gain of nearly 92,000,000 over 1905, the price dropping

off 30 cents per 1,000. The pottery production was much larger than last year.

Any of THE CLAY-WORKER readers who wish to make a closer study of the interesting statistics of the United States Geological Survey Report of 1906 can obtain one of the charts by writing to Jefferson Middleton, statistician in charge of the clay industries, Washington, D. C.

Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NOTES.



USINESS HAS been pretty good the past few weeks with the brick and terra cotta manufacturers. They are having more than the average fall trade. The fall building outlook is reported by various architects and contractors as not unsatisfactory and a reasonable amount of construction is promised.

The construction work recently, or at least what is known as new construction, has been necessarily somewhat limited, partly due to the money market flurry, but more especially to men who have contemplated building being out of the city on their summer trips until recently.

There has been considerable talk of new work being deferred on account of high labor and expensive materials, but the volume of work under way and already under contract dispels this theory.

Some contractors attribute the small amount of building permits being issued to the fact that crops have recently been harvested; that country banks have not paid what is due by them to St. Louis banks, and in turn these banks are not so anxious to loan money to the St. Louis investor at a low rate of interest as they will be later.

The indications are for a fair amount of work in the building line before long and a much larger amount as the fall progresses.

The building commissioner filed his statement for permits during September recently, with a comparative statement for the same month last year. The amount expended on new brick buildings in September, 1907, was \$1,720,622. In 1906 the amount was \$1,861,905. Old brick buildings altered in 1907 were 137, amounting to \$141,000. In 1906 they numbered 135, amounting to \$112,150.

In September, 1907, there were 378 frame buildings, costing \$88,810, and in 1906, 435, for \$103,379. The alterations consisted of 94 frame buildings in 1907, amounting to \$16,515, and 71 in 1906, involving \$13,635. Alterations irrespective of classes in 1907 amounted to \$157,524, and in 1906 to \$125,785. The total amount of building during September, 1906, was \$1,966,956, and in 1907 \$2,031,069.

The street commissioner says he expects 1908 will be a banner year for street improvement in St. Louis and that the former mark of thirty-two miles of new paving in one year probably will be eclipsed.

The largest number of street improvement bills ever sent to the Municipal Assembly at one time reached the Council a few days ago for its consideration.

Upon the recommendation of the commissioner, the Board of Public Improvements has approved sixty-three bills for new street work. The estimated cost of the proposed street construction they represent is \$874,914, and the number of miles 15.13.

The materials to be used are divided as follows: Asphalt, 2.40 miles, to cost \$149,976; bitulithic macadam, 2.35 miles, to cost \$128,837; vitrified brick, 9.29 miles, to cost \$511,859; granite block, .85 mile, to cost \$67,270; wood block, .24 mile, to cost \$16,972.

By this it will be seen that more vitrified brick material will be used than any other, being more than one-half of the entire amount.

Eleven bills for asphalt paving sent to the St. Louis

Municipal Assembly by the Board of Public Improvements May 14 and June 11 are being held up by the Public Improvement Committee of the House of Delegates. Not a single bill for that kind of street improvement has been passed by the House during the present session.

The total street and alley improvement bills introduced in the House number 161, of which 107 were for alley improvements with brick, all but two of which were passed. Of four bills for the improvement of streets with bitulithic paving material, two were passed. Three out of seven were passed authorizing granite block pavement and sixteen out of thirty-two for brick improvement. None of the eleven asphalt bills were passed.

The following is a table representing the street improvement work of the House in the present session:

	Introduced.	Passed.	Held up or killed.
Brick streets	32	16	16
Brick alleys	107	105	2
Bitulithic streets	4	2	2
Granite street	7	3	4
Asphalt streets	11	...	11
Total	161	126	35

The St. Louis Terra Cotta Company has purchased a tract of vacant ground, about six acres in extent, in Cheltenham, as a site for a new plant. The property was conveyed to the company by an attorney a few days ago in three parcels for a total consideration of \$28,125. The attorney bought one of the tracts a few weeks ago. He was in Europe at the time, and although it was surmised that he was acting for some manufacturing concern, the fact was not established until the titles were transferred.

The tract has a frontage of about 600 feet along Sulphur avenue, between Manchester and Wilson avenues, and a depth of about the same distance. It is cut in two by the 'Frisco right of way. It is close to the present plant of the St. Louis Terra Cotta Company. The company is preparing plans for a new plant, which will represent an investment of about \$150,000. This is to be built within a year, and will be used for the manufacture of terra cotta products. The site is well located for switching facilities, and is in the heart of the clay-products industry of the city.

A two-day meeting of the creditors of the McNeil Pressed Brick Company, of Newburn, Jersey County, Ill., which was recently held, adjourned to October 21. The meeting was before the referee in bankruptcy of the United States Court for the Southern District of Illinois, following involuntary bankruptcy proceedings against the company by the C. W. Raymond Company, of Dayton, Ohio. The latter company sold the brick company some machinery, and the court proceedings grew out of a disagreement over the settlement.

Three sets of creditors were represented: The holder of a mortgage on the plant, the C. W. Raymond Company, and the other creditors. T. E. McDaw, of Daw, Jersey County, was appointed receiver by the court. The appointment was the result of the failure of the creditors to agree upon a trustee after a two days' meeting.

The assets of the company are estimated at \$27,700 and the liabilities at \$69,497.

A. SAINT.

DO YOU WANT SOMETHING?

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

THE POROSITY OF AMERICAN ROOFING TILES.*

By H. A. Wheeler, St. Louis, Mo.



ROOFING TILE in America is subjected to more severe action from frost than any other clay product, with the possible exception of paving and sidewalk brick. It receives the full effect of every rain and the more severe action from the slow melting of accumulated snows. The sudden freeze that frequently follows our winter rains finds the tile soaked with water, and, therefore, in a most vulnerable condition for frost disintegration. Building bricks are usually so well protected by cornices, overhanging eaves and drip courses of stone or terra cotta that they seldom become water soaked, even in a driving rain. Their greater thickness, about $4\frac{1}{4}$ inches as compared to the $\frac{1}{2}$ inch tile, would also greatly reduce the effect of freezing strains, even if water-soaked, owing to its poor heat conductivity which retards the freezing so as to give ample time for the expulsion of the surplus water into the interior of the wall.

It is, therefore, an interesting study to see how successfully the roofing tile on the American market has met the severe conditions incident to its use and what amount of water it usually absorbs. The product of the new factories is not considered in this article, from the lack of time to test their tile on the roof. All the examples subsequently quoted have been ten to thirty years on the market and therefore have been tested to at least this extent by actual use.

As the roofing tile industry is comparatively new in the United States, the manufacturers naturally followed the precedent of the European factories in making a rather soft, quite porous tile. For, the softer a tile is burnt, the lower is the cost of manufacture, owing to the very greatly increased loss from warping and checking that occurs in hard burning. As tile has had a hard fight in entering the American market, where it has to contend with the much cheaper slate and still cheaper shingles for roofing, any factor that would cheapen the cost is of importance. While the quantity of the tile has improved and the cost has been reduced in recent years, it is still regarded as such an expensive roof that it is seen on only the higher grade of buildings.

The soft porous tile also has an important advantage in being a better non-conductor of heat than a hard tile, which materially adds to the comfort of the roof. In fact in Mexico, where tile are almost exclusively used for roofing, the clay is scarcely baked hard enough to resist rain disintegration, and they are so very porous that they leak to some extent until dirt chokes up the pores.

American tilemakers have found it necessary in most cases to burn their tile harder than is customary in Europe, on account of our more severe winters, yet some of our tile are quite porous and are only given a light burn. The following table shows that the American tile that have had over ten years' successful use range from 1 to 21 per cent absorption, after twenty-four hours' continuous immersion in water. The broad statement that the less porous a brick or tile the less the risk of frost disintegration is still upheld as a general proposition by the table, but the risk of grave error in sweepingly applying this rule is also clearly shown by the same table. Three different tiles that absorb 12 per cent. or more have thus far proved quite as satisfactory as six other tile that absorb 6 per cent. or less after twenty-four hours' soaking. All the tiles cited have been used along the 40th or Indianapolis parallel, in which the violent fluctuations of winter weather are most severe, and, therefore, the most trying on roofing tile.

The great variation in intermolecular strength of burned

clay that enables one very porous body to successfully resist frost while another much less porous one is completely disintegrated came under the writer's notice on an Illinois brick yard. One brick that was hard burned and having an absorption of only 5 to 7 per cent. would completely disintegrate in one winter, while a salmon brick alongside of it, but made from a different clay, successfully withstood years of freezing although it absorbed 22 per cent. This marked variation in the ability to resist frost has been attributed to the pores either being closed tubes or open continuous tubes. In the latter case the 10 per cent. increase in volume of water experiences in passing into the solid form could relieve itself by expelling the excess from the protected or unfrozen side, whereas the closed tube, having no such outlet for the escape of the excess of water, would rupture and disintegrate the brick or tile if frozen when water-soaked. This explanation is questioned by the writer, for the shale employed in sample H, when worked in a dry-pan

ABSORPTION OF AMERICAN ROOFING TILE.

Tile.	Per cent. of Water Absorbed in					Remarks.
	$\frac{1}{4}$ Hr.	1 Hr.	10 Hrs.	24 Hrs.	48 Hrs.	
A...	0.1 to 0.2	0.2 to 0.7	0.4 to 1.4	0.4 to 1.8	0.8 to 2.7	Very dark red, vitrified.
B...	.....	0.1 to 3.2	0.1 to 3.6	0.3 to 3.7	0.3 to 3.8	Very dark red, vitrified.
B-1.	.....	0.3 to 1.5	0.6 to 2.4	0.8 to 2.6	1.0 to 2.8	Dark gray, hard burnt.
C...	12.0	12.0 to 12.2	12.5 to 12.6	12.7 to 12.8	13.2 to 13.4	Light red, burnt medium hard.
D...	0.7	0.9	2.2	2.8	3.1	Dark red, hard burnt and glazed.
E...	5.4	5.6	5.7	5.9	6.0	Medium red, well burnt.
E-1.	.....	5.3 to 5.8	5.5 to 6.3	5.5 to 6.3	5.6 to 6.4	Brown, hard burnt.
F...	20.0	20.1	20.8	21.5	21.5	Light red, soft burnt.
G...	4.0	4.7	5.5	6.0	6.4	Very dark red, hard burnt.
H...	0.1	0.3	0.3	0.3	0.3	Very dark red, vitrified.
H-1.	1.4 to 2.4	2.1 to 3.8	2.2 to 4.8	2.3 to 4.8	2.4 to 4.9	Dark red, hard burnt.
H-2.	.....	6.7	6.8	7.1	7.2	Medium red.
H-3.	6.5 to 6.8	6.5 to 6.8	6.9 to 7.1	6.9 to 7.1	7.1 to 7.4	Light red, soft burnt.
H-4.	11.9 to 14.0	11.9 to 14.0	12.2 to 14.4	12.2 to 14.3	12.5 to 14.4	Very light red, very soft burnt.
H-5.	8.4 to 3.7	8.4 to 8.7	8.5 to 8.8	8.5 to 8.8	8.6 to 8.9	Buff, medium burnt.

and pug mill made a brick that would completely disintegrate in one winter unless burnt very hard, or with less than 5 per cent. absorption, whereas the very soft burnt tiles, with 14 per cent. absorption, have successfully resisted frost for over ten years on the roof and in very severe laboratory tests. But in making the tile, the shale is ground finer in the dry pan and worked very thoroughly in a wet pan in a softer condition and therefore its intermolecular strength is very greatly increased. Hence in the latter case the poral tubes have sufficient strength to resist the severe freezing strains and compel the excess volume in freezing to extrude itself, whereas in the brick the tubes are ruptured from sheer lack of strength.

Again tiles A and B, which are both made from shale, had to be hard burnt before they could resist frost, which shows they had insufficient intermolecular strength until it was increased by harder burning, since up to a certain limit the

*Reprint from Transactions American Ceramic Society, Volume VIII.

harder the clay is burnt the greater its strength. Why one clay should have a much higher intermolecular strength than another is part of its individuality, and can be no further explained than why they differ in plasticity.

An inspection of the table shows that the soft or more porous tile have such large pores that the poral tubes are almost completely filled within fifteen minutes after immersion. This is noteworthy in showing that soft tile can become water-soaked from even a short rain, so that if lacking in strength to withstand freezing strains, its life is liable to be very short in our northern winters.

This discussion of frost resistance is based solely on the normal conditions under which brick or tile are used, in that they rest on one protected surface. This is the underside of roofing tile or the inside of the wall or the ground in the case of brick. This condition of one protected side is absolutely necessary for any porous material, whether tile, brick, terra cotta or stone, to prevent its disintegration by frost. For if a water-soaked, porous body is hung by a string and then frozen, as the outer pores are all promptly closed by ice, there is no exit for the excess of volume developed by the freezing, and if the cold is so increased as to congeal all the water, rupture of the body will take place which will be the more violent the more porous or the larger the volume of water that passes into ice. In actual usage there is always one or more protected sides at a temperature of 32 degrees or higher when freezing begins, and as the cold travels from without into the body of the porous tile, brick, or stone, congealing the water as it advances, the excess volume flows out through the protected sides where it will be found accumulated as a sheet of ice, if the cold finally penetrates through the entire mass.

Written for THE CLAY-WORKER.

PHILADELPHIA BRICKYARDS.



THE NORTH Philadelphia Brickyard, owned by William Kelley, has had a busy and prosperous season, turning out 20,000,000 brick this year. Besides this number they have purchased 25,000 brick from the Montello Brick Company, which but recently made an assignment to the Penn National Bank, of Reading. The Montello Brick Company had many bricks to sell, having at one time 13,200,000 bricks stored in the yard.

The North Philadelphia Yard is serving an operation in Germantown of ninety-nine two and three-story houses, requiring 2,100,000 bricks.

Another operation of ninety-nine houses at Seventeenth and Winghocking streets requires 2,000,000 brick.

The municipal hospital, which is in reality a series of buildings, including thirteen buildings now, and these thirteen are to be duplicated, will require 4,500,000 brick from the North Philadelphia yard.

Added to these are many smaller operations ranging from ten to one hundred and forty or fifty houses.

The manufacture of brick will continue in this yard throughout the year, as they work under cover in all sorts of weather.

The Tansey Brick Company.

This yard is located on Second street, Pike and Greenlane, and does a large business in small operations. Seventeen to twenty houses are the largest operations they have had this year. In fact, they prefer small operations and have had a good year.

Following the trolley line from this yard we sidetracked at Olney avenue and cut through the new road in search of Patrick Kelly & Son. No wonder these men are cool, calm and deliberate, for they are literally banked on one side

by nerve food—a large celery field—on one side, reached across a foot path, to a large field of celery on the other side.

Mr. Kelly, Jr., was indulging in his noonday siesta and luncheon, and in spite of "the little friend of all the world," who tells us "never speak to the white man until after he has eaten," we ventured in contradiction to his philosophy—and found Mr. Kelly sweet-tempered, genial and communicative. They turn out 3,500,000 brick per year with their Martin soft-mud machine. The brick are stacked thirty-four high in their four kilns, with a capacity of 150,000 each. They use the pipe-rack drying system, drying 25,000 daily. Their supply is mainly local, twenty-five to thirty houses usually being their largest operations.

After straining our eyesight some looking for John Coyle's yard at Fifth and Bristol we discovered that he had sold out to Edward Dougherty, Fifth and Rising Sun lane. This is a small hand yard, but greatly improved since last year. Their old kiln has been torn out and a new one, with a capacity of 42,000, stacking their brick thirty-two high, is being built. The new kiln built during the past year is a small one, with a capacity of 20,000, and was built on ground filled in. It will be improved later. They have made this year 300,000 brick, and have been furnishing some of the brick for Mr. Snyder's operations—about 200,000 in all. About 64,800 brick have been served from this yard for four two-story houses nearby.

Mr. Dougherty is always hopeful—now more so than ever—with the additional adjuncts of a black cat for luck.

Mr. S. B. Dobbs, who has his show rooms and office at 1218 Chestnut street, is the representative and agent for numerous brick manufacturing companies, including the Harbison-Walker Company, Pittsburg, Pa.; Alumina Shale Brick Company, Bradford, Pa.; Auburn Shale Brick Company, Auburn, Pa.; Coshocton Brick Company, Coshocton, Ohio; Ohio Mining-Manufacturing Company, Atlantic Brick Manufacturing Company, Mays Landing, N. J.; Queen City Brick Company, Cumberland, Md.; Mt. Savage Enamel Brick Company, Mt. Savage, Md.

The Queen City Brick Company, Cumberland, Md., manufacture an absolutely impervious red brick of an attractive and peculiar dark deep shade. Two hundred thousand of these have been served to the Hotel Traymore, Atlantic City, and have attracted much attention. The output of the yard, which covers one hundred acres of ground, is 8,000,000 per year. Their seven kilns have a capacity of 100,000 each, and the brick are sent all over the country.

The Mt. Savage Enamel Brick Company.

The yard at Mt. Savage, Md., covers an area of 135 acres, and is run by Andrew Ramsay, an old English brick manufacturer, who has patented his own machine, which turns out 4,000,000 enamel and porcelain brick per year. These brick are superior, they say, to any other enamel brick made, owing to the peculiar clay. The Mt. Savage clay is known all over the world and is particularly adapted to the manufacture of enamel brick. There is no shrinkage—the brick are turned out from the kiln the same size as they entered it, the enamel rests easy, without strain, graze or crack. The nine kilns have a capacity of 60,000 each. Brick are sent from this yard to Chicago and farther west, and all over the country, although the principal market is Philadelphia and New York.

Mr. Dobbs was for fourteen years with the Eastern Hydraulic Press Brick Company in Philadelphia, and was most successful. He left voluntarily to go into business for himself, and has sold more face brick than any one in Philadelphia. His brick exhibit is an exceptional one, comprising all brick of fine grade. He is serving brick for three operations in Philadelphia taking 500,000 face brick each. Also 250,000 white, impervious face brick for the Pennsylvania Railroad, of Wilmington, Del.

It is unnecessary for us to wish him good luck and prosperity. He seems to hold both in the hollow of his hand, guiding them in masterful manner. M. E. LOCKINGTON.



Some Queries Answered.

A CORRESPONDENT of the Farmers' Guide requests an answer to the following problem, to-wit: "A gently rolling clay farm, about half 'black land,' It is drained in all the low places with tile about thirty-four inches deep. The clay soil is good six inches deep, the immediate sub-soil yields readily to the spade, but gives you warning at the bottom of the second spade that the third spadeful would be much more difficult than the second. Now there are two or three quite level areas on the farm containing from four to six acres of all clay that must be ditched right through the clay to make it farm rightly. How deep and how far apart should those ditches be?"

It is most probable that the level areas referred to would have to be drained to one side. If an outlet of sufficient depth can be secured, the upper end of the drain should be as much as three feet deep and the depth gradually increased to four feet. If the surface is level, a very slight inclination will serve to make the water flow in the drain quite freely. It is well to keep in mind the fact that at the depth of three or four feet there is a water pressure in the soil that will force the water through the drain, if the drain were laid level, but a slight inclination is preferred—one to three inches in 100 feet will work well, provided the drains are well laid.

We prefer a depth of about four feet for two important reasons, which we here mention briefly; one is, that the clay above the level of the tile will, in a few years, become open and porous. In short, a storehouse of fertility, the action of the air, the heat and water together with the roots of growing crops penetrating to greater depths each added year, serves to mellow very tough clay and make of it a great laboratory for the preparation of soluble plant food.

The other reason that we here mention on account of its importance, in our judgment, is that deep drainage serves to conserve moisture for the growing crop. After the soil moisture, or, in other words, the water that adheres to the soil particles after the water that fills the spaces between the soil particles has passed out through the drains, becomes somewhat exhausted, or used up by the growing crop and a heavy rainfall comes, in deep and thorough drainage, the entire rainfall will enter the soil where it falls and pass down until the soil and sub-soil is moist. but little, if any, water is passed out through the drain. It requires a large amount of water to wet a four-foot depth of earth to a dripping point. Besides conserving moisture from rainfalls, in the circulation of air through the deeply drained and cooler earth, there is a condensation of moisture which adheres to the soil particles the same as dew is formed on vegetation, which adds much to the needed moisture for crop growing. For the reasons named we advise deep underdrainage of such lands as are mentioned in the problem.

Now, as to "how wide apart should the drains be laid?"

If laid at the depth as above suggested, and the clay is retentive, the drains will do good work at a distance apart of forty, fifty, or sixty feet to what we call thorough work in retentive clay soils, fifty or sixty feet to four rods apart is thought to give very satisfactory results. In England, where they practice thorough drainage, the clay is fine and very retentive. Much of their drainage is from four to five feet

deep, the drains being laid thirty-three feet to fifty feet apart. In this State the clay underlying the surface soil is usually somewhat coarse grained. If so, the drains may be laid farther apart. We know of some drains that are eighty feet and even one hundred feet apart that are doing good work on account of the favorable conditions of the soil.

Another query by the same correspondent is: "In ditching a hillside with a gentle incline would you run the ditches straight over the hill, or would you circle the hill with the drain?"

If the outlet is at a given point it may be advisable to run the main ditch directly up the slope and have lateral drains cross the slope obliquely. In short, so much depends upon the surface configuration of the land to be drained that one must use his practical common sense, sometimes we say, "horse sense," to determine what is best. Two things are important: Secure sufficient drainage to prevent surface washing as far as practicable; and avoid extremely rapid water currents in the drain, as they are likely to give trouble. The tile needs to be firmly and carefully laid.

MUST TILE DRAIN.

A correspondent of the Recorder, Greene, Iowa, writes: "The continued wet weather of the past season impresses upon all the great importance of tiling our lands, even where the surface drainage is good. There are many fields where the prospects of a crop are by no means good, and the conditions away from the river on the flat lands with heavy soils are really discouraging. It does seem that no time whatever should be lost in preventing a recurrence of the drowning out of the crops which has happened so many times. Some of our most enterprising farmers are already draining their farms. Among them is Mr. John Boggs. He declares that the increased crops on his land more than paid the expenses of the work of drainage in a short time. He is having the remainder of his land drained as fast as possible. This is the opinion of a practical and successful farmer, and it ought to persuade every farmer and landowner to tile his land as soon as possible.

TILE NEWS.

A company has been organized to erect a drain tile factory at Stockport, Iowa, with the following officers: C. W. Wheatley, president; Miles Shelman, vice president; R. M. Harlan, secretary; Wm. Brewer, treasurer; capital stock, \$10,000, paid in full. The company will begin at once the construction of the factory.

The Rives Tile Company, of Obion County, Tenn., has been incorporated; capital, \$10,000.

A new tile factory at Jackson, Minn., is under consideration by some local capitalists.

The Sheffield (Iowa) Brick and Tile Company is reported as having completed its organization. E. L. Smith has been elected president; C. C. Carhart, secretary and treasurer. These experienced men at the head of the organization assures the success of the undertaking. The actual work of construction will begin as soon as the needed material can be secured.

The present annual capacity of the National Drain Tile Company, with its several plants, is reported as being 5,000 carloads of drain tile. The National Drain Tile Company has recently signed a contract for the delivery of drain tile to be used in construction of the Panama Canal. Several carloads of tile were shipped in July via New Orleans, and more cars are being loaded at their plant at Terre Haute, Ind., the work for which they are designed being already under construction. More will follow as rapidly as they can be turned out.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF NORTHWESTERN OHIO.



BUILDING BRICK BUSINESS has not been as good in Toledo as it was last year. Building operations have been very low, and will fall about \$2,000,000 below what they did last year, when the legitimate growth of the city is considered.

Last spring the local officials assumed what is generally considered as an attitude of persecution toward the material men of the city, and the members of the Toledo Brick Supply Company, together with about a hundred other business men, were indicted for conspiracy in restraint of trade. All summer the city has suffered a season of depression in building lines, and it has not yet recovered its normal condition.

The brick men were not so bad off, however, as some of the rest, for they have enjoyed a ready market for all their products that were not wanted at home, and as a result a lucrative business has been carried on with surrounding cities.

Paving brick concerns have been very busy, and there has been much doing here in that line. Some of the largest paving awards ever made in Toledo were made this summer. In addition to what has been doing here the paving business generally in Ohio cities has been much larger than ever known before. Extensive sewer and drainage contracts have also been carried out, making the season one of great activity among clayworkers.

A company is being formed at Findlay for the purpose of manufacturing building brick. The present plan contemplates the taking over of the plant of the Hydraulic Press Brick Company, which has already removed all of its machinery.

The city of Lima has expended more than \$138,000 on street paving this summer, and without hindrance from a single suit in court. This is the greatest amount ever expended by the city in one year. Paving contracts are being rapidly closed for the season, and the brick are now on the ground for High street, one of the last jobs.

When the work under way has been completed at Wauseon, Ohio, the city will have laid about 5,000 feet at a cost of over \$26,000. Depot, Commercial and Beach streets are now being paved with firebrick.

Not a single contractor submitted a bid for a proposed sewer to be constructed at Sandusky, recently. The sewer is an important one on Warren street and extending to the bay. Scarcity of laborers is said to be the cause of the dearth of bidders.

It is probable that the work of paving West Federal street at Youngstown will have to be suspended before completion, and finished in the spring. This is the biggest job of paving ever awarded in the city, being more than two miles long. The work has been rushed by Kennedy Bros., who have the contract, in the hope of completing it before winter.

The town of Columbus Grove is erecting a new brick city building at a cost of \$9,207. F. E. Wood, of Lima, was the successful bidder for the work.

J. C. McKenzie recently landed the contract for the mason work on the new schoolhouse being erected at Northfield Center, Ohio.

The Elsworth M. E. congregation at Toledo will erect a new \$40,000 brick edifice. The building permit was issued this week.

Sewer contracts will be awarded at Steubenville, Ohio, on October 21. The sewer will be laid on Wells street, and indications point to plenty of bidders for the job.

A sewage disposal plant will be erected for the Girls' Industrial Home, at Delaware, Ohio, to cost \$50,000. The Pitt

Construction Company, of Pittsburg, was awarded the general contract.

Van Wert, Ohio, will expend about \$13,000 in building a brick storm sewer in the near future. It will be from three to three and one-half feet in diameter. Plans are now under way.

Plans are being prepared for the erection of a \$15,000 press brick pumping station for the city of Toledo. It will have stone trimmings and be fireproof. T. O. D.

A FLOATING CISTERN.

WE ARE indebted to the American Clay Machinery Company's publicity department for the accompanying illustration, which depicts a peculiar incident which happened on the banks of the Wabash, near Terre Haute, Ind., during the recent severe freshet. At the time the Wabash went on a rampage, the owner of the cistern, a Mr. Church, was standing in his back door overlooking the raging waters. Suddenly he saw his brick cistern begin to rise. The cistern was partly full of water, and Mr. Church rubbed his eyes to make sure that he was awake. Inch by inch the cistern emerged from the water surrounding it. Not content to believe his own eyes, Mr. Church called his neigh-



A Brick Cistern Floating on the Wabash.

bors, and together they saw the big brick jug weighing six tons, rise to two-thirds its height, and topple over side ways.

As the water of the river continued to rise, Mr. Church saw that if he wanted to maintain his proprietorship of the cistern he would have to take steps to keep it on his property, as the raging Wabash was coaxing it down stream. The cistern was tied to a tree and after the waters had somewhat subsided the accompanying photograph was taken.

The cistern is no small affair. It contained two and a half thousand brick, four barrels of cement and a wagonload of sand. It is ten feet deep, and eight feet wide. The total weight of the cistern is six tons exclusive of the water it contained. It was said to have a capacity of 200 barrels.

From the time the cistern began to rise until it was entirely out of the ground did not exceed half an hour.

MONEY OUTLOOK IS BRIGHT.

There is no room for pessimism in the figures showing our national cash account at the end of the fiscal year which will occur on June 30. It is now pretty well established that these figures will show large gains on each side of the foreign trade account over the year which ended last June, and those twelve months broke all previous records. As long as our exports lead our imports by their present wide margin it

is a waste of time to be croaking about coming hard times, for hard times simply can't come when the gold continues to come our way. The Industrial Examiner has had occasion several times during the last year to ridicule the talk of those who see, or pretend to see, financial clouds on the horizon, for the very simple reason that hard times can not come so long as the tide of the world's gold continues to flow in our direction. Here are the facts and figures to substantiate what we say:

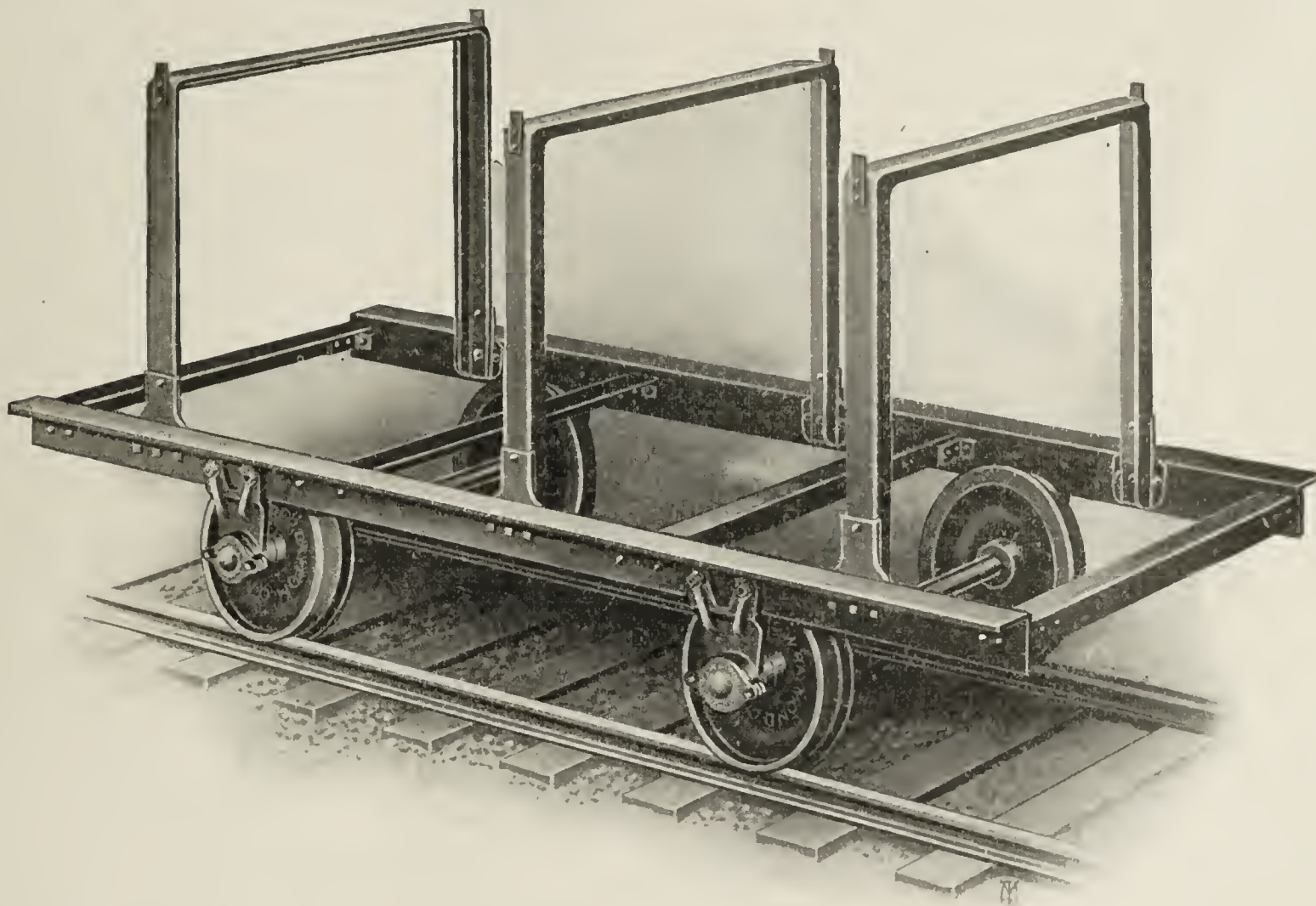
For the seven months ending last January, our merchandise exports were \$1,129,000,000 and our imports \$809,000,000. This was far in excess of all former figures, with a slight gain in the imports. There has been nothing to break or diminish the drift of foreign trade and as matters stand the net gold importation for the fiscal year will break all records. Already the gold imports have exceeded the exports to the extent of \$78,000,000, as compared with \$23,000,000 in the corresponding time a year ago. The nearest at which the present figures

foreign trade account is a barometer which rarely makes a mistake in this respect.—Exchange.

A NEW LINE OF DRYER CARS.

WE ARE PLEASED to illustrate a new dryer car which the C. W. Raymond Company, of Dayton, O., are introducing to the claycraft, a new line of dryer cars of their own manufacture. It is well known that this company has for several years past been handling cars of other makes. They have spent nearly \$7,000.00 for new equipment to turn out this product in a strictly first-class manner and with rapidity. Their equipment is modern, entirely new and ideal in every respect.

The Raymond Company have had excellent opportunity to study the requirements of their customers, with the result that they are putting out a neat and attractive car and one which is up to the standard of Raymond productions. Judge



The C. W. Raymond Company New Dryer Car.

were approached was in the seven months ending with January, 1897, when the net gold imports amounted to \$64,000,000. Nobody, of course, can tell what will be the drift of things in the remaining five months of the financial year, but the outlook is for a large addition to the country's gold stock, despite the rapidly increasing volume of merchandise imports, and this means that our people have money and are buying more and more liberally.

The truth is, all this talk about the probability of a panic or a money depression comes from the Wall street stock market and is manufactured for stock-bearing purposes. The fact cannot be concealed that the people as a whole have more money than formerly and are paying out more for luxuries as well as for necessities, and many of these luxuries come from without the country. This accounts largely for the increase in the volume of our imports. Taken as a whole our cash account tells an attractive tale and there is no reason to fear any general financial depression within the next two years. Our

ing from the illustrations sent us, the car certainly is a winner. The Raymond Company have gotten out exhibit sheets giving the detail of these cars, which they will be glad to send to any one interested.

POPULARITY OF RICKETSON'S MORTAR COLORS.

"WHAT SOME FOLKS SAY," is the title of a little leaflet being mailed by the Ricketson Mineral Paint Works, of Milwaukee, Wis. It tells of the mineral colors of the "Never Fade" variety which they furnish for the brick, tile and pottery trade. The leaflet contains quotations from users which, as they say, tell the story of the quality of Ricketson's mortar colors better than it could be done in any other way. Ricketson's mineral colors are peculiarly adapted for coloring mortar, cement building blocks; clay, cement and sand-lime brick, etc. They will be pleased to send this and other literature on the subject to any address on request.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF KANSAS CITY.



RECORD OF SEPTEMBER building in this city, as represented by the permits issued by the superintendent of buildings, has been a very nice percentage ahead of the same month of last year, but still brick men feel the tendency upon the part of builders to hold up on building operations at this time. The total estimated cost of buildings for which permits were taken out last month was \$922,497, as compared with \$781,540 the corresponding month of last year. This shows a net gain of \$140,957, the work being divided as follows: 35 brick buildings, 142

frame buildings and 155 miscellaneous buildings.

One hundred and ten building permits were issued in Kansas City, Kansas, last month, the total cost of buildings being placed at \$196,155, and the number of permits issued so far this year, in that city, are 768, the total value of which is placed at \$1,244,246.

It is stated that those who have money to invest in buildings are complaining about the heavy cost, and their complaints are still greater when it comes to the matter of delay in construction. The great factor of delay at the present time is the slowness of the railroads. A year ago it was called a car shortage, but it is found that there is really no car shortage—it is merely a failure of the roads to make the proper mileage with each car. Those who have studied the matter declare that it is motive power, yard room and new rails and ties that are needed, and not cars. They have plenty of cars, but it takes too long to move them, and as a result they are "car poor."

It is a very distressing state of affairs when a man has a demand for his product which far surpasses his power to produce, and can then not produce more than a tenth of his capacity just because he can not get rid of his finished material; but that is the position of many Kansas brick plants to-day, and there seems to be no indication of relief. The man is lucky who has his plant located in a city large enough to make a big home demand, which can be supplied without shipping, and plants so located should be making an extremely fine showing at this time, for they should clean up everything they can make, good, bad and indifferent.

A delegation of business men of Kansas called on Mr. Hurley, of the Santa Fe Railroad, when he was in Topeka a few days ago, and placed their grievances before him. This body of business men was headed by Mr. Amos, of the Humboldt Brick Company, and also president of the Kansas Brickmakers' Association. No results have yet made themselves apparent to the naked eye, but it is hoped that Mr. Hurley will see that his subordinates give some relief.

It is becoming evident that brick prices are to be reduced, and the reduction will have to come pretty soon, for other building material is coming down. Lumber was reduced a couple of months ago, and a reduction in the price of cement was recorded at that time. Cement has just made another reduction, the card prices in carloads now being \$1.00 per barrel instead of \$1.80. These reduced prices will cause builders to look into the virtues of concrete as a building material, and will make it a stronger competitor to brick than is now the case, for brick has held its supremacy as a building material in this market to this time. Price reductions will have to come at an early date, however, if this condition is to continue.

The Great Western Life Building Company has been formed here, and proposes to at once begin the construction of a twenty-story office building on the southwest corner of Tenth and Grand avenue.

The Lyle Brick Company has sustained a fire loss of about

\$4,000 in their plant No. 1, but new machinery has been ordered, and the plant will soon be in active operation again. In the meantime their No. 2 plant is loaded down with orders.

The Eadie Building Supply Company reports that instead of handling the usual ten to twelve cars of brick per day they are only getting about two or three, and the railroads are to blame for the slow business.

The Pittsburg Brick Company reports having received the contract for enough of its noiseless paving blocks to pave a mile of the main street of Emporia, Kansas, the delivery to be made the early part of next summer, which is as quick as delivery could be promised, on account of the number of orders booked ahead.

K. A. W.

Written for THE CLAY-WORKER.

BRICK NEWS FROM THE SOUTHLAND.



THE LAUREL BRICK and Tile Company, of Laurel, Miss., has been improving its plant from time to time, and has just placed an order for a Chambers No. 10 side-cut machine, and will soon be in shape to turn out 40,000 first-class building brick per day. The power plant consists of two Erie 60-horse boilers and one 100-horse Atlas engine. The general manager, Mr. T. G. Snyder, has dryers and kilns of his own patent, which are giving entire satisfaction. The yard is located between main lines of the N. O. & N. E. and M. J. & K. C. Railways, which afford every shipping advantage and give a ready demand for their products. Mr. S. M. Jones is president, M. H. Lampe secretary and treasurer, and Mr. T. J. Snyder is superintendent and general manager.

The Bayou Sara Brick Company, of Bayou Sara, La., after many delays caused by high water, has at last commenced making brick, and will build a levee which will protect them from high water and will give them a plant which can make brick every working day in the year. The plant was built from plans furnished by Chambers Bros., of Philadelphia, and the machinery was furnished by this company. The demand for brick in this section of Louisiana has always exceeded the supply, and this company will have no trouble in selling its output at a good price. A. Schnebelen, the general manager, has for many years managed the Altemus Brick Company, of Plaquemine, La., one of the best paying small plants in Louisiana. The company at Bayou Sara is particularly fortunate in having secured the services of Mr. Schnebelen. The other officers are John F. Irvine, president; M. J. Derryberry, secretary; J. R. Matthews, treasurer.

A new departure in the manufacture of firebrick, which will be of interest to the brickmakers, will be found in Rome, Ga. The Crucial Firebrick Company will soon put on the market one of the highest—if not the highest—grade firebrick made in the United States. The plant is now being rapidly pushed to completion, and will be modern in every department. Mr. C. N. Fuller is general manager, and has spent several years in making tests, and thoroughly understands what will be required of his brick and feels confident that he can deliver the goods.

The Chattahoochee Valley Brick Company, of Lumpkin, Ga., with plant located at Omaha, Ga., has had a very satisfactory season, and is still improving. They expect to make this plant one of the best in Georgia, and to have every modern improvement that helps to make first-class brick and to make them economically. Mr. W. L. Mardre, cashier of the Bank of Stewart County, is the active head of the company, and under his management the success of the plant is assured.

J. P. Jones & Son, of Newnan, Ga., are now erecting a brick plant eight miles from Newnan, where the Central of Georgia Railway crosses the Chattahoochee River. They have acres and acres of the famous Chattahoochee River clay, and expect in time to build a large plant.

The Georgia Brick Company, of Adairsville, has made

quite a good record for the first year. They commenced grading in March, and have since installed a complete outfit of Chambers' machinery, 25,000 daily capacity, five-track Standard dryer, and four permanent furnace kilns. Mr. R. L. McCollum is general manager, and M. E. T. Asbury has had charge of erecting and operating the plant. DIXIE.

Written for THE CLAY-WORKER.

WESTERN PENNSYLVANIA BRICK AND BUILDING NOTES.



REPORTS FROM THE majority of the brick and clayworking plants of this section of Pennsylvania indicate that the month of September was an excellent one from a business standpoint, the majority of these plants having been operated to the utmost capacity, while none of them report that there has been any material

loss felt over the volume of the same period last year.

This is particularly true regarding the firebrick and fire-clay industry, as these plants have had about all on hand that it has been possible to handle and at the same time get the shipments out on time. The steel and iron business has been very active, and as a result most of the hundred or more blast furnaces in the Pittsburgh district have been pushed to capacity, and as a result many linings have been scorched, or, as in some cases, burned out entirely. Therefore when the first lull in the steel and iron business came the linings that are always carried on hand in cases of emergency by these steel companies were built into the furnaces and stoves and orders placed with the manufacturers of refractory materials for entire new linings. There has also been an excellent demand for firebrick for open hearth and crucible furnaces, and at the present time inquiries for these brick are unusually numerous.

During September the demand for vitrified paving brick has shown an encouraging increase over the month of August, when there was quite a loss in business suffered. It seems at the present time that most of the country towns in this part of the State which have been either paving their streets or contemplating this class of paving for this fall, have decided to rush the work through before winter sets in, and are accordingly placing their orders for paving material.

In view of the excellent building conditions throughout this district the volume of business in building brick, both common red and pressed, is excellent at the present time, and will continue so for another month at least. This year fall building is heavier than usual, and most of these structures of all kinds are either of brick or veneered with brick. There is not so great a demand for light-colored building brick.

The sewer pipe business continues very good, with an increase noted in the number of orders that are being placed this fall. There is a rush on the part of contractors to complete sewer contracts on hand, which creates a heavier demand during the early fall than during some of the best months during the summer.

Fireproofing demand has not shown much improvement in this immediate vicinity, although a number of good orders have been placed during the past month. There is an excellent demand reported from Western and Southern cities, however, where there are a large number of large fireproof buildings being erected, and where cold weather will not put a stop to building operations, as is usually the case in this part of the country.

Building operations in the city of Pittsburgh showed another good increase last month, just about holding even with the fine record made during August, as reported in our September issue. An increase was also noted in the bureau of building inspection in the cities of Braddock, McKeesport, Homestead, Carnegie, Wilkesburg and Wilmerding.

Fire, early on the morning of September 27th, destroyed

the entire plant, with the exception of the kilns, at the works of the Standard Fire Clay Manufacturing Company, at Fallston, Beaver County, Pa., and forced the company to discontinue business for the time being. The fire was discovered by the watchman in the main building, but before assistance could be obtained the entire building was a mass of flames. In a short time the other buildings of the large plant caught fire, and it was only an hour until the entire works, except the kilns, as above stated, was a hopeless mass of ruins. The entire mechanical equipment was lost, and the damage will amount to between \$25,000 and \$30,000, which is partly covered by insurance. It is the intention of the company to erect another modern mechanical brick plant on the same site as soon as possible.

During the past month the announcement that there had been another important consolidation of firebrick manufacturers in the vicinity of Pittsburgh created considerable talk, as but meager information could be obtained regarding the merger. The new company will be known as the United Firebrick Company, and the general offices will be located in the First National Bank Building, Uniontown, Pa. The Pittsburgh office of the company is located in 1601 Arrott Building.

The company absorbs the plants formerly conducted by the Dunbar Firebrick Company, of Dunbar, Pa., and the Fayette Firebrick Company, of Uniontown, Pa. Three separate and distinct plants will be operated as follows: No. 1, Dunbar, Pa., where firebrick for use in blast furnaces, stoves, open hearth furnaces and other iron and steel operations will be manufactured; No. 2, Fairchance, Pa., where all brick for coke oven purposes will be manufactured, and No. 3, Fairhope, Pa., where the highest grades of silica brick will be manufactured. All of the plants have direct connections with the Pennsylvania and Baltimore & Ohio Railroads, and shipping facilities are of the best.

The three plants have at the present time a daily output of about 75,000 brick, and this will be increased as occasion may demand. It is probable that a number of important improvements will be made shortly after the first of the year, and these, if they mature, will be announced in due time.

The new concern is headed by T. B. Palmer, while John Palmer is vice president, G. B. Burchinal is secretary, and I. W. Semans is treasurer, all of these gentlemen having been identified with the individual companies before the merger was effected.

A new cement filler for brick paving is being tested very thoroughly throughout Western Pennsylvania in cities where there is any amount of brick paving. This filler, it is claimed, makes the brick street as noiseless as asphalt, gives it a continuous smoothness, and also prevents the usual chipping and beveling of the brick on the upper edges. The cement also has the advantage of preventing water from seeping through to the foundation on which it is laid, thus making the street rough in spots. F. A. C.

NINETY PER CENT. HARD BRICK.

At the N. B. M. A. Conventions Alfred Yates has more than once declared that he averaged 90 per cent. hard brick in his down draft kilns. The following letter proves that "there are others." If any reader of The Clay-Worker can make a still better showing, we will be glad to record the evidence. Next!

Kane, Pa., Sept. 18th, 1907.

Mr. Alfred Yates, Shawmut, Pa.:

Dear Sir—We have used two of your patent kilns, one of them we have been using for about three (3) years and the other one for about (1) year. We find these kilns all that you claim them to be. They have given us the best of satisfaction in every respect and we consider the five hundred dollars (\$500.00) royalty for each of these kilns, money well expended.

We have drawn as high as 90 per cent. of good hard burned brick of one uniform shade from one firing of these kilns. We can heartily recommend your kiln to all contemplating the building of kilns for the manufacture of brick. We also desire to say that there is a considerable saving of fuel in the use of your kilns as compared with ordinary kilns. Yours truly,

KANE BRICK CO.

W. H. Bunce, Sec'y-Treas.

Thos. E. Lewis, Manager.

Written for THE CLAY-WORKER.

BRICK NEWS OF TWIN CITIES AND NORTHWEST.



THE BUILDING SITUATION in Minneapolis and St. Paul has not shown much change during the present month, perhaps the most pleasing feature being the way in which building operations have kept up throughout the early fall. The season was late in getting started, and this has made it necessary to keep up all work as long as the weather remains favorable. The season is now far enough advanced, however, to make safe the prediction that the building totals for the two cities will show a healthy increase over those of 1906. There are a number of good-sized buildings in prospect, most of which will be started this fall, and there promises to be no letting up in building this year until the winter sets in in earnest. The month of October is always one of favorable weather in the Northwest, and there can be more or less work done in November, so that it is safe to say that there are still two full months of activity. There are in prospect several buildings of good size which will be started this fall and completed next year, so that the present prospects for a good building season in 1908 are bright. The high price of building materials has caused a postponement of considerable work, but the public generally looks upon the present values as one of the adjuncts to continued prosperity and there is really less complaint than might be supposed. The fall work in the Northwest is usually that of starting foundations for large buildings and of finishing the work begun earlier in the year. This is necessary because of the severe winter, which practically puts a stop to all building. This year will prove no exception to the rule, but the high prices of all farm products, together with the good crops which have been harvested, has assured the Northwest of continued prosperity, and the next six weeks will undoubtedly see building work rushed very rapidly.

The steel framework for the Palace Clothing Company's building in Minneapolis is practically completed, and work has been started on the brick and terra cotta work. The owners have decided to make it eight stories high, instead of six, as originally planned, and when completed it will be a striking addition to the larger business houses on Nicollet avenue. The H. N. Leighton Company are the contractors. The building will be faced with white enamel. The L. S. Donaldson's Company's new nine-story steel-frame building at Seventh street and Nicollet avenue is practically completed.

Among the larger buildings under consideration in St. Paul for the coming season is a brick factory building to be erected near the Midway Transfer. J. Walter Stevens, architect, is preparing the plans for the building, which will be 160x175 feet, of mill construction; cost, complete, \$75,000.

It has been noted quite generally on the number of new brick manufacturing plants which are being started in the Northwest this year. This condition has been brought about by the excellent prices being obtained, which has made it possible to open up the hitherto inaccessible beds, and also by the fact that the lumber supply of the northwestern forests is becoming depleted at an alarming rate. This has made it necessary to turn more than ever to clay products as a building material, the supply of which is inexhaustible and the quality of which has been thoroughly tested.

The Menominee Hydraulic Press Brick Company, of Minneapolis, has recently placed a contract at Fargo, N. D., for 85,000 red press brick and for 50,000 red sand mold brick. The brick are to be used in the new Gardner Hotel at Fargo.

Peter Maurin will be manager of a new brickyard, which will be placed in operation at Cold Spring, Minn., the coming season. The plant is now being constructed at a cost of about \$25,000.

A company will be formed at Austin, Minn., to build a plant for the manufacture of brick and tile. The plant will cost \$100,000.

Louis Lockwood, architect, has completed plans for the foundation for the new Fire and Marine Insurance Building at Fifth and Washington streets, St. Paul. It will be erected at a cost of \$175,000.

Harry W. Jones, the well-known Minneapolis architect,

who was almost fatally injured in an automobile accident during the summer, has recovered sufficiently to leave on a trip, accompanied by Mrs. Jones, to the Orient, where he will remain until he has fully recovered. A. R. Van Dyck, his associate, will have charge of his office until he returns.

The new brickyard at Detroit, Minn., has turned out its first kiln of brick, which proved to be of exceptionally good quality. Another kiln will be burned shortly. The plant will be enlarged next season to a daily capacity of 35,000.

The Jackson Brick and Tile Company has been formed at Jackson, Minn., and work is progressing on the new plant, which will be completed this fall.

A. W. Schone is talking of starting a brick manufacturing plant at Milbank, S. D.

A. E. Fuller has completed successful tests of the clay beds near Madison, S. D., and a company may be formed to start a brickyard.

The Aberdeen Brick Company, of Aberdeen, S. D., has been compelled to shut down its plant because of inability to secure labor.

The four brickyards at Princeton, Minn., have turned out 17,500,000 brick the past season.

A company has been organized to manufacture tile at Stockport, Iowa, with \$10,000 capital. R. M. Harlan is secretary. T. WIN.

A NEW ST. LOUIS INCORPORATION.

The Luce Engineering Company, of St. Louis, was incorporated on September 1 for \$35,000 to do a general brick plant engineering business. The present company has taken over the business and good will of the G. E. Luce Engineering Company, formerly of No. 601 Plymouth Building, Chicago, retaining in their service as president Mr. G. E. Luce, who up to this time has been conducting the business of the former company.

The plans of this company are to design plans for the installation and establishment of brick plants of every character, their chief claim being that since their company owns no brick machinery, has no shop of its own, and is positively untrammelled by any interest in any manufacturing corporation whatsoever, its officers can much more readily work to the interest of those clayworkers who from time to time might be installing new plants, making additions and surmounting difficulties on their old plants.

The temporary offices of the company are located at 421 Olive street, where they will remain until about January 1st, when they will establish themselves permanently in a suite of offices in the Third National Bank Building.

The officers of the company are G. E. Luce, president; Will P. Blair, of Terre Haute, vice-president, and Peter B. Gibson, of St. Louis, secretary and treasurer.

Mr. Luce's reputation and good name, acquired through about ten years' active service in the field, does not need to be dwelt upon, for almost every clayworker has already in mind his lengthy and successful career with the Illinois Brick Company before he started into the engineering business in Chicago.

Mr. Will P. Blair, the vice-president, has long been identified in the paving brick business, and is one of the most prominent advocates and thoroughly versed leaders in this line in the country today. Mr. Gibson, up to September 1st, was actively connected with the Scott Manufacturing Company, of St. Louis, but has resigned from the former company to assume the above office.

Associated with the company is Mr. Marion W. Blair, of Terre Haute, who has been connected with G. E. Luce Engineering Company, of Chicago, as an assistant engineer to Mr. Luce, and also Mr. E. C. Peper, who will have charge of the drafting department.

For the present, the common, stiff mud and paving brick features will be made a leader, partially due to the large amount of business on hand, which must needs be taken care of. At an early date, however, other departments will be added to the line, as opportunity might present itself.

THE CLAY-WORKER extends hearty congratulations to the new organization, and to our old friend, Peter B., whose advertisements heretofore have set the pace for the "Press That Scott Builds," we extend most hearty congratulations, and hope that his business management will prove as efficient as Mr. Luce's and Mr. Blair's engineering ability has proven in their former connections.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

An Echo of "In Perpetuum Hominum Memoriam."

Dear Mr. Randall:

Rather much of a joke on us. I find that some of the cement fellows have been reading "Kruhadhara," and though we wrote it as a joke confound them, they have gone to work and applied the scheme to concrete. Several cement fellows have laughingly twitted me about my tile graves, but they have taken up the matter seriously at the Cement Manufacturers' Convention now going on in New York, and proposed to line graves with concrete and seal them up, "which would preserve the bodies of the dead far beyond the time of any other method and be as protective as the embalming of the ancients," and they further incidentally state that thousands of tons of cement would be demanded for that use in the next few years.

And so we tile fellows go, ever marching on in the van of progress, indicating the way, lighting the dark places and having the other gadzooks follow up and steal our blooming thunder, b'gosh!

F. W. FITZPATRICK.

An Object Lesson—Why Brick Were Used Instead of Concrete Block.

Editor THE CLAY-WORKER:

A reader of the CLAY-WORKER, while stopping in a Western town of about 8,000 inhabitants, noticed many very nice buildings under progress and some just finished. Attention was called to a cement block building, which was just being started inside the fire limits. For some reason or other the city ordinance did not include cement block as being fireproof. The attention of the City Council was called to the fact, and they took it up and gave the matter their special attention by having a test made. A test was recommended to be made on cement block and sand-lime brick in connection with a common building brick. A test kiln and pyrometer were used, and the work was done under the direct supervision of the Committee on Fire Limits, and resulted as follows:

Cement brick (three-quarters sand and one-quarter cement) tested to 1,528 degrees Far., giving the brick thirty minutes to heat; also giving it thirty minutes to cool to temperate; with the result that the brick powdered and crumbled. A pressure of 68¾ pounds caused it to crumble to a mass of dust. It was also noted that it would sluff off or powder while under heat at 982 degrees Far.

The sand-lime brick stood a test of 2,628 degrees Far., and neither crumbled or powdered, but it cooled off very readily. It was then tested as to pressure, and it stood nearly as much as it did before heating, but was somewhat more brittle than before, which was caused by its cooling so rapidly.

The clay brick was then tested, heated to 2,628 degrees Far., and then raised to 2,780, with no breakage or crumbling. It took longer to heat, and also longer to cool, and at 2,850 degrees it started to fuse or melt. Of course, this condition depends on the clay, as some stand more heat than others. The clay brick was made of a yellow dirt take from a pit about fourteen feet deep. A pressure was applied, but from last reports they were still pressing it. The test was sub-

mitted, and where once was to have stood a cement block building there is now erected a beautiful brick one.

AN IOWA SUBSCRIBER.

Trouble With Cold Spots in Up-Draft Kilns.

Editor THE CLAY-WORKER.

We are having a deal of trouble with cold spots in our kilns. This commenced in two kilns last fall and every kiln this summer has developed one or more bad spots. Our methods of setting and burning are the same as in previous years. Kilns are ordinary scoved, updraft not under a shed, and take seven days to burn. We fill arches while building with logs too big to go indoors, water smoke slowly, and about the third day shut up one end and fire from the other. It is always at this time cold spots develop in center of kiln, although water smoke has been coming off evenly from every part. Unless checked now, spots get worse. We cover them over with sheets of tin, till the fire gradually works through; but this is mostly too late to make more than good soft. Last kiln had six or seven arches near end not burned at all, though every effort was made to get fire through. Present kiln has about 20,000, which refuse to take fire. Feathers held over cracks rush downwards, although the kiln a foot away may be red-hot. We have tried feathers many times over these spots, proving that for some reason or other the draft here is strong downward. Some say these are caused by uneven setting; others forcing a kiln before water smoke is off. We have the same setters for years. I have done the firing for fourteen years, so am not a novice at it. Why should we have trouble now after escaping all these years? Our methods are similar in every detail to former years.

It will be too late for help to reach us for this kiln, but we would like as a personal favor you would show this to the right person, or put us in touch with the right parties that we may know the cause of this, and also its remedy.

By giving this your immediate attention you would much oblige,

A CANADIAN READER.

Cause and Cure for Cold Spots.

Editor THE CLAY-WORKER.

The trouble which "A Canadian Reader" is having with cold in his kiln is caused by using too much draft after it is water smoked. Up to this point there has been air and steam enough going up to crowd every opening and crevice in the platting in its endeavor to escape. But now a sudden change has come; one side of the kiln has been closed entirely and possibly the other partly, only allowing enough for draft. The consequence is that the openings on top of kiln are not crowded with hot air and gases, as same has unduly been cut off, and this, too, when the draft was rapidly increasing; so here we have a case of a small inlet and an ever-increasing outlet. Now, as the opening in the platting is not crowded any more with escaping air and gases, there is not enough to fill them all. There arises a competition between the different parts of the kiln to see which part can get the most, and, of course, those places where the platting or setting is the loosest, or where it is getting the hottest, takes the lead and very rapidly runs away with all the draft. The cold spots, though very little colder in the first place, now turn colder and colder, and there is not enough air going in at the furnace to satisfy the terrific draft of the hot places, a current of air is started down the cold spots to help supply the hot ones.

The cause is too much draft. Instead of closing one side of the kiln at a time, I would advise closing up the fire holes or arches, leaving an opening no larger than a brick on the flat. In other words, take two flat brick, place one each side of the fire hole, then place a piece of sheet iron on top of them large enough to close up the balance of the opening, then be content to feed the wood as the heat in the arch will allow. After water smoking, the top platting must be kept tight enough so the hot air and gases can spread out to every part of the kiln in the endeavor to find a way of escape. This can be done by adding a layer of damp soil

over the kiln, commencing with the hot places and crowding the fire all over equally.

Only enough air should be used in the furnace to give perfect combustion. And only enough opening on top of the kiln to give the proper amount of draft. If these instructions are carried out it will save half the wood that has been used.

R. T. I.

Written for THE CLAY-WORKER.

HEARD IN NEW ENGLAND.



ACCORDING TO information obtained in Boston the market has shifted slightly during the past month, and prices are lower in some instances. As a consequence the quotations given herewith are widened to include both limits of the range. The sale has been reduced slightly by the change in building operations incident to the approach of cold weather. As a whole, however,

the market is considered fair for the season, and makers and dealers are confident that prices will not change materially during the remainder of the season. Spot prices are now as follows: Up and down s. s. brick, f. o. b. yards in New Hampshire or Massachusetts, \$7.35 to \$8.00; up and down w. s., \$9.00 to \$9.50; New Hampshire selected w. s., f. o. b. cars New Hampshire, \$12.00; Massachusetts face brick, \$20.00 to \$21.00; firebrick, \$28.00 to \$35.00.

Many yards in New Hampshire are closed for the season. They have not yet announced how successful the season has been, but according to superficial observations it seems reasonably good. Prices, as has been shown from month to month, have averaged reasonably well. Building operations within the district supplied by the New Hampshire yards have been active and demand has continued practically unabated throughout the summer. During the past weeks, which have marked the close of the season, there has been some rain to interfere with the work, but as a rule the weather has been dry enough most of the time to permit continuous operations. The season closes with New Hampshire stock in fair demand, but apparently there will be sufficient carryover to supply the trade at the opening next spring.

Massachusetts makers say that they can not close yet, as they have orders ahead which must be filled. The market is active, according to these gentlemen, and demand is now sufficient to keep them going. They have accumulated only a small surplus, and it will be necessary to continue operations right up to the time when cold weather shall force them to close.

Elsewhere in New England yards are closing, and things are being put in shape for the winter. Sales have been reasonably good during the past year and the market has closed with prices fairly high. The prospect for building and other structural operations next season is sufficiently promising to cause makers to believe that there is a good opportunity awaiting them next year.

No late reports have been received from Connecticut makers, but at last accounts the yards were busy, and there was a strong probability that they would continue so until the close of the season. The market has been active, and conditions have generally favored makers all through the summer.

HIRAM.

Victor Currier, well known throughout Western Pennsylvania and Eastern Ohio in firebrick circles, died at his home in Grampian, Clinton County, Pa., last month. He was 30 years of age, and for several years has been identified with the Harbison-Walker Refractory Company, of Pittsburg. For the past year he has been the superintendent of the Olive

Hill, Ky., and Portsmouth, Ohio, plants of that company, and was thoroughly familiar with this business. Death was due to acute diabetis, from which he had been suffering for about one month. He was educated at State and Lafayette Colleges, graduating at the latter college in 1902.

OHIO STATE UNIVERSITY CERAMIC SCHOOL NOTES.

Never has the oldest ceramic school in America, that at Ohio State University, known such gratifying advances as this year. Entering its thirteenth year this ceramic school had an enrollment of ninety students, seventy-one of whom are taking the four-year course. Seventeen freshmen have entered the regular course this year, while eleven have cast their lot in the short course or in special work.

The new building and its fine equipment is the best of any branch of the Ohio State University, and the most complete of any ceramic school in the world to-day. Prof. Orton has accomplished wonderful results in building up this clay-workers' department, and is reaping a rich harvest for his years of untiring efforts by coming into full possession of his highest hopes. The enrollment this year is the largest in the life of this ceramic school, and is a greater increase in attendance over last year than any other preceding year. Last year's attendance was a remarkable one.

Prof. Purdy, who has made quite a name for himself in the ceramic world by his valuable experimental work and instruction at the Illinois University during the past two years, has charge of the ceramic chemistry department, and the teaching of the courses in cement manufacture. He has for his assistant in this important work Mr. J. M. Knoté, who is a thorough chemist, and comes to take up this position well recommended, holding a master's degree in chemistry from Ohio State University, and being a graduate from Wittenberg College.

Prof. Orton has his assistant in the ceramic laboratory work, Mr. W. G. Worcester, who is a former student of Ohio State University, having graduated in Prof. Bleininger's class. He has had several years' experience as a practical worker, holding the position as superintendent and manager in two well known clay plants. He is an excellent man for Prof. Orton, coming to the university only through a desire to carry on experimental work for the ensuing year.

A number of valuable experiments are now under way, and a great deal of research work will be accomplished by the professors and the students this year. This is a banner year for the Ohio State University Ceramic School, and with its beautiful and well equipped home and able corps of instructors, its future was never brighter than it is at present. In the next issue of THE CLAY-WORKER we will publish a finely illustrated write-up of the school, which will be interesting to all our many readers.

FOLLOWS BLEININGER'S EXAMPLE.

On the third of September a very pretty wedding took place at New Plymouth, Ohio. The parties to be congratulated and well wished, being Mr. L. B. Coulter and Miss Maud Bartlet. The honeymoon was spent on a trip South to Galveston, Texas. Mr. Coulter has been identified with the American Ceramic Society for a number of years, and has written several interesting and valuable papers for that body. He has charge of Prof. Orton's cone factory at Columbus, Ohio. The happy couple is now comfortably settled in the Buckeye capital. Some weeks past Mr. Peppel, chemist for the Richardson-Lovejoy Engineering Company, gave a very unique dinner in their honor and initiated them into the mysteries of a chemical dinner, the food being served in laboratory apparatus. Their many friends wish them a happy, easy journey on the sea of matrimony.



OFFICIAL ANNOUNCEMENT.

THE TWENTY-SECOND NATIONAL CONVENTION
TO BE HELD AT COLUMBUS, OHIO,
FEBRUARY 3-8, 1908.

American Ceramic Society and National Paving Brick Manufacturers' Ass'n Hold Separate Sessions Feb. 3 and 4.

THE STATISTICAL CHART recently issued by the United States Geological Survey shows that Ohio still maintains her position as the leading State in the production of clay wares. Buckeye kilns turn out 19.26 per cent of the entire clay products of the country.

It is peculiarly fitting that we should meet in the capital city of this, the chief clayworking State of the Union. It is so centrally situated, so easily accessible to a great majority of the clayworkers of the land, that it would seem an attendance exceeding even that of the St. Louis convention, which was the best convention in point of members yet held, may be anticipated.

Hence we are pleased to announce that arrangements have been completed for a convention at Columbus the week of February 3d, at which time the Ohio School for Clayworkers will keep open house, and Prof. Orton and his assistants will not only bid all visitors a cordial welcome, but will be prepared to demonstrate the advances made along technical lines in the art of clayworking since our previous meeting there in 1899.

The brick manufacturers of Columbus and vicinity will demonstrate that the cordial invitation extended by them through Prof. Orton at our last meeting was not a mere form of words, but will individually and collectively extend a welcome so earnestly heartfelt and warm that, regardless of the temperature, the visitors will have no occasion to make a mid-winter trip to the tropics, and while the entertainment afforded will be so timed and planned as not to interfere with the deliberative work of the convention, the local committee will strive strenuously to make the week one of many pleasures.

It is too early to announce railroad rates, but as Ohio and adjoining States now operate under a 2-cent law, and those coming from a distance can obtain the same low fare by using mileage books, the same relative rate that has heretofore prevailed is assured. The N. B. M. A. hotel headquarters will be at the Southern Hotel, where special rates have been arranged for.

As in former years, the American Ceramic Society will meet Monday, Tuesday and Wednesday forenoon. They will rendezvous at the Hartman Hotel, which is two blocks from the Southern.

The National Paving Brick Manufacturers will meet in a parlor of the Southern, as will also the Machinery Manufacturers' Association.

The N. B. M. A. sessions will, as heretofore, begin Wednesday afternoon at 2:00 o'clock, and ample provision will be made for an exhibition room affording adequate facilities for all who may wish to display samples of brick, models of clayworking machinery, factory supplies, trade literature, etc.

Those desiring more detailed information on any feature of

the convention, or the requisite of membership, etc., are requested to communicate with the secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,

WM. CONWAY, President.

THEO. A. RANDALL, Secretary.

THE CANADIAN CONVENTION.

The Canadian Clay Products Manufacturers' Association will hold its sixth annual convention at Ottawa, Ontario, Canada, the 19th, 20th and 21st of November.

The headquarters of the convention will be at the Goldsmith Hall, 115 Sparks street. The hotels recommended are as follows:

The Russell House	\$2.50 per day and up.
The Grand Union	\$2.00 per day and up.
The Windsor	\$2.00 per day and up.
The Brunswick	\$1.50 per day and up.

On Tuesday morning, November 19th, there will be a reception and the registration at the Secretary's headquarters. The first regular session will be Tuesday afternoon. A theater party will be tendered the members Tuesday evening, while the banquet will take place Wednesday evening at the Russell House.

Wednesday morning will be spent driving through the city. Sessions will be held Wednesday afternoon, and all day Thursday, the convention adjourning at the close of Thursday's afternoon session.

The convention this year will be a repetition of that of last year, with its many interesting papers and discussions, and the social stunts. Everybody is assured a good time.

OTHER CONVENTION DATES.

The National Association of Manufacturers of Sand-Lime Products will meet in annual convention in the German room of the Chittenden Hotel, Columbus, Ohio, Wednesday, Thursday and Friday, December 4th, 5th and 6th. Ample facilities will be afforded for the exhibition of sand-lime brick.

The Iowa Brick and Tile Association will hold its twenty-seventh annual convention at Des Moines, Wednesday and Thursday, January 22d and 23d.

BOYD BRICK PRESS TESTIMONIAL.

We are pleased to give space to the accompanying letter from the Summit Press Brick Company. Their experience is certainly worth chronicling. It is not often that manufacturers offer voluntary testimonials of this sort. The five years' record certainly speaks well for the Boyd press:

(COPY.)

N. G. Potter, President. Joseph Welte, General Manager.
THE SUMMIT PRESSED BRICK AND TILE CO.,

Manufacturers of
HIGH-GRADE PRESSED BRICK.

Office and Yards, Fourteenth and Water Streets.

Pueblo, Colo., October 10, 1907.

Chisholm, Boyd & White Co.,

Fifty-seventh and Wallace Streets, Chicago, Ill.

Gentlemen—We have recently noticed in THE CLAY-WORKER several letters from your customers giving their experience with the Boyd Brick Press, and as we are using one you may be interested to hear from us also.

It is now over five years since we installed our Four-Mold Boyd Press, which has been in constant operation since that time. It shows practically no wear for the five years' use, and it is in first-class condition, running every day and doing as good work as when first started, and has given us entire satisfaction.

As you doubtless know, we are working shale, which requires heavy pressure and with your press we never have any trouble to get all the pressure we want to make a good, hard, solid brick.

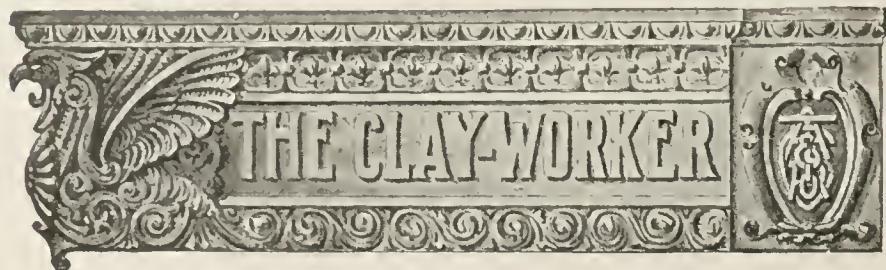
Before buying the Boyd we made a thorough investigation of all other dry press machines, and we are pleased to state that we have never had cause to regret the selection of your press. We desire to thank you for your prompt and courteous treatment.

We are, yours very truly,

SUMMIT PRESSED BRICK AND TILE CO.,

(Signed)

JOSEPH WELTE, General Manager.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	- - - - -	\$ 2.00
One copy, one year (if not paid in advance)	- - - - -	2.50
Six copies, " " " " " "	- - - - -	10.00
Ten copies, " " " " " "	- - - - -	15.00

Foreign subscriptions 65 cents additional.

Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVIII.

OCTOBER, 1907.

No 4.

CURRENT COMMENT.

And now we turn from summer idleness to the matinee idol.

* * *

You may be able to down a good man, or a good idea, now and then, but if either is really good it is the next thing to impossible to keep them down.

* * *

To some people copper mining stocks now look considerably like gold bricks—and there are other mining ventures, too.

* * *

Whatever else may be said for or against the railroads, no one ever seems inclined to deny the statement that American railroads hold the record for damage to life and property by accidents.

* * *

Personal enthusiasm is not the whole works in any industry, but it is one of the main springs that keeps the wheels going. So get and keep a fair amount of enthusiasm about your business—or else get into some business where you can get enthusiasm.

* * *

It looks like we will soon get to the point where cities will make much more stringent regulations for concrete structural work, and when the regulations are made as severe as they should be it will be so discouraging for the concrete enthusiasts that brickwork will get nearer the show it deserves.

* * *

An illustration of how little things can pile up and make big things is furnished by that now famous Southern 2-cent freight rate case. It was only a little 2-cent advance at first, but now it is a matter of millions of dollars that railroads are being called on to refund to shippers of lumber. It is enough to set us thinking more seriously than ever what

better waterway transportation might mean for the shippers of heavy freight by lowering the rates so that too much of the value, of brick for example, may not be eaten up by freight charges. Just a little difference in a freight rate amounts to a whole lot in a little while.

* * *

The superintendent of a Southern pressed brick manufacturing plant writes: "We are having so many orders that we are running day and night to catch up." This seems to be the prevailing condition in both pressed brick and paving brick lines, and as a rule the common building brick manufacturers are exceptionally busy for this season of the year. So long as this happy condition continues, Wall street panics need not be feared.

* * *

It does seem that so much has been done in the way of underdraining land and the increase of crop production resulting from work well done in the way of tile draining farm lands is so apparent that every wideawake farmer would be doing all he could in this way to improve the soil conditions, and thus add to the increased crop production and the prosperity of all concerned. But it is hard for some people to get out of the old ruts—even though they be full of water.

* * *

Building operations, while they did not go off as well as they should in the early part of the year, now give promise of making up for a part of it by renewed activity. And there is not much doubt but what structural work will be kept up as late as possible this winter, so that though it may not make up all the lost time it will round out fairly well, and include a goodly volume of brick. One regrettable feature about it all, however, is the scarcity and high price of bricklayers, which frequently hampers and discourages operations.

THE FOLLY OF CUTTING PRICE OF BRICK.

When it comes right down to the question of giving good advice about what we should do when business gets a little slow, and there is not enough to go around, it is naturally much easier to tell what not to do than to point out what would be best. It is easy to point out, for example, that price cutting as a means of relief when the demand for brick is not all that could be desired is a poor refuge. It is true that the cost of brick does have something to do with the quantity used, but this influence is so slight within the range of ordinary price variations that there is not enough gained by shaving prices a little, in the way of new demand, to make it worthy of consideration under ordinary conditions. If prices have, through some strain, been run up to an abnormally high point until the quantities being used are seriously handicapped thereby, then it might be reasonable to assume that, with conditions bettered, the trimming of prices to a reasonable basis would encourage business somewhat. Under ordinary conditions, however, where a brick manufacturer is making only a small profit on his work, to cut prices in the hope of creating more business is simply to give way to the spirit of unrest and make trouble. One may get some extra business by doing this, but he doesn't create it. He gets business that would ordinarily go to some one else, which is not disposing of the burden at all, but is merely shifting it off on to other shoulders and inviting trouble generally. There is, it is said, a certain amount of stimulating influence to be derived from friendly rivalry, or competition, between competing manufacturers, but when the trade gets a little slow and no one has enough, it is very difficult to maintain the rivalry and still keep it friendly. When it becomes unfriendly it is not rivalry any more, but is plain fighting, and the first result of warfare is spoils. It is very seldom, too, that the spoils are all on one side. It spoils

things for everybody, and frequently it does more spoiling for the man that starts it than for any one else. Now, here is a fact that points one of the peculiarities of mankind. Every man who buys, no matter whether it is brick, machinery, or what, naturally enjoys buying a bargain and getting all that he can for his money, but at the same time this same buyer has but little respect for the price cutter. The first impression that is made on the shrewd buyer when a man comes along and cuts prices is that there is something wrong with the product offered, or else he is in a tight place. In other words, he figures that there is something wrong somewhere, and he immediately becomes suspicious, and if he is very particular about the product he is buying, an offer of a lower price on the part of the seller frequently prevents the sale.

A BATTLE CREEK GOOD ROADS IDEA.

We all know that the community around Battle Creek Mich., is quite prolific with ideas, and probably many of us think that the ideas emanating from there pertain exclusively to the making and selling of breakfast foods.

Still, there are others, and some of the others are apparently worth while. For example, according to newspaper reports, the Battle Creek merchants have organized a Business Men's Association whose first purpose is to get into closer touch with the farmers of the community by building good roads as an inducement to the farmers to come into town more often. This association was the means of getting two of the thirteen roads leading into Battle Creek improved last year, and they seem to be carrying the good work on this year. The original object of all this seems to have been to meet and overcome the competition of the mail order houses by making it both easier and better for the farmers to come to town and keep in touch with local affairs. There are a number of other features connected with the work, such as the serving of lunches and the holding of monthly sales for farmers, and various things of that kind. Probably one of the best of these ideas was that of road building, and one of the most cheering things of it all is that the good roads idea is not only obtaining a prominent place in the minds of the people in general, but it has been leading, not merely to talking, but to action. In other words, we are coming to the point where we are getting down to business on all sides, and in a few years we will reap the good results and begin to wonder why it was not done sooner.

This Battle Creek idea is one that merchants in other parts of the country can well afford to copy after and thus help themselves by helping a good cause—that of good road building. They will find plenty of co-operation in this work, and especially from the automobile people, who are organizing all over the country and have for the main object the improvement of highways. We would suggest to the brick men throughout the country that it might be worth while to speak of this better roads idea to local merchants, with a view to getting their more active co-operation in this good work, which means better times and more business for everybody.

GOOD PRICES USUALLY MEAN GOOD BRICK.

There is nothing that will do more to create in the mind of the buyer an impression of quality in one's product than to ask a stiff price. He may not buy, but the chances are that he will receive a good impression and when he starts out looking for quality he is mighty likely to remember the man who asked the stiff price. It looks like the only rational thing to do when the situation becomes in any community such that there is not enough market for all the brick manufacturers without the people engaged therein getting on one another's toes is to cultivate a larger market or curtail the output. The best course when it can be done is always

to cultivate a wider market. To cultivate a market in the true sense of the word means, to use a simile from the farm, to make something grow where nothing grew before, or to "make two blades of grass grow where only one grew before." In short, it doesn't mean going out and taking some other fellow's trade from him in some other territory, but it does mean to put forth every effort to encourage and build up a more extensive use of brick and thus create business where there was none before, or else increasing that which is already doing. Many progressive brick manufacturers are doing some excellent work in this line, but there is always room for more of it, and of late years opportunities have been better than ever before to extend the use of brick in all kinds of work, and when times get dull and there is not enough for everybody in any given locality the thing to do, instead of fighting each other and cutting prices, is to get together and map out a campaign of work which shall have for its main object the enlargement of the use of brick in the territory that can be reached. There is room for all and the brick industry can be increased, and thereby the spirit of unrest that causes so much trouble when allowed to run riot can, if properly controlled, be made to assist us materially in promoting a wider use of the greatest and best building material on earth.

THE BLANKET OF OBSCURITY.

Time, which helps to shape our ends and weave our destinies, is also a great weaver of what might be termed blankets of obscurity. Many things pertaining to people, events and places are dimmed and obscured by time, until it is difficult for us to unearth the facts out of many points in history. This is not surprising, that this should occur in relation to ancient history and the doings of great men in the past ages, but there is one surprising thing in connection with time and its blanket of obscurity, and that is, with the rush of modern events, in which we speak of annihilating time, we now and then are reminded that time moves more rapidly in this work of dimming and obscuring people and events of prominence. There is a particularly interesting example of this found in a discussion among journalists as to whom the credit of inventing the steel frame building belongs. The present discussions, out of which differences of opinion grew, started after the death of W. L. B. Jenney, one of the leading architects of Chicago and the man to whom the credit seems due for introducing the steel-frame building, or, in other words, inventing the skyscraper. It seems that Mr. Jenney designed the first steel-frame building about thirty years ago in Chicago, and had quite a lot of trouble in getting his plans accepted. The people were rather apprehensive, and at first refused to build after his plans, but having confidence in his work Mr. Jenney is said to have backed up his plans by some kind of a guarantee to make good in case of loss, and on this basis a steel-frame building was erected in Chicago about thirty years ago. There are others who have come forward with claims of originating the steel-frame type of building, and this has at times grown into quite a lively discussion on the subject, which is regrettable, in a way, because there should be unstinted praise and credit given to the originator of the steel structure, and it is a pity to have the fame of the original inventor clouded by disputes and questions. Leading architects have had this point up for discussion at meetings of their societies, so that this question has been gone over thoroughly and they say there is no doubt but what Mr. Jenney is the pioneer in skyscraper buildings. If this is true, no one should desire to detract from the credit due Mr. Jenney. It is, however, a remarkable thing, when we come to reflect on it, that thirty years of time should so obscure an important point in history as to leave room for differences of opinion that seem difficult to harmonize, and it furnishes a striking illustration that while we may be annihilating time in some of our great works it is also working rapidly and weaving some blankets of obscurity in a much shorter period of time than in the slower-going days of old.

LIFE'S A FUNNY PROPOSITION AFTER ALL.

I.

Did you ever sit and ponder—sit and wonder— sit and think
Why we're here, and what this life is all about?
It's a problem that has driven many brainy men to drink;
It's the wierdest thing they've tried to figure out.
About a thousand different theories the scientists all know
But never yet have proved a reason why;
With all our thought, and all we're taught, all we seem to know—
We're born and live a while—and then we die.

REFRAIN.

Life's a very funny proposition after all;
Imagination, jealousy, hypocrisy and gall.
Three meals a day,
A whole lot to say,
When you haven't got the coin you are always in the way.
Ev'ry day we're fighting as we wend our way along;
And ev'ry fellow claims the other's in the wrong.
Hurried and worried
Until we're buried,
And there's no curtain call.
Life's a very funny proposition after all!

II.

When all things are coming easy and when luck is with a man,
Then life to him is sunshine ev'rywhere;
When the Fates blow rather breezy and they quite upset a plan,
Then he'll cry that Life's a burden, hard to bear.
Though to-day may be a day of smiles to-morrow's still in doubt;
What brings me joy may bring you care and woe.
We're born to die, but don't know why, nor what it's all about;
The more we try to learn the less we know.

REFRAIN.

Life's a very funny proposition, you can bet;
And no one's ever solved the problem properly as yet.
Young for a day,
Then old and gray,
Like the rose that buds and blooms, and fades and falls
away.
Losing health to gain our wealth as through this dream we tour;
Ev'rything's a guess—there's nothing absolutely sure.
Battles exciting,
And Fates we're fighting,
Until the curtain's fall.
Life's a very funny proposition after all!
—George M. Cohan.

OLD OCTOBER.

Old October's purt' nigh gone
And the frosts is comin' on
Little heavier every day—
Like our hearts is thataway!
Leaves is changin' overhead
Back from green to gray and red,
Brown and yellor with their stems
Loosenin' on the oaks and e'ms;
And the balance of the trees
Gittin' balder every breeze—
Like the heads we're scratchin' on!
Old October's purt' nigh gone.

I love Old October so,
I can't bear to see her go—
Seems to me like losin' some
Old-home relative er chum—
'Pears like sorto' settin' by
Some old friend 'at sigh by sigh
Was a-passin' out o' sight
Into evelastin' night!
Hickernuts a feller hears
Rattlin' down is more like tears
Drappin' on the leaves below—
I love Old October so!

Can't tell what it is about
Old October knocks me out!—
I sleep well enough at night—
And the blamedest appetite
Ever mortal man possessed,—
Last thing et, it tastes the best!—
Warnuts, butternuts, pawpaws,
'Iles and limbers up my jaws
Fer real service, sich as new
Pork, spareribs, and sausage, toc.—
Yit, fer all, they's somethin' 'bout
Old October knocks me out!

—James Whitcomb Riley in The Home Magazine.

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ESTABLISHED COMPANIES, as well as beginners, find our services profitable. We correct faults of manufacture and keep plants up-to-date. Engagements for special service, or by the year.

THE RICHARDSON-LOVEJOY ENGINEERING CO.

[See page 442.]

WANTED, FOR SALE, ETC.

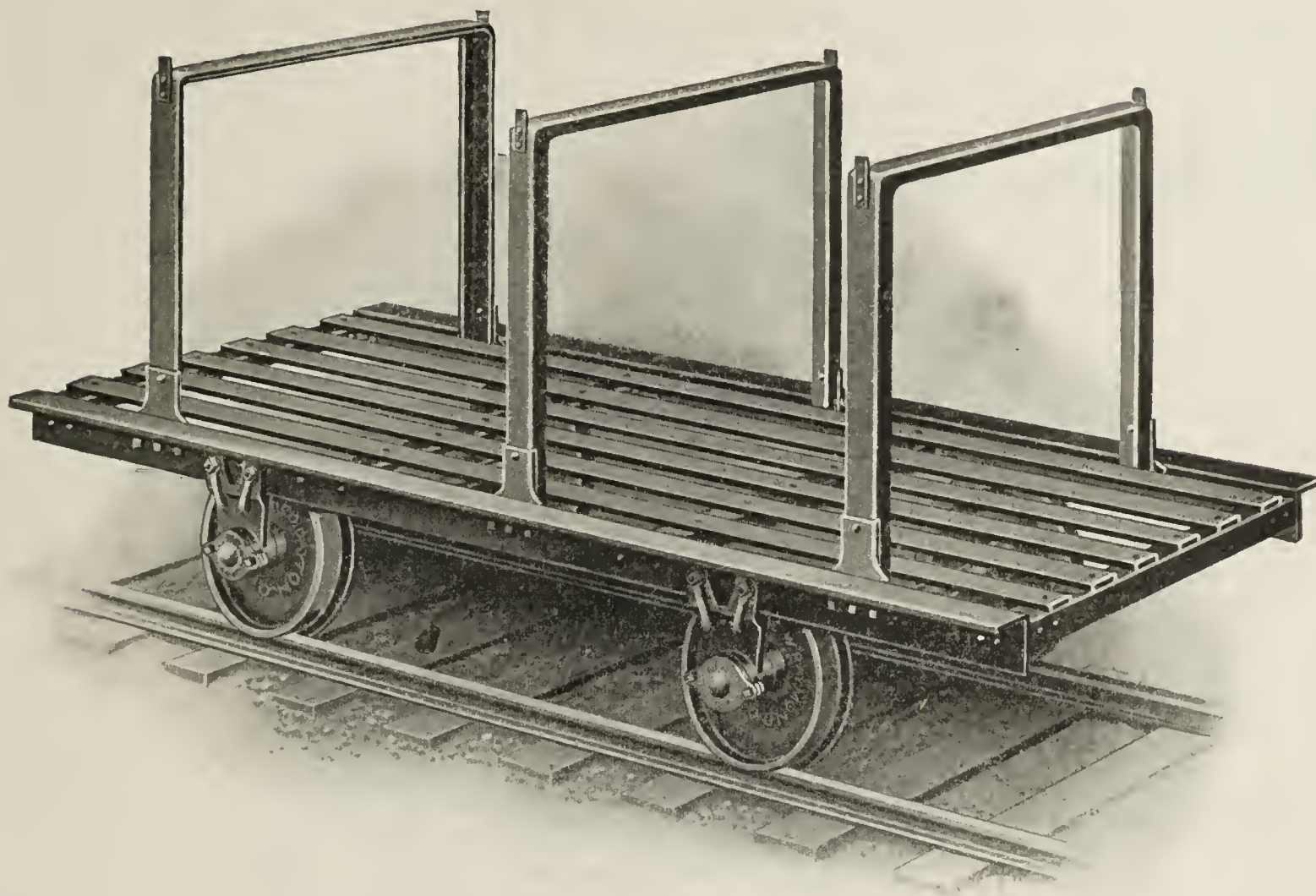
WANTED.

T rails, No. 12, for a complete dryer. Write, quoting prices to KLEYMEYER-KLUTEY BRICK AND TILE WORKS, Henderson, Ky.

FOR SALE—Little Wonder brick and tile machine, brick and tile tables, two off-bearing, two clay cars, three wheelbarrows and tile dies, 4 to 8. Address, E. M. COMBS, Mechanicsburg, Ill.

FOR SALE—Entire steam outfit, boiler, engine and Chambers' Bros. brick machine; all in first-class condition; lease expiring. Address, JOHN HANARTY & SON, Fifty-eighth and South Streets, Philadelphia, Pa.

For Sale, Wanted, Etc., Ads Continued on Pages 422, 423, 424 and 429.



CAR "E."

To the Claycraft:

After years of handling Dryer Cars of various makes and with only indifferent results as to the quality obtained, we have now equipped to produce a car which maintains the valuable features of them all and overcomes their several weaknesses. We have been between the Manufacturer and Consumer for a long time and appreciate the sides of both. Consequently from this unbiased position, together with a thorough knowledge of the claycrafters requirements, we have produced a Dryer Car as strong as can be made, with more and better material.

Roller bearings, with the boxes finished inside, making a smooth bearing surface and an easy running car.

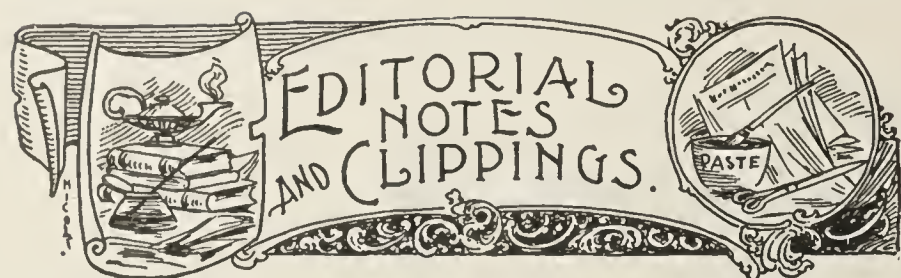
Solid web wheels free from shrinkage cracks, forced on a turned axle by about ten tons hydraulic pressure. Accurate gage, strong, rigid and weighed on scales—not estimated.

Write for exhibit 2084.

The C. W. Raymond Company,

Largest Exclusive Builders of Clayworking Machinery in the World.

Dayton, Ohio, U. S. A.



Montrose, Colo., is to have a \$25,000 brickmaking plant.

Wm. Holden has purchased the brick and tile factory of Wm. Schultz, at Wayland, Iowa.

The brick and tile plant of J. M. Fauvre, at Orange Grove, La., was completely destroyed by fire recently, causing a \$10,000 loss. The plant will be rebuilt.

The sand-lime brick plant of S. F. Warren, at Bainbridge, Ga., was entirely destroyed by fire October 6th. The plant had only been in operation a short time, and will be rebuilt at once.

Mr. Wm. Kelley, of Philadelphia, Pa., is putting in an equipment of Martin improved style "A" machinery on his Fankford yard, installed by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa.

The plant of the San Angelo (Texas) Brick Company has been completed and brick were turned out for the first time October 9. The plant is to have a daily capacity of 30,000 brick, for all of which there will be a local demand.

Julius Belknap, senior member of Belknap & Phillips, the brick manufacturers of St. Clair, Mich., died at his home in that city recently. Mr. Belknap had been engaged in the brick business since 1871. He leaves a wife and two daughters.

The Perth Amboy Firebrick Company, of Perth Amboy, N. J., have recently equipped their plant with one of the Martin heaviest and best style "A" double mold entrance steam power brick machines installed by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa.

While F. Y. Jordan, an employe of the California Brick and Clay Manufacturing Company, at Antioch, Cal., was engaged in loosening a valve on a steam drain pipe leading from the boiler into the engine room of the company's works, he slipped and struck his head against a piece of iron, causing injuries from which he died the next day.

The Lonsdale Face Brick Company, at Knoxville, Tenn., has just completed a large storage shed, which will hold enough clay to enable them to run the plant through the winter months. Mr. Lundy, the manager of the company, is well pleased with the season's work. He is now making preparations to manufacture some fine brick specially for mantels.

The Mill Hall Brick Works, Mill Hall, Clinton County, Pa., has been awarded the contract for the pressed brick that will be used in the construction of two fine residences that are being built this fall at Lock Haven, Pa. The brick-contrators are Hoover & Glenn, of Lock Haven, Pa. The homes will be two of the finest in that county, which is one of the greatest brick manufacturing districts in Pennsylvania.

Robert Campbell, of East Liverpool, Ohio, a practical potter of many years' experience, is at the head of a project to found a second Sebring, near Atwater, Ohio, ten miles north of Alliance, on the Cleveland & Pittsburg division of the Pennsylvania Railroad. Options have been obtained on lands and \$25,000 stock subscribed to organize a company for the manufacture of chinaware, jardineres, etc., the establishment to employ 100 hands at the start.

The Luverne Brick and Tile Company, of Luverne, Minn., has been incorporated with \$50,000 capital stock. R. B. and B. S. Hinkly, and C. W. and John Sheriff, the incorporators, are gentlemen who have had considerable experience in the manufacture of brick, and the enterprise bids fair to be a success from the start. The new company has taken over the old Hinkly plant, which will be rebuilt, new machinery added, and improved kilns erected.

The Ensign Bros., of Salt Lake City, Utah, have purchased from Alma Beck, Charles Beck and Henry Smith some fireclay beds about one mile north of Cedar Fort, near Lehi. The beds are forty-five feet wide and extend over 3,000 feet in length. Exhaustive experiments have been made with the clay, and it is pronounced superior to any heretofore discovered in Utah for firebrick purposes and the manufacture of crucibles and other appliances used for refining and assaying purposes. A big company will be organized at an early date,

and a plant will be built at Lehi that will consume about 200 tons of clay per day.

Construction work has commenced on the new factory of the Mason City Drain Tile Company, and it is hoped to have the plant in operation before the snow flies.

Mr. Daniel Zehnder, of Easton, Pa., has placed his order with the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., for an outfit of Martin brick machinery and the Martin patented rack pipe steam brick dryer system.

The Bessemer Limestone Company, of Youngstown, Ohio, has just booked a contract for 4,000,000 brick for the Hudson River tunnel. The plant has had an unusually busy season, and Manager Cook has kept things moving at a lively rate all summer.

After having been identified with the pottery firm of Dunlop & Lisk, at Matawan, N. J., for fifty-one years, Mr. Dunlop has sold his interest to K. H. Shafto, of Cliffwood. The name of the new firm will be the Dunlop & Lisk Pottery Co., although Mr. Dunlop will have no financial interest in same.

Messrs. Jos. H. White & Sons, of Easton, Md., are at the present time installing a complete equipment of Martin brick-making machinery of 20,000 daily capacity, including the Martin patented rack steam brick dryer system, furnished by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa.

Fire broke out in the dynamo room at the Weaver Clay and Coal Company's plant at Brazil, Ind., October 9, and for a while the entire plant was threatened. Heroic work on the part of the laborers at the plant stopped the fire before it spread to the main building. The loss, which is not heavy, is covered by insurance.

A corporation to operate a brick and tile plant at Crush, Texas, six miles east of Sulphur Springs, on the Missouri, Kansas & Texas Railroad, has been organized with Phil H. Foscue, president; Howard Templeton, vice-president; W. B. Weaver, secretary and manager; Phil H. Foscue, John D. Williams, T. Coleman and Max Yesner, directors. The company will incorporate with a capital of \$15,000.

The Pittsburg Clay Products Company, Bessemer Building, Pittsburg, has had a busy month and has secured a number of fine orders. This firm is the local sales agent for the American Enameled Brick and Tile Company, of New York City, which firm is supplying the enameled brick for the big Keenan Building in this city, mention of which is made above. This order was secured through the local sales agent.

With the completion of improvements now under way the output of the T. B. Townsend Brick Company's plant, at Zanesville, Ohio, will be doubled and employment given to 100 more men. Two new kilns are now being constructed with the necessary railroad switches and improved machinery. Plans are also being prepared for new buildings. It is expected that the work on the improvements will be completed by spring.

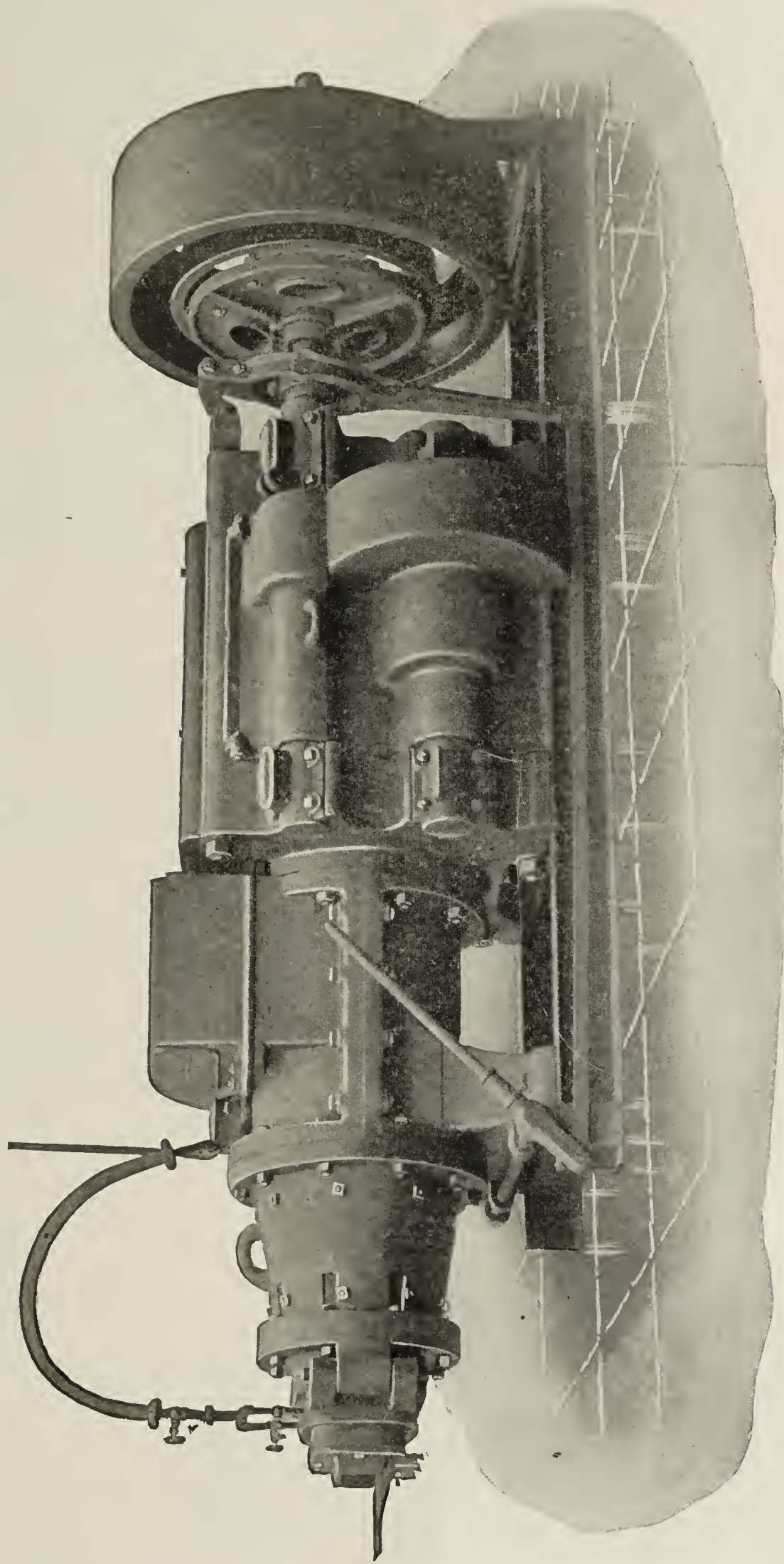
The tile factory at Stockport, Iowa, which was burned some time since, will be rebuilt at once. A company with \$10,000 capital has been organized with C. W. Wheatley, president; M. Shelman, vice-president; R. M. Harlan, secretary, and Wm. Brewer, treasurer. The new company will be known as the Stockport Brick and Tile Company, and work on the new plant will be pushed as rapidly as possible.

The brick plant of Judge James E. Romig at Hillside, Montgomery County, Pa., in the suburbs of Philadelphia, which was recently equipped by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., with their best and most modern machinery and the Martin patented system of handling and drying 40,000 brick daily, is now in operation, making and drying 40,000 brick every day, and which plant is conceded to be the best, most complete and most modern in the United States.

The plant of the Henry Martin Brick Machine Manufacturing Company, manufacturers of clayworking machinery and appliances at Lancaster, Pa., was badly damaged by fire early in the morning of September 18th, which is supposed to have originated from an overheated core oven. The foundry room was almost wholly destroyed, as was also the large cranes, the elevator and cupola fans. The engine room was but slightly damaged, while a building in which valuable patterns and castings were stored was not reached by the fire. The loss, which passes the \$10,000 mark, is only partly covered by insurance. The ruins had not cooled before members of

(Continued on page 416.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

EDITORIAL NOTES AND CLIPPINGS—Continued.

the firm were laying plans for the rebuilding of the plant, and work on same is being pushed vigorously.

An overheated kiln started a fire at the plant of the Wilmington Brick Company, Wilmington, Del., which resulted in a \$1,700 loss. The damage was confined chiefly to the kilns.

Alfred Abrahamson, a young brick manufacturer of Youngstown, Wash., died at the hospital in Seattle recently after a brief illness. He left an estate valued at half a million.

A company has been organized at Fort Pierre, S. Dak., to manufacture brick from gumbo, which is found in the hills of that section. Tests have been made which have resulted in fine vitrified brick.

The Missouri Brick and Tile Company, of Dickinson, N. Dak., has increased its capital stock from \$35,000 to \$75,000. The company has had a very busy season, having a market for all the brick turned out.

The Muskogee (Ind. Ter.) Vitrified Brick Company is enlarging its plant, increasing the capacity from 40,000 to 60,000 brick a day. The town of Muskogee is using a large number of the brick in paving its streets.

J. M. Sanders and Marion Williams have sold their interest in the Chatsworth Pressed Brick Company, Chatsworth, Ga., to S. M. Barnett. The company has been reorganized, with Mr. Barnett president, and Mr. Houck vice-president.

The Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., have recently shipped to Los Angeles, Cal., one of their improved heavy and large 10x20-inch crushers and a 36-inch by 12-foot revolving screen.

Alexander McLean, a pioneer brick manufacturer of Illinois, died at his home at Macomb, that State, recently. He was at one time owner of the Bardolph Brick and Tile Works, Bardolph, and was well known among the clayworkers of the State.

The plant of the Arcadia Brick Company, of Arcadia, Ind., was burned to the ground last month. The loss is estimated at \$30,000, partly covered by insurance. There was no fire protection either at the brick works or in the town, and the flames could not be controlled. The plant will be rebuilt.

The brickyard of the Illinois Brick Company, at Lansing, Ill., was damaged to the extent of \$50,000 by fire September 26th. The flames, which originated in the dryer, gained such headway before discovered that the employes were unable to check them. The plant will be rebuilt without any unnecessary delay.

The Sayre-Ford Manufacturing Company, of Camden, N. J., is installing the Martin patented rack pipe steam brick dryer system having a holding capacity of 40,000 stiff mud brick daily, furnished by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa.

The Providence Pressed Brick Company, of Providence, Ky., has had a most remarkable season. The plant has been running to full capacity since early in the spring, and the firm was recently obliged to turn down an order for a million and a half brick to be furnished before the close of the year. If the present conditions continue, the plant will have to be enlarged.

The Apollo Silica Brick Company, Apollo, Pa., has been drilling for gas to supply its plant for some months past, with but little success until the latter part of last month, when the lower Bradford sand was reached and a fine well blown in. Gas in sufficient quantity has been discovered in this one well to supply the entire plant, and the use of coal will now be dispensed with for the present at least. The plant of the company is very busy, and has orders on hand that will keep the works running full throughout the entire winter.

The Chanute Brick and Tile Company, of Chanute, Kansas, has just completed its new plant. They make paving and face brick, with a capacity of 100,000 per day. They have thirty acres of land with an inexhaustible supply of shale. Their dry sheds are 80x100 feet, holding 104 cars of 600 brick each. They have their own gas supply, with a daily product of 15,000,000 feet. Brick are dried with this gas in fifteen hours. The shale is procured by means of a large steam shovel, saving the labor of twenty-five men. The machinery was furnished by the American Machinery Company, of Bucyrus, Ohio. The company is incorporated with a capital of \$125,000. Its officers are: President, W. S. Cochran; vice-president, Sen. E. G. Potter, Minneapolis; treasurer C. J. Keiser, presi-

dent of Keiser Bank, Mt. Olive, Ill.; secretary and general manager, A. O. Kenton.

Straight Bros., of Fonda, Iowa, will build a factory at Auburn, Iowa, for the manufacture of common building brick and drain tile, on which they expect to spend \$40,000.

The St. Joe Brick Works, Pearl River, La., have recently added to their plant a Martin compound granulator to further improve their yard, furnished by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa.

The caving-in of a roof over a brick kiln at the plant of Kissenger & Bro., at York, Pa., resulted in a \$600 fire loss, on which there was no insurance. A high wind was blowing at the time, and for a time the entire plant was threatened.

The Amarillo Pressed Brick Company, at Amarillo, Texas, of which B. H. Lewis is the manager, began operating its new plant early this month. They have a very fine shale bank, which will furnish them raw material for years to come.

J. K. McGarth has in contemplation the establishment of a brick factory at Beaumont, Texas, for the manufacture of common and pressed brick. Mr. McGarth is not a novice in the business, being identified with a Louisiana clayworking concern.

George J. Walters, proprietor of the Chatsworth Tile Works, Chatsworth, Ill., fell from a ladder while making an adjustment of the door of a car loaded with brick, and was painfully injured. He will be laid up for some time with a crippled leg.

The Delaware Terra Cotta Company, of Wilmington, Del., who recently installed the Martin patented rack pipe steam brick dryer system on their plant, have now placed their order with the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., for an additional 20,000 capacity Martin dryer.

L. E. Bennett, of Millsap, Texas, is at the head of a company being organized at Brownwood, Texas, for the manufacture of vitrified brick. The shales of that vicinity have been tested and found to be specially adapted to the manufacture of paving brick. The company will probably be capitalized at \$30,000.

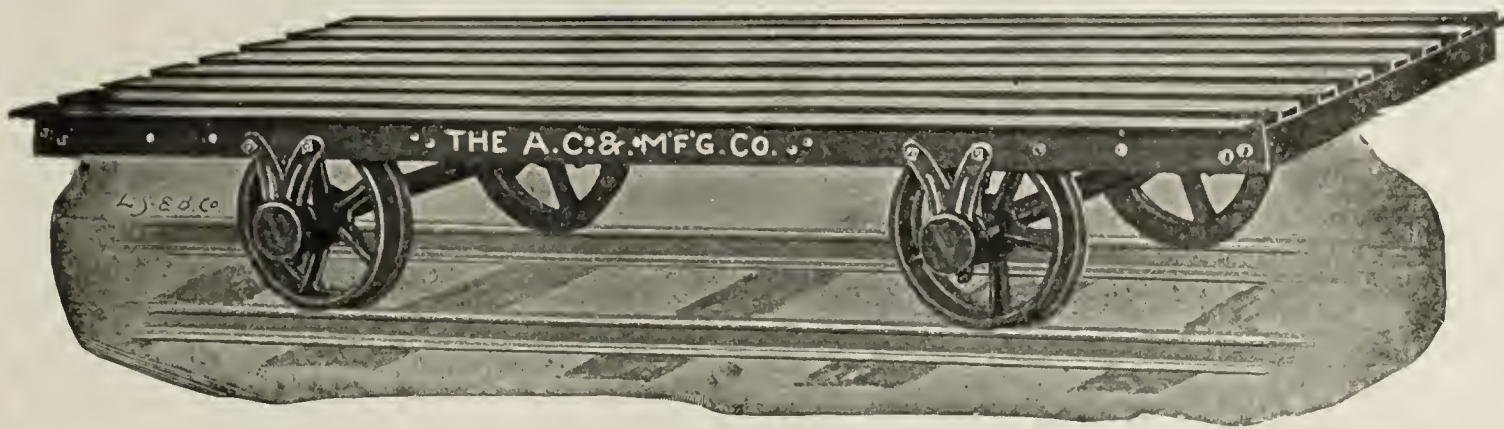
The Fitchburg Brick Company, Fitchburg, Mass., have just installed one of the latest Martin style "P" compound disintegrators on their yard, this disintegrator being the best and most modern of any machine of its kind on the market, and which is built by the Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa.

The Clay Products Company has been organized at Texarkana, Ark., with a capital of \$25,000. The officers are: John T. Owsley, president; Ralph G. Moore, vice-president; F. W. Mullins, treasurer, and L. E. Howe, secretary. The object of the company is the manufacture of jugs, jars, vases, and a general line of other pottery; also, face, fire and vitrified brick. The company has purchased the pottery plant of John E. Parkhurst, three miles north of town, and will at once increase its output to four times its present capacity.

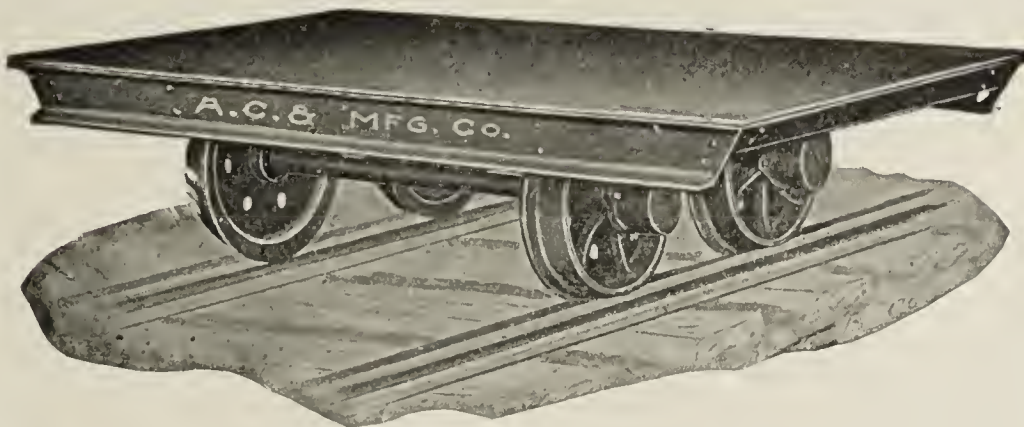
F. W. Dennis, the kiln builder, writes that he has completed the first kiln for the Industrial Brick Company, at Mt. Vernon, Ind., and has another well along toward completion. These kilns have a capacity of 300,000 each. They will finish the first burn in kiln No. 1 the latter part of the month, and brickmakers generally who are interested in the economical burning of their ware are invited to visit the plant of the Industrial Brick Company and inspect these kilns, which are said to be the largest down-draft kilns in that section.

The firebrick and building brick manufacturers of northern and central Pennsylvania held a meeting at Dubois, Pa., September 11th, and formed an organization to be known as the Brickmakers' Association of Northern and Central Pennsylvania. W. I. Harvey, of the Hayes Run Firebrick Company, of Orvis, Pa., was elected president, and W. D. Ramsey, of the Elk Firebrick Company, of St. Mary's, Pa., secretary. The organization was formed for the mutual benefit of the brick manufacturers of that section.

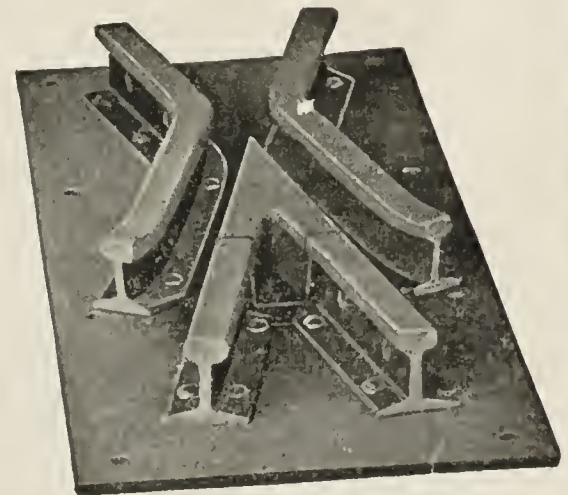
R. W. Wehrle, of Indiana, Pa., while investigating a formation of silica rock on what is known as the Rockvale farm, a short distance from Coral, Indiana County, Pa., discovered a fine grade of plastic silica clay that averages 63 per cent. silica and 29 per cent. aluminum. He has interested a number of Pittsburg, Cleveland and Williamstown capitalists in the discovery, and steps will be taken at once for the formation of a company to erect a large brick plant for the manufacture of silica brick. A 60-foot vein of ganister rock was also found on the farm.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

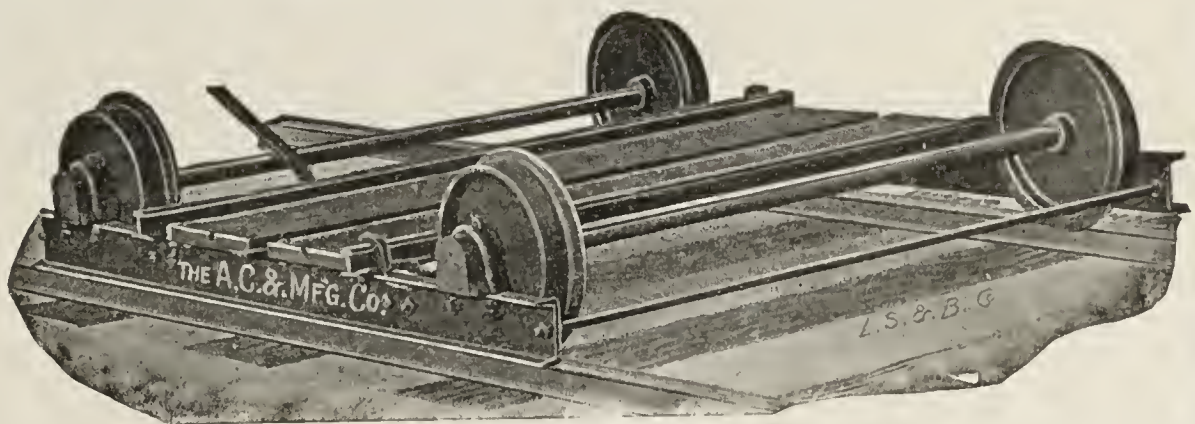
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

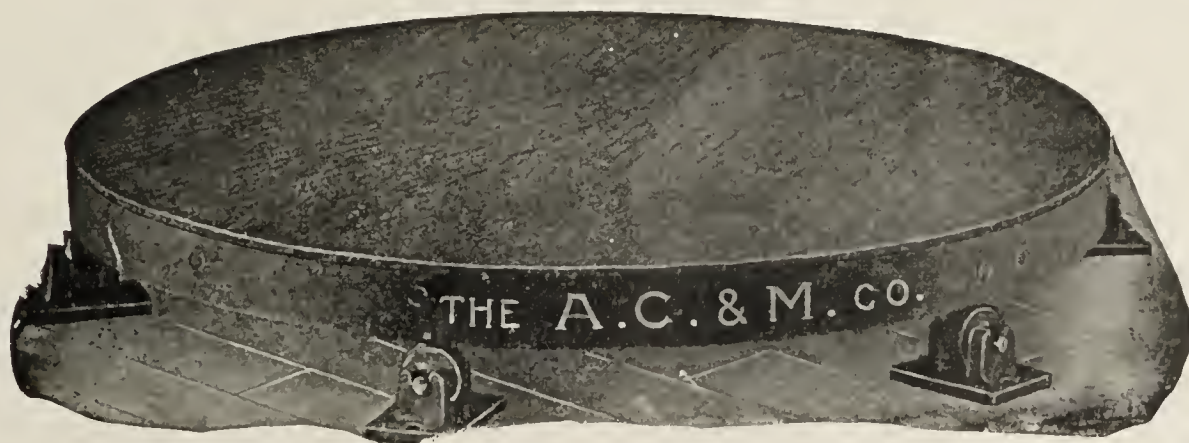
Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



ITH REPORTS of eighteen-story hotels and theater buildings and of great railroad, commercial and industrial projects being heard on every hand, there is every prospect that building material men here are going to have a busy winter of it.

Many think that at no time since the year preceding the World's Fair have so many varied and large undertakings been under practical consideration as at present. Great satisfaction is expressed in as much as the activity appears to be significant merely of the healthy, rapid growth of the city and in no way abnormal nor due to speculative frenzy. The purchase by Levy Mayer of the Stratford Hotel property and adjoining property on Michigan avenue and Jackson boulevard is understood to be in the interests of Klaw & Erlanger, and an eighteen-story playhouse and hotel structure is talked of by those who profess to know what is going on. Real estate transactions just west of the river, both in the neighborhood of Madison and in the neighborhood of West Sixteenth streets, are said to indicate the erection of large structures for new terminal facilities for the Pennsylvania and the Baltimore & Ohio Railroads.

B. A. Eckhart, the miller-politician of Chicago, has bought the property at the southeast corner of Sheldon street and Arbor place, 90x100 feet, and another piece 111x90 feet in Sheldon street just adjoining the corner plat, and is planning to construct a large up-to-date warehouse, it is understood.

Not to be outdone by the magnificent Stockyards office building of Swift & Co., Armour & Co. are going to put up a \$400,000 building in the yards for the use of their clerical force. This will take the main offices of this great packing concern from downtown LaSalle street. The Swift Building is an imposing and attractive affair of brick, with ceramic fittings and trimmings on the interior, and it is said that the Armour Building will follow the same lines of construction, which are especially adapted to the demands of cleanliness and sanitation of a place like the stockyards.

The biggest construction job immediately on hand is that of the Corn Products Company, which in a few days will begin the construction of a \$5,000,000 plant on the South side of West Sixty-third street, extending from Archer avenue west to the line of the Chicago & Alton Railroad and adjoining the territory of the Sanitary District's main drainage channel. The plant will cover an area of 110 acres, and plans for thirty-three buildings have already been put under way and are ready for the physical work. A capacity of 100,000 bushels a day finished product is contemplated. This company is one of the wise ones which have sought sites convenient to the drainage channel, on the theory that the Lakes to the Gulf Waterway, for which the entire Mississippi Valley is clamoring and which President Roosevelt advocates, is only a few years, comparatively speaking, from actual realization and that a site along the line of this proposed waterway will in a short time be an asset of great positive value.

Bernard Weber, president of the National Brick Company, is another of the farsighted people in this part of the country. There is pending for consideration before his company a contract which he has negotiated himself with the Sanitary District with reference to the work on the proposed Evanston channel, which within a few months will communicate through the North Branch of the Chicago River with the main channel of the drainage or ship canal. The proposed contract, it should be said at the outset, is a good two-sided proposition, and is generally considered as advantageous to the public, represented by the District government, as it is to Mr. Weber and to his brick company.

Mr. Weber's company holds the property through which it was deemed necessary to carry the Evanston channel, the

entire quarter section involved being valued chiefly for its clay bearing qualities. Under the terms of the proposed contract, which has been accepted by the Drainage Board, Mr. Weber will undertake the work of excavating a channel 50 feet wide and capable of carrying twelve feet of water, not only through the half mile of the course through his own property, but for one-half mile to the north of his tract. The clay taken from his own tract will, of course, be his, or rather that of his company, and in addition the National Brick Company is to have all the clay taken from the District's right of way from the Northwestern tracks in Evanston south to the Weber tract—a distance of four miles. The brick-making interests, however, will be obliged if they accept the contract to take care of and dispose of all the "spoil" other than the clay and the clay as well, which may be taken from this part of the right of way of the Evanston channel.

In return for these benefits the Sanitary District gives to the National Brick Company a lease without compensation for thirty years on the five-foot strip next adjoining the water for the distance of one-half mile through the Weber tract, and an option for a twenty-year renewal of this lease at its expiration, the valuation to be fixed at that time. The task undertaken by the Weber interests is computed by engineers as involving the excavation of twenty-six acres. So soon as the Evanston channel is completed the National Brick Company will have its competitors at a disadvantage, being able to avoid the north shore switching charges—at present high; take their product direct to the heart of Chicago and a great new territory on the Southwest Side, which will soon begin to build up, and with the opening of the proposed great waterway to the lower Illinois and Mississippi will be on a direct line of cheap and safe transportation with the heart of the great State of Illinois.

Fireproof houses are the newest things in Oak Park. Charles E. White, Jr., is the architect who is responsible for the new good move. There will be practically nothing in the houses that can burn. The only wood used will be for the doors, window frames and the top floors. Hollow tile is the material of which the houses will be built. For the exterior a coat of plaster will be used. Mr. White says that the new departure calls for inventions in the line of a fire-proofing tile that will be ornamental and not demand the use of plaster. Many makers and dealers in tiles think they can meet this demand without further trouble. The original cost of the new type of houses, which are patterned in some ways after the construction work in fireproof office buildings, is estimated to be about one-third more than the usual house, but in the long run economy is claimed for them, the saving being made in repairs and insurance premiums.

The New Southern Hotel Company is to remodel the building on the northwest corner of Thirteenth street and Michigan avenue at an estimated cost of \$200,000. This building was originally used by the late John Alexander Dowie as a hotel for his better class of dupes and for his "college."

A careful study of the paving brick clays of Illinois has been made by the new State Geological Commission provided for by the Forty-fourth General Assembly, and is now being published. Unsuspected resources in this line have been found, and important light has been shed on some of the problems of paving brick manufacture. Samples of paleozoic and mesozoic clays have been collected and tested in a preliminary way. In all forty-six clays were examined, and of these thirty-nine stood a fire test equivalent to 1,670 degrees centigrade, or higher, and were considered refractory. Much more work is needed on the fireclays, and in addition the pottery clays and various building brick clays demand investigation, in the opinion of the commission. Second only to coal the Illinois clayworking industries are the most important ones found in our mineral resources. In 1905 the total value of the clay output of the State was \$12,892,000, and in 1906 there was a substantial increase.

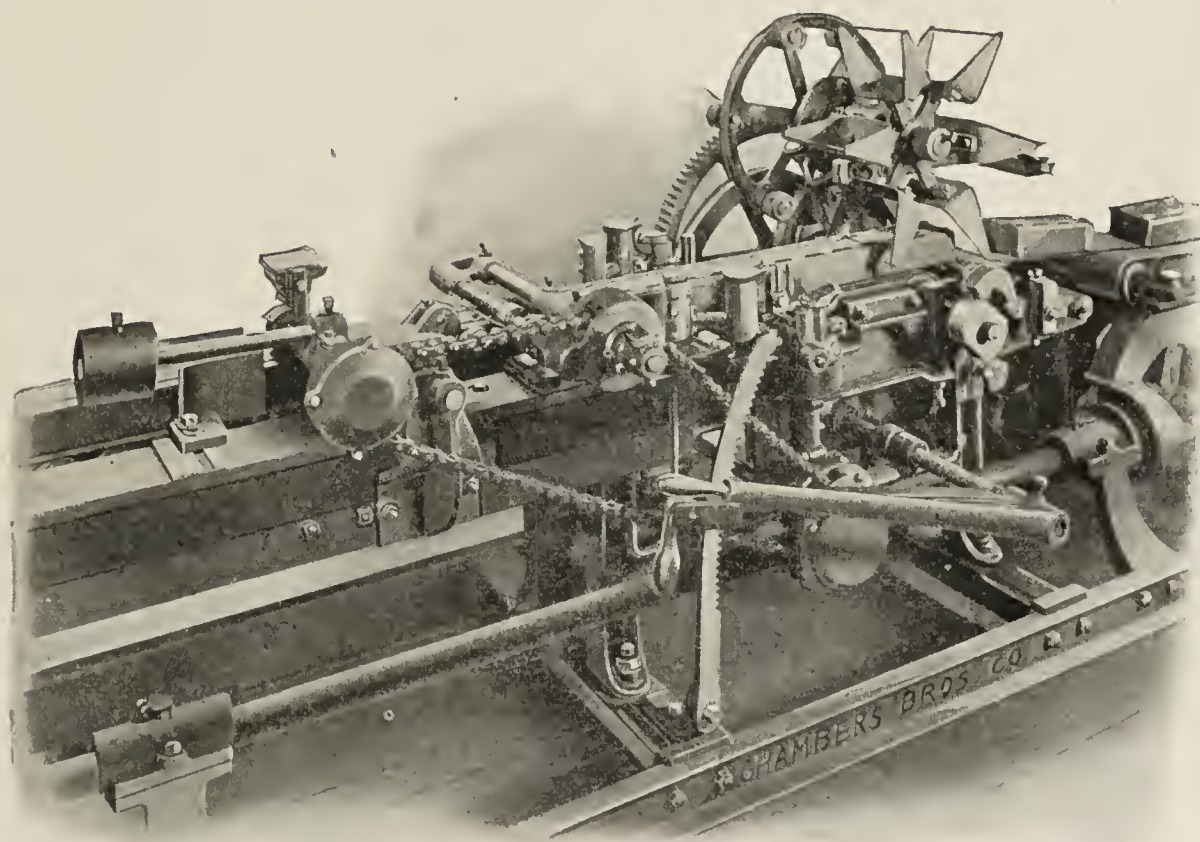
Governor Charles S. Deneen and President Edmund J. James, of the University of Illinois, are ex-officio members of the commission, which is completed by the appointment of Dr. Thomas Chrowder Chamberlin, the distinguished geologist of the University of Chicago. Dr. H. Foster Bain is in charge of the work.

SCRIP.

PAVING BRICK MACHINERY.



Round Corner Pavers Without Repressing.



The Round Corner Cutter Greatly Improved.

Ribbed brick with grooves for cement produced by the new Automatic Indenting Cutter.

CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets, Philadelphia, Pa., U. S. A.

59 West Jackson Boulevard, Chicago.

SEE AD ON PAGE 347.

Written for THE CLAY-WORKER.

NEW YORK AND VICINITY.



MUCH RAIN has fallen in and near New York during the past month, and has, thereby, interfered somewhat with the closing up of the brick business. But the agreement to shut down in all the Hudson River yards, which was to go into effect on October 15, was virtually carried out. The weather conditions made but little difference, excepting that the final clean-up was delayed a bit, perhaps. Interspersed with the rain were many fair days, and on those days there was no question about activity.

While reports are not all in, it seems probable that this season has been fairly prosperous and that manufacturers have made money, notwithstanding the slight difficulties which may have arisen in certain quarters. Speaking in a general way, there is little for them to find fault with.

The New York market offers few new features, and while shipments down the river are fair, demand has decreased. Prices are the same as they have been, but there are occasional soft spots which enable purchasers to obtain supplies below actual quotations. The building situation, which was poor during the latter part of September and has been a portion of this month, is improving it is said. Money is not quite so close and operators have been able to secure accommodation, and are now beginning again in about the usual volume. By the close of the month a much better market is expected, and it is thought that it will be possible to go through the remainder of the season without reducing quotations. Spot prices are: Front buffs, No. 1, \$32.00; grays, shaded and specked, \$32.00; white, No. 1, \$32.00; Hudson River common, \$6.50 to \$7.00; light hard, \$4.75 to \$5.25; pale, \$3.75 to \$4.25; No. 1 fire, American, \$25.00; No. 2 fire, American, \$20.00; Scotch, \$35.00.

Perhaps the most interesting feature of the month has been the abandonment by the asphalt trust of all paving contracts in New York City. It will be remembered that these contracts called for keeping the pavement in order for a specified number of years, varying with the liberality of the one who signed the contracts. Since the investigation into the affairs of the office of President Ahearn, of the Borough of Manhattan, the trust has been forced to live up to its contracts. Previous to that it was not required to fulfill those which referred to repairs. On the contrary, the streets were permitted to go for weeks and sometimes months in a positively dangerous condition, as has been shown by illustrations published in this journal. But as soon as the pressure was put on, and the requirements for repairs were forced, then the trust was obliged to give up its contracts, admitting its inability to fulfill them. Moreover, in thus abandoning the field it forfeits \$150,000, the amount of its cash bond. But even at that it is said the trust will actually make money.

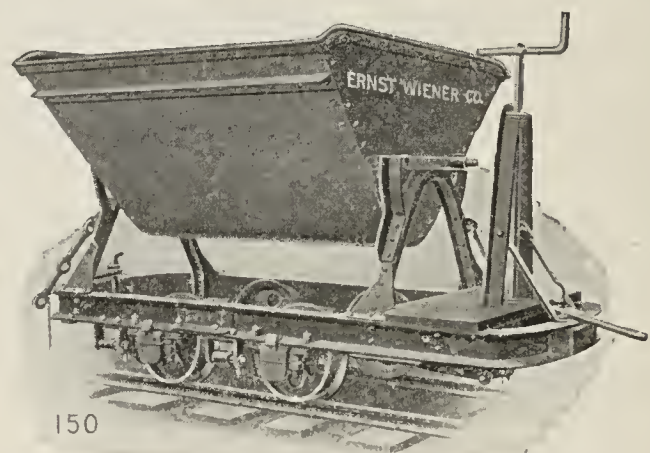
Perhaps the fact that the introduction of processed wood has superseded asphalt on many downtown streets has had something to do with this decision. It is impossible to say, but it is known that there has been more or less chicanery unearthed in the borough president's office, and the investigations are not done yet. This asphalt trust matter was but one of the difficulties with which the investigators had to contend. At any rate, this abandonment of the field is proof, if further proof were needed, that asphalt is not the pavement for a city street where the traffic is heavy, and the determination of the trust to refuse to do further work is sufficiently emphatic to cause other paving men to look after the reasons. Meanwhile it would seem as though brick men have an unusual opportunity to do business. There isn't so much graft in brick as there is in some other varieties of paving, though the quality of the material is such that the

people would get more for their money than they can get from any other variety of paving. It is to be hoped that this decision of the trust to get out of the New York field will be sufficiently suggestive to induce some effective work along the lines required by brick men in developing their business.

The practical completion of the outside work of the Singer Building discloses the fact that the combination of different colored brick, which was outlined by the architect, has made a pleasing looking structure. The combination of dark and light on the tower, which shoots up 612 feet above the pavement, is attractive and has the effect of making it stand out strongly against the sky, no matter what the condition of the light may be. It is brilliant in the sunshine, and it is light enough to be attractive when the clouds hang heavy over the city, as they frequently do. The claim that this building is the highest in the world is disputed by the Metropolitan Life Insurance Company, whose new tower will spring 680 feet into the sky. This is sixty-eight feet more than the Singer Building. The ball on the flagstaff on the latter is 708 feet above the pavement. Both buildings are more satisfactory in appearance than would be deemed possible under the circumstances. And while the Singer Building crowds forty-five acres of floor space into the area of less than a city block it will prove rather an ornament than otherwise to the downtown section of New York.

Sheriff Hayes has received an execution against the Kohl-Hepp Brick Company, 439 Fifth avenue, New York, for \$804, in favor of the American Process Company. He found nothing to levy upon, as the furnishings of the offices were the property of the Atlantic Cement Company, which is in bankruptcy, with Robert C. Morris as receiver. The Broadway Trust Company has obtained a judgment against the Kohl-Hepp Brick Company for \$2,536, as endorser on a note of the Atlantic Cement Company. John W. Gannon was president of both companies. The Kohl-Hepp Brick Company was incorporated February 2, 1906, with a capital stock of \$100,000, and bought a plant at South River, N. J., upon which a large sum was expended in improvements. The assets of the company are estimated at \$169,000. On September 1 it was reported that the liabilities were \$95,000.

BURTON.



HAVE YOU CONSIDERED

carefully the question of conveying your clay, sand, coal and finished materials by the aid of

INDUSTRIAL RAILWAYS?

These railways can be easily installed anywhere. They are cheaper, better and less troublesome than any other system of transportation and pay for themselves in a very short time.

We manufacture any style of Industrial Cars or Tracks required and carry a LARGE STOCK of equipment at our works and warehouses

Youngstown, Ohio — Brooklyn, N. Y.

Write for descriptive Catalog 2B.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
• COMPANY •

64-68 Broad Street, New York, N. Y.

715 Hartford Bldg., Chicago.
Barnaby Bldg., Bisbee, Ariz.

402 Oliver Bldg., Boston.
333 Cooper Bldg., Denver, Col.

ANNOUNCEMENT.

We cordially solicit the correspondence of those who may contemplate any changes in the construction or arrangement of their present plants, those who are figuring on complete brick plants and last but not least, those who are having troubles which they wish to have corrected.

Having no interest in any line of equipment of any character, we feel that we are in a position to offer our services with the interests of our patrons as nearly first at heart as possible.

For the present our headquarters are in the Commonwealth Trust Building, but after January First we will be found just across the street in the Third National Bank Building, now under process of construction.

Yours for your patronage,

LUCE ENGINEERING CO.,

St. Louis, Mo.

STYLED "212"

This car is built for rough usage and we can thoroughly recommend this design for your service, but we build cars, either of lighter or heavier construction. Let us know your wants, as we are one of the largest brickyard equipment manufacturers in the world.



**Yard cars.
Dump cars.
Transfers.
Turntables.
Decks.**

**Switches.
Kiln bands.
Pallets.
Rail.
Special
designs.**

Write for our Catalogues '07 Serial. Complete estimates given on your equipment.

The Cleveland Car Company

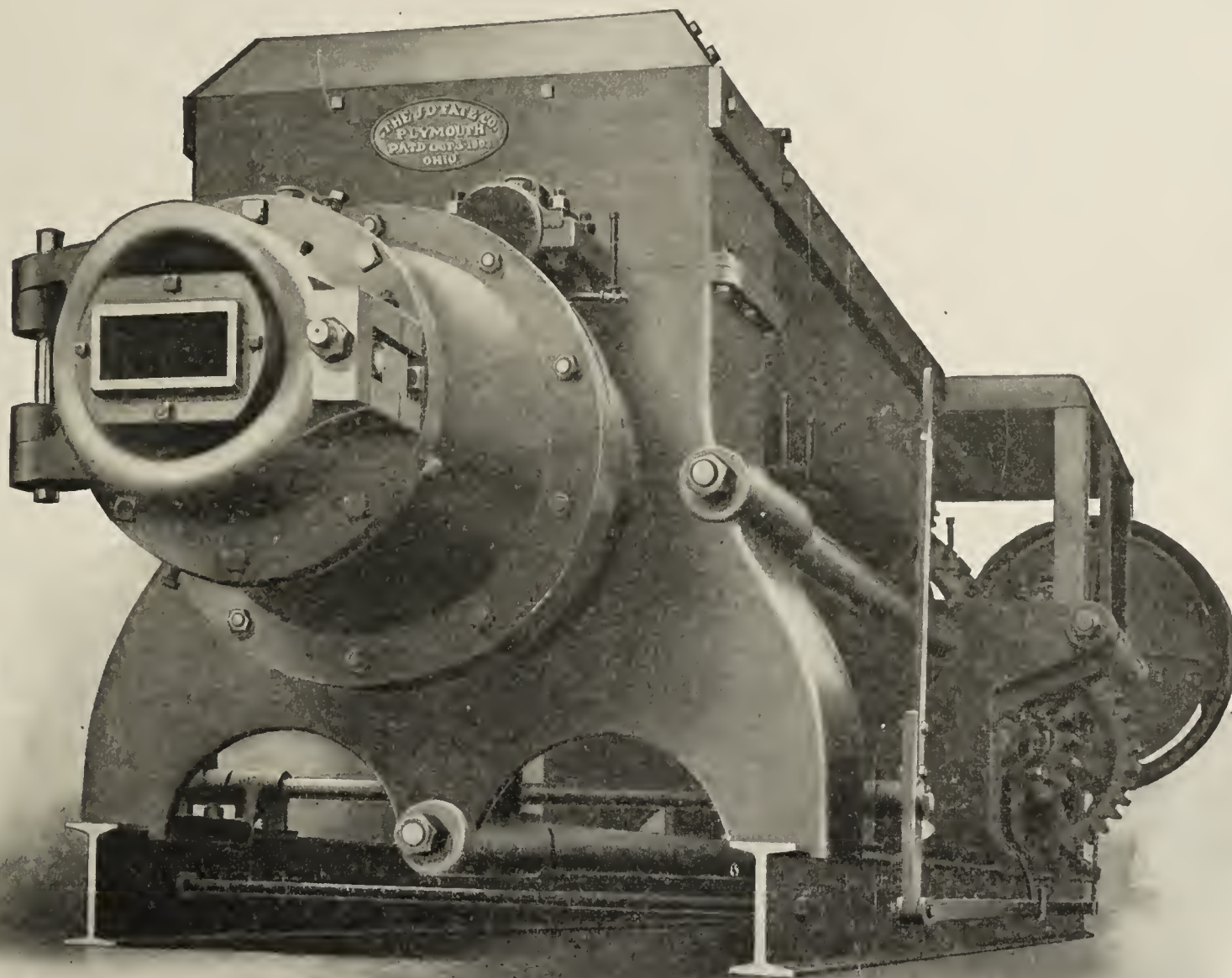
West Park, Ohio, Suburb of Cleveland.

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THE FATE SPECIAL

The Largest Combined Brick Machine in the World.



Length of machine over all, 25 ft. Width, 6 ft. 4 in. Height, 6 ft. 6 in. Weight, 35,000 lbs. Mounted on steel "I" beams, has interlocking hubs and independent knives. Capacity, 15,000 to 20,000 brick per hour. All the bearings have automatic wick oiling device and all those with heavy end thrust are of the marine type.

One of these machines has been recently installed in each of the following plants: Johnson Bros.' Clay Works, Iowa; La Prairie Brick Works, La Prairie, Quebec; Fredonia Brick Co., Fredonia, Kansas, and the Logan Brick Co., of Logan, Ohio, and all are doing fine work. This is especially true of the one at Logan where they make a paving block $4\frac{3}{8} \times 4\frac{3}{8} \times 9$ and weighing 13 pounds and they get a capacity of about 90,000 of these blocks per day, being more than they formerly got with two large machines. If you want the largest, strongest and best brick machine and one with the largest capacity, write us and we will tell you more about this machine.

The J. D. FATE CO.,

Plymouth, Richland County, Ohio.

Mention The Clay-Worker.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

FOR SALE—Sixty thousand dollar brick plant, center gas and shale belt. Good railroad facilities and business. Write, **FRED PFENDLER**, Homestead Bldg., 10 3 cm Muskogee, Ind. Ter.

FOR SALE—An up-to-date dry press brick plant, Fernholtz machinery, with 20 acres of fine clay. Plant well located and doing a nice business. Can be bought at a bargain. Write to **W. T. PITTS**, 10 2 dm Indianola, Miss.

FOR SALE—Within 100 miles of the City of Chicago, 60 acres of the best Illinois fire clay and shale land. Will join party in erecting plant or sell outright. This is worthy of thorough investigation. Address, 8 6 d **G. A. R.**, care Clay-Worker.

WANTED—Experienced pressers, turners, etc., for stoneware plant in vicinity of New York City. Good pay and steady employment to reliable men. Address with references, **P. O. BOX 142**, 8 3 d Brooklyn, N. Y.

WANTED—A capable man for terra cotta work; one who understands pattern work, molding and cutting and laying of towers. Must have roofing tile experience. Good opportunity for right party. Address, **DETROIT ROOFING TILE CO.**, 10 1 dm 304 Bamlet Bldg., Detroit, Mich.

FOR SALE—Two brick and tile machines, Nos. 9 and 10 Brewer. Have made 5,000 per hour on No. 9 and 10,000 on No. 10. All in good condition. Reason for selling, clay not suitable for stiff mud process. Will change to dry press. Address, **D. A. LAYTON**, 7 tf d Marion, S. C.

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address **J. J. KOCH**, 5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE—ENGINES AND BOILERS.**BOILERS.**

- 4 72x18 horizontal tubular, high pressure.
 - 1 84x18 horizontal tubular, standard.
 - 1 78x16 horizontal tubular, standard.
 - 1 72x16 horizontal tubular, standard.
 - 5 72x16 horizontal tubular, standard.
 - 1 66x16 horizontal tubular, high pressure.
 - 1 60x18 6-inch rivetted flue, standard.
 - 3 60x16 horizontal tubular, standard.
- Sixty others, all styles and sizes.

ENGINES.

- 20x48 Wheelock.
 - 18x42 Hamilton.
 - 18x36 Wright.
 - 16x32 Buckeye.
 - 18x26 H. S. & G.
 - 16x20 Brownell.
 - 14x20 Atlas.
 - 14x14 Vertical.
- Forty others, all sizes and styles. Also pumps, heaters, tanks, saw mills and general machinery. Send us specifications of your wants.
- THE RANDLE MACHINERY CO.**, 10 tf d 1735 Powers St., Cincinnati, Ohio.

WANTED—Second-hand swing jaw rock crusher. Quote lowest price, stating size and condition in first letter. Address, **BULLARD BRICK CO.**, 10 1 cm Jackson, Miss.

WANTED—Position as superintendent of modern brick plant, by one who can give good results. Can make plans, lay off and construct modern plants. Address, **BOX 1402**, 10 1 c Care Clay-Worker.

WANTED—Practical man for superintendent of plant in the West producing fire, hollow and building brick. State experience with clays and manufacturing. Give terms. Address, **POSTOFFICE BOX 528**, Chicago, Ill.

WANTED.

We are in the market for a second-hand heating apparatus, fan, etc., and coil containing about eight or ten thousand feet of one-inch pipe. Address, **SOUTHERN BRICK AND TILE CO.**, 10 3 d Louisville, Ky.

FOR SALE—One American No. 2 Giant auger machine, with 42 by 10 F. C. pulley and 7-inch solid round tile die. Price \$300.00. Machine used less than three months and in first-class condition. Address, **AKRON HI-POTENTIAL PORCELAIN**, 10 1 dm CO., Barberton, Ohio.

TO LEASE—Former brickyard site of the Middlesex Brick and Tile Company, on shore of Pentwater Lake, Michigan. Chambers machine. Railroad and government harbor. Abundance of clay adjoining plant makes fine white brick. Cheap labor. Also marl deposit. Address, **C. MEARS**, 345 Ohio street, 10 3 cm Chicago, Ill.

WANTED—Position as manager or superintendent of soft or stiff mud brick plant, thoroughly understand the business from shale bank to the building; at present in charge of plant producing 75,000 brick per day. Have been with present concern ten years; have satisfactory reasons for desiring a change; can give best of references as to habits and ability. Address, **J. L. B.**, 10 1 c Care Clay-Worker.

BRICK PLANT.

To Lease or Sale of Half Interest. Success soft mud machine, capacity 40,000. Standard steam dryer; two boilers; engine; steam hoist; square kilns; side track; commissary; good clay. Has been run but a few months and practically new. One and one-half miles from a town which has grown from 8,000 in 1900 to about 30,000 at present date. Good demand for brick at \$7.25. Reason for selling, other business. Address, **WALTER G. KIRKPATRICK**, 10 1 d Jackson, Miss.

FOR SALE—Cheap, a complete line of pottery machinery, power and dryer, used only a short time. Address, **W. T. LIGGETT**, 10 1 cm Metropolis, Ill.

WANTED—Second-hand dryer cars, single or double deck. Quote lowest cash price in first letter. Address, **NORRISTOWN BRICK CO.**, 10 1 c Norristown, Pa.

WANTED—A thoroughly capable man to take charge of the burning and kiln department of a dry press brick works. We have up-draft kilns. Would prefer a man fitted to superintend such a plant. Address, 10 1 d **HARRY**, care Clay-Worker.

WANTED.

A man to make himself generally useful. One who can make a plaster mold, experiment with glazes, enamels, clays and repair kilns. Address, **X. Y.**, 10 3 l Care Clay-Worker.

WANTED—Position as superintendent or manager by practical man who will take entire charge of plant. Understand the manufacture of common, fire, paving and building block, sewer pipe and tile; stiff, soft and dry press processes. All kinds of kilns. Address, **READER**, 10 1 cm Care Clay-Worker.

FOR SALE—The following Raymond machinery, capacity 20,000 to 24,000 per day: One Daytonia No. 2 brick machine, one 8-ft. pug mill, one No. 20 separator, one board delivery cutter, one 30-ft. conveyor. Clay not suited for stiff mud process. Address, **JOS. H. WHITE & SON**, 10 1 cm Easton, Md.

DRY PRESSES FOR SALE.

One 2-mold U. S. brick press. One 2-mold Boyd brick press. One 4-mold brick press of standard make. One 3-mold Andrus brick press. Dry pan, pulverizer, screen and transmission. One set of plates for 7-foot wet pan. 1,000 horse power Corliss engine and boilers. **B-K BRICK CO.**, 9 tf d Denver, Colo.

WANTED.

By one of the largest face brick, fire brick, common brick and pottery plants in the South first class help of all kinds. For our face and fire brick plants we want first class pressman, setters, tossers, burners and laborers of all kinds; also men that are handy with the trowel on repair work around kilns. For our pottery plant we want first class jolly men, pressers and turners for majolica ware. We have a fine climate the year round, no cold weather, pleasant surroundings, and our superintendents are all northern men. To good men that understand their business we can offer good inducements and steady work all the year around. Address with experience, wages expected, etc. to **SOUTH**, 9 3 dm Care Clay-Worker.

FOR SALE.

Up-to-date stoneware plant in Southwest Texas. One each 18, 20 and 24 ft. down draft and one 12x14 ft. Howard kilns. Taplin, Rice & Co. 8 ft. Chaser Mill. 3 turning and 3 jolly wheels. Shop fully equipped. Output 100 cars per annum and equal in quality and appearance to any out of state. Unable to supply demand for goods @ 7½ cents and 8 cents per gallon Northern computation. Maximum carload rate 20 cents. Leaving to take charge of interests in Mexico. Will retain \$5,000.00 stock in new company. Address **SAENGER POTTERY WORKS**, 8 3 c Elmendorf, Texas.

WANTED

To let contract to responsible, practical brickmaker to make ten million brick. Will furnish modern equipped plant that can be operated the year round. Steam shovel in pit; plenty clay, cheap labor and fuel. For further information address
9 2 d
BRICK,
Care Clay-Worker.

FOR SALE—A 75 h. p. gas engine, complete with air tank and gasometer, in good condition. Let go cheap if sold at once. Address
RAY,
9 3 L
Care Clay-Worker.

WANTED—A superintendent of a plant making firebrick and face brick. Salary \$200.00 per month. State qualifications and experience, and give references. Address,
RICHARDSON - LOVEJOY ENGINEER-
10 1 L
ING CO., Columbus, Ohio.

FOR SALE.
Well equipped fireproofing, tile and brick plant near Portland, Ore., runs the entire year. Will take the entire output of plant at a good price per 1,000; \$6,000 needed to handle this plant. Best of reasons for selling. Address, C. E. FULLER,
8 tf d
374 Water st., Portland, Ore.

FOR SALE
STEAM SHOVELS, CARS, LOCOMOTIVES, and RAILS for modern clayworking plants. Send for list No. 30. Give us your requirements.
THE MALES CO.,
26 Cortland Street, New York, N. Y.,
1508 First Nat'l Bank Bldg., Cincinnati, O.

BUSINESS WANTED
I can sell any business or real estate that is salable, no matter where located. I reach the people who buy. A trial will convince you. Established 1881. If you want to buy or sell,
Address
FRANK P. CLEVELAND,
Real Estate Broker,
965 Adams Express Bldg.,
10 tf d
Chicago, Ill.

BUSINESS OPPORTUNITY.
A GREAT CHANCE
For an experienced business man fully posted on the sewer pipe or fireproofing business to get a controlling interest in a first-class modern factory located near a large city, and having abundant supply of raw materials, coal, fire-clay and natural gas—all adjoining plant. The present owners are looking for a practical man who could take the position of President or General Manager, and operate the business. A very attractive offer will be made to a man of ability and experience who has from \$30,000 to \$40,000 to invest. Address
WALTER K. HOOD,
10 1 c
421 Wood St., Pittsburg, Pa.

[Continued on next page.]

TO PRODUCE POTTERY ECONOMICALLY USE

CROSSLEY MACHINERY

THE CROSSLEY MFG. CO.,
TRENTON, N. J.

Robert Twells Will Buy or Sell Second-Hand Brick Machinery.

For some time past, I have been devoting my time to assisting fellow clayworkers who have had trouble in burning their ware, and have always succeeded in obtaining better results in burning, as well as improving the ware, shortening time of burning, saving coal and getting the desired color.

SECOND-HAND BRICK MACHINE EXCHANGE.

I have now opened an Agency or Exchange for second-hand brick machinery and brickyard supplies of every discription. Why buy a new machine when you can buy a good second-hand machine for half the price? Many machines are taken out to make room for one of larger capacity, or because it was not adapted to the particular clay it had to work, or because the clay bank becomes exhausted, or the plant burned down, or the owners failed in business, or for a number of reasons, none of which reflect upon the machine itself. Tell me what you want, and I will tell you at once whether I can furnish it.

If you are putting in new machinery, and have any machines or supplies that you wish to dispose of, send me a description of same, stating exact condition of machine, and the lowest cash price you will take for same, f.o.b. cars at your place. Listing it for sale with me will not hinder you from selling it yourself if you get a buyer.

ROBERT TWELLS, Walnut Hills, Ill.

Mention the CLAY-WORKER

When writing to Advertisers.

The Richardson-Lovejoy Engineering Company,

Consulting Engineers and Factory Architects.

Manufacturers of Controlling Apparatus and Special Machinery.

Geological Examination of Properties.
Mines and Mining.
Chemical Analyses.
Clay Testing.
Plants Designed and Construction Superintended.
Dryers for Any Clay Product.
Kilns of Every Type.
Plants Modernized.



PUBLICATIONS.
Brick Works Engineering.....Free
Brick Kilns.....Free
Apparatus for Controlling the Drying of Clay
Prodnts.....Free
Apparatus for Controlling the Burning of
Clay Prodnts.....Free
Drying Brick.....\$.25
Burning Brick in Down Draft Kilns.....1.00
Kiln Records.....1.00
Scumming and Efflorescence......50

TECHNICAL BUREAU FOR CLAYWORKERS, 1534 N. High St., Columbus, Ohio.

WANTED, FOR SALE, ETC.

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.
THE T. B. TOWNSEND BRICK & CON-
TRACTING CO.,
5 tf d Zanesville, Ohio.

FOR SALE—Steele & Sons No. 4 brick ma-
chine and cutter, pug mill, disintegrators,
crushers, winding drum, cars, etc., used one
month, same as new. Inquire,
BOX 463,
7 5 cm Ft. Wayne, Ind.

WANTED—A superintendent for fireproof-
ing and sewer pipe plant. One who un-
derstands the burning of the goods and the
machinery, both press and machine. Please
state experience and references; also
whether a married or single man and sal-
ary expected. Address, W. E. D.,
10 1 d Care Clay-Worker.

FOR SALE.

My brick plant, located in the village of
New Bremen, a prosperous town of 2,000
population. The plant is in first-class con-
dition and on a paying basis. Will sell
very reasonable and give very liberal
terms, owing to ill health. Address,
J. C. STEINEMANN,
10 1 cm New Bremen, Ohio.

FOR SALE—One of the best brickyards in
the Northwest. Fine deposit of clay.
Plant equipped throughout with modern ma-
chinery, including Penfield brick machine,
Potts disintegrator, Benson side cutter,
Bechtel system of trucking, good kilns and
dryer sheds, machine shop, barns, boarding
house for employees. Everything in first
class shape. A bargain if sale is made at
once. Reason for selling, owner moving
away. Address MINN.,
10 tf d Care Clay-Worker.

WANTED

BRICK AND TILE PLANT

at Rich Hill, Mo., 80 miles south of
Kansas City, Mo. Three lines of
railroad. More shale and fire clay
than can be used up in fifty years.
For full information write,

Secretary Commercial Club,
10 3 dm Rich Hill, Mo.

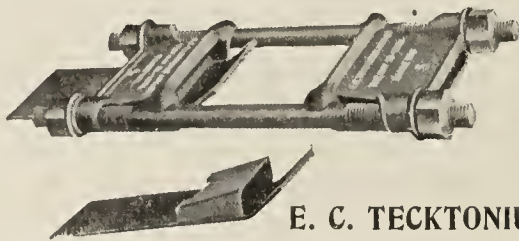
WANTED POSITION

As superintendent by an up-to-date
man experienced in the manufacture
of all clay products including fire,
building and paving brick. Hollow
ware, conduits and other brick and
tile of either shale or clay. Under-
stand all the different processes, and
the handling of men. Also able to
superintend the building of factory
for either process. Strictly sober.
Address R. M. S.,
10 2 c Care Clay-Worker.

[Continued on page 430.]

MANGANESE
FOR ALL USES.
LUMP, GRAIN AND GROUND
60-70% 70-80% 80-90% OXIDE.
CLAY WORKERS GOODS A SPECIALTY.
SAMPLES AND PRICES ON INQUIRY.
METALLIC ALLOYS CO.
99 JOHN ST NEW YORK, N.Y.
SUCCESSORS TO KENDALL & FLICK.

Philadelphia **LINK-BELT COMPANY** Indianapolis
New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY

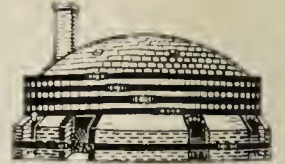


The Best and Cheapest

BAND LUG

on the market.

Write us for price.



E. C. TECKTONIUS MFG. CO., Racine, Wis.

6 to 8 Per Cent. Interest.

Many Southern Cotton Mill Stocks pay
above rates. We offer some gilt edged 7 per
cent. Preferred Stocks, County and Munici-
pal Bonds, to net 5 to 6 per cent.

Write for our offerings. Would like to
have offers from sellers.

LeRoy Davidson,

Banker and Broker,

Charlotte, N. C., and
Wall St., New York, N. Y.

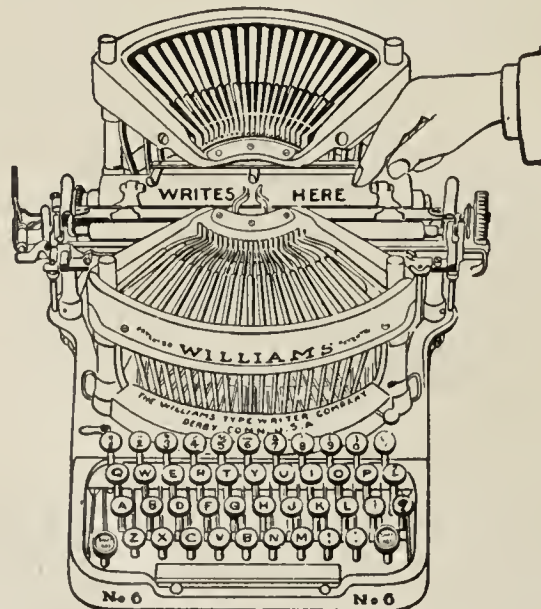
Money to Loan on
Good Business,
Well Located City
Property in Large
Cities, in any part
of the U. S.

SEEING

Saves the beginner time when learning.

Saves the learned time when beginning.

New
Number
Six
Visible
Writer



Saves time, energy,
worry and money.

Gives speed, simplic-
ity and beautiful work.
Single shift. Strictly
visible writing.

Old machines of any
make taken in trade.

The Williams is sold
under a positive guar-
antee and on easy
terms.

If you want the best
value in a typewriter
ever offered, write us.

Williams Typewriter Agency,

Indiana Agency, 221 East Ohio Street, Indianapolis, Ind.

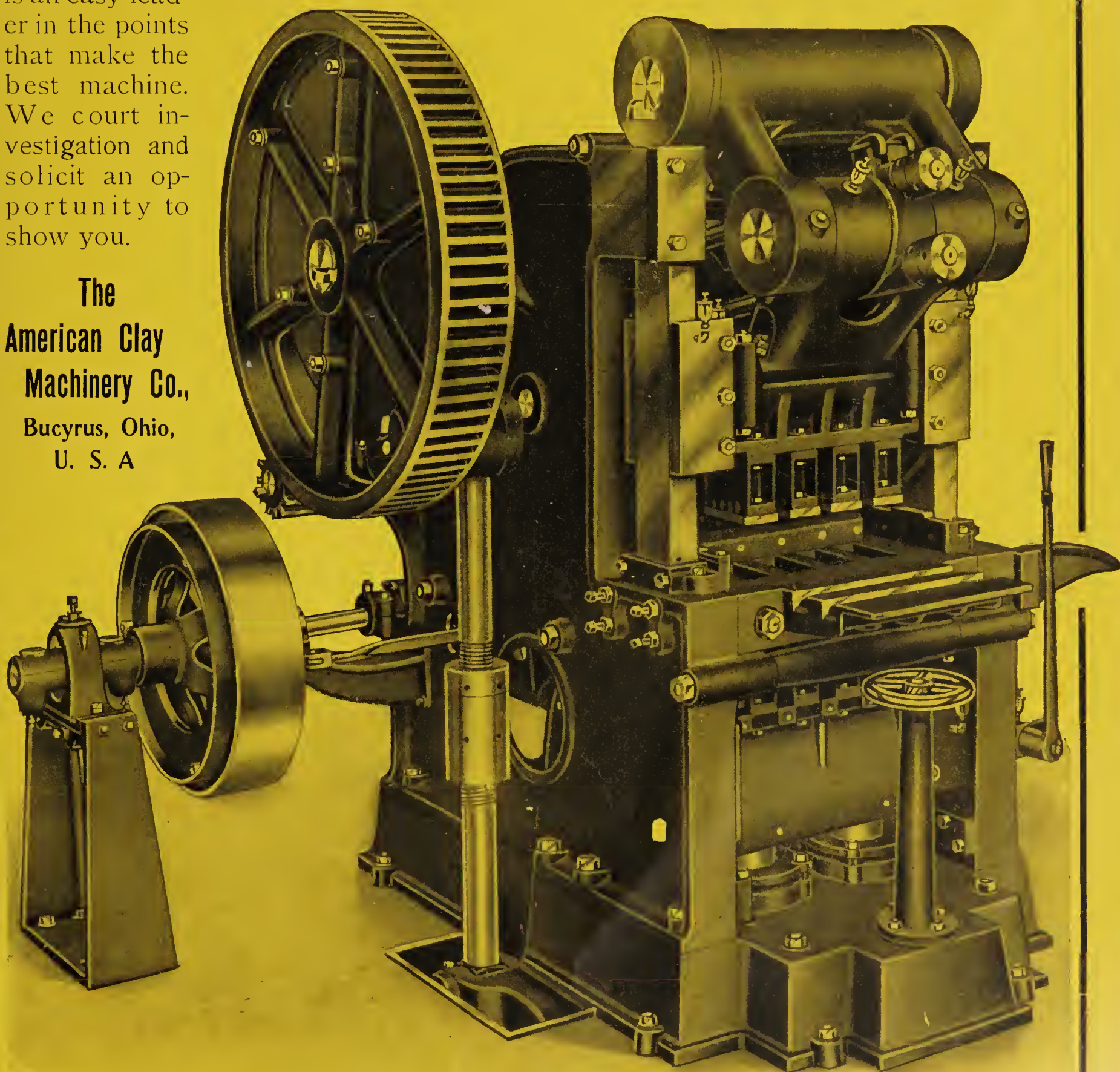
Home Office and Factory,
Derby, Conn.

Old Machines Taken in Trade.

Why the Model "B" Dry Press Leads

Could a competition of presses last for years we are confident that long after other machines were down and out the "Model B" would still be running with the precision of a clock, delivering perfect product at every revolution. This is our opinion, but it is based upon our knowledge of the care of designing of this machine, the exaction with which the raw material is selected, and the censorship in its building. Then, too, there are the records of its performance. All we ask is that you investigate thoroughly before you buy a press or any other Clayworking Machinery. Ours is an easy leader in the points that make the best machine. We court investigation and solicit an opportunity to show you.

**The
American Clay
Machinery Co.,
Bucyrus, Ohio,
U. S. A**



Four-Mold Model "B" Dry Press Brick Machine.

A Dependable Pipe Press

Compare this cut of our Sewer Pipe Press with the cut of any other press advertised. Note the superiority of our press and its construction. It is really impossible for

us to adequately show the superiority of our machine in an ordinary cut. We should like to go into the matter thoroughly with you. We want to demonstrate that we have the very best Sewer Pipe Machinery on the market. Not

Presses alone, but every machine and appliance needed in a modern plant, no matter how large or small the plant may be.

We build every machine and appliance needed to manufacture Clay Products of any kind by any process. Correspondence solicited.

**The American
Clay Machinery
Company,**

Bucyrus, Ohio, U. S. A.



Soft Mud Brick Machinery



There is many a clay which can best be worked on Soft Mud machinery. To handle such clay on Stiff Mud or Dry Press machinery would prove a failure in the long run.

We build a complete line of Soft Mud Brick Machinery and appliances to meet the needs of such clays. We are not interested in selling you machinery which may prove a failure. We have the very machinery you require to make a success of your business, and that is the only machine we will sell you.

Our Upright Stock Brick Machine is built for long and continuous use. It has many satisfied users who will cheerfully recommend it.

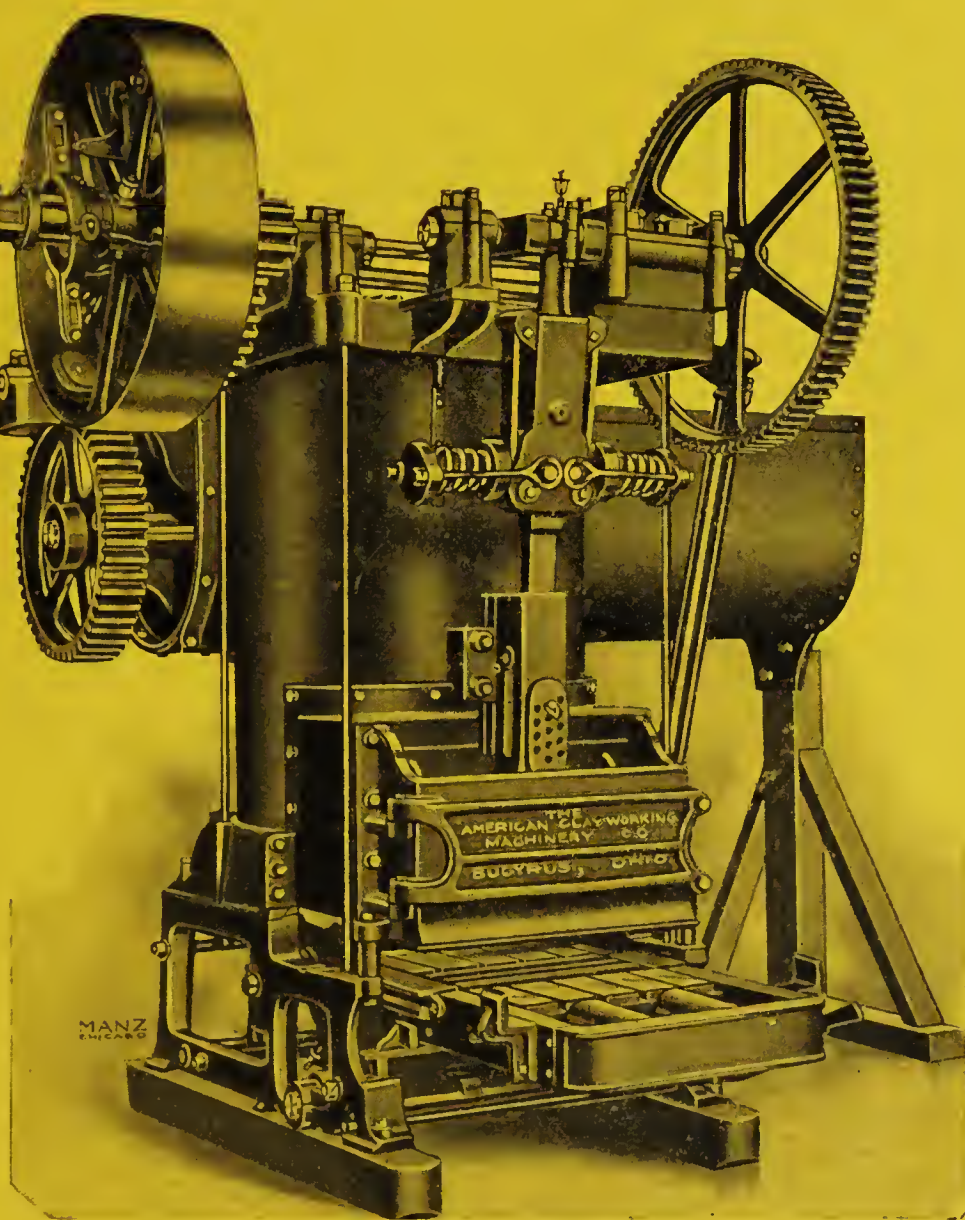
Our line of Plunger machines is complete, with a size range to meet your requirements.

Our Eagle Horse Power and Eagle Steam Power machines are popular favorites in their class.

Every machine we build has a quality behind it attained only by faultless designing, excellent material and superior workmanship.

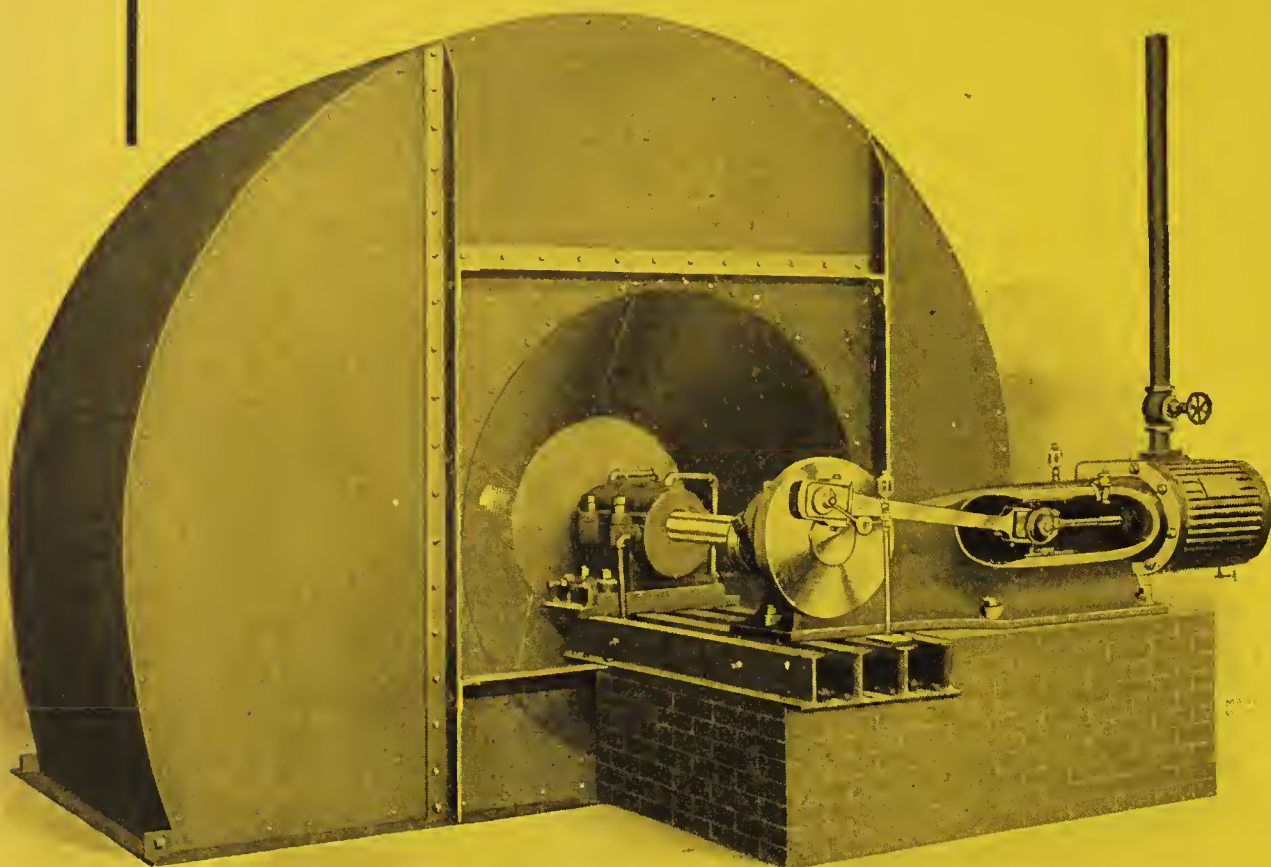
In buying the "Built Right Run Right" line you buy quality and that means successful operation.

We build every machine and appliance needed to manufacture Clay Products by any known process. Every machine built in our own factories, so that we are able to guarantee the quality because we know that quality to be all that material and workmanship can attain. Sand-Lime Brick Machinery a specialty.



The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

Waste Heat Dryers And Other Dryers.



We are Dryer Specialists in every sense of the word. We are not content with making one kind of Dryer, but make every kind. We are, therefore, in a position to consider your interests without any bias or prejudice toward any one kind of Dryer. This insures your getting a Dryer which will most successfully handle your clay, whether that Dryer be a Waste Heat, Steam, Hot Air, or Furnace Dryer. We build a full equipment for every Dryer in our factory, including Fans, Heaters, Cars, Transfers, Turntables, etc. We also build and equip Dryers operated by the carless system.

If you are in the market for a Dryer let us look over your plant, consider the clay and conditions, and design you a system that will be a success. Then if you place the order with us the equipment will be made in our own factory and will be of our standard quality.

As it is with Dryers, so it is with every class of Clayworking machinery. We build a full line for making Clay Products by every known process.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

**ALWAYS
ON HAND**

THE AMERICAN CLAY MACHINERY Co.

Willoughby, Ohio, U.S.A.

**PLANTS
DESIGNED**

**COMPLETE EQUIPMENT
FURNISHED,
AND INSTALLED
SET IN OPERATION**

SAND-LIME BRICK MACHINERY





GRIZ

REMARKABLE OFFER.

We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for

\$3.00



The New Way.

“POST” SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen.

Guaranteed by Makers.

NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

Gen. Lew. Wallace: The author of “Ben Hur” writes, “I have tried every kind in the market and unhesitatingly give the preference to the “Post.”

Judge Luther L. Mills, Chicago: The “Post” Fountain Pen is the Best I have ever used; simple, reliable, durable.

Dr. Josiah Strong: The great author of “Our Country” says: “I have been hunting for twenty years a perfect fountain pen; have tried many, and they have tried me; but the “Post” leaves nothing to be desired.”

The CLAY=WORKER, INDIANAPOLIS,
—INDIANA.

**DO
IT
NOW**

T. A. Randall & Co., Publishers The Clay=Worker, Indianapolis :

You will please send me THE “POST” FOUNTAIN PEN and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued, beginning with the.....Enclosed find \$.....

Name.....

Postoffice.....

Street and Number.....

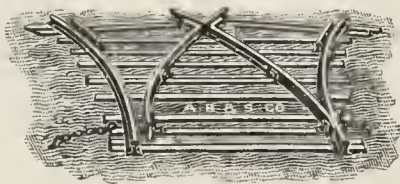
County..... State.....

FOR SALE.

One steam power and one h. p. soft clay machines.
 One feed water boiler heater.
 One wheel scraper.
 A number of dryer cars.
 Two second-hand dump carts, practically as good as new.
 All of the above in first-class condition.
 Address,
 THE HORTON MANUFACTURING CO.,
 6 tf L Painesville, Ohio.

Do you want to sell your brickyard?
 Do you want to buy a brickyard?
 If you want to buy, sell or exchange any kind of business or real estate, anywhere at any price, address
 FRANK P. CLEVELAND,
 Real Estate Expert,
 965 Adams Express Bldg.,
 5 tf d Chicago, Ill.

FOR SALE—The plant of the Poteau Brick Co., at Poteau, Ind. Ter., consisting of one four-mold Ross-Keller press; nine-foot Frost dry pan; 50 horse-power boiler; 40 horse-power engine; three up-draft kilns; railroad switch in yard; large deposit of shale and unlimited supply of fire clay. Coal cheap and convenient. Plant in good running order and behind with orders. The owners want to sell because they have too much other business and cannot attend to it properly. Will sell outright or will sell an interest. A splendid opportunity for a man who has had experience and can manage business. Address
 POTEAU BRICK CO.,
 9 2 cm Poteau, Ind. Ter.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.
 THE ATLAS CAR & MFG. CO.,
 7 tf d Cleveland, Ohio.

(See additional ads under Table of Contents.)

The Department of Clayworking and Ceramics

Established by the Legislature
 in 1902 at the

New Jersey State College,

RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

C. W. PARMELEE, B. Sc., Director.
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OHIO STATE UNIVERSITY

Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture. Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

For information or catalogue address,
 Prof. EDWARD ORTON, JR.,
 Department of Ceramics.
 DR. W. O. THOMSON, President,
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COX'S Special Drawn Coil Wire is

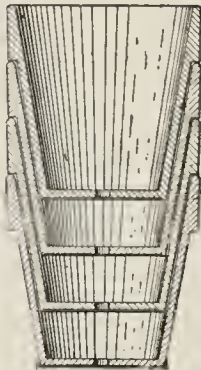
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

GEO. S. COX, East Liverpool, Ohio.

For End-Cut, Side-Cut
 and Automatic Tables.

Satisfaction guaranteed.
 Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

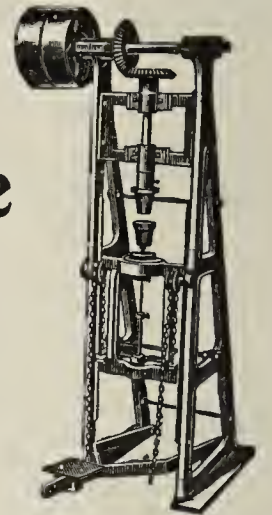
(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
 4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.



The Rockwood Mfg. Co.,

1801 English Ave.

INDIANAPOLIS, IND.

The Kiln of Kilns is the "IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

For full particulars please apply to

J. OSMAN & CO., Ltd.,

Cable Address: Dampening, London.

Arundel St., Strand, London, W. C.

THE WEBB WIRE WORKS

MANUFACTURERS OF

MUSIC WIRE

NEEDLE WIRE

NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE CUTTING WIRE, drawn especially to withstand abrasion.

Send for prices of wire in coils.



CANADIAN TRADE. Wooden Brick Pallets.

WRITE US

BARCHARD & Co., Limited,

135-151 Duke St.,
 TORONTO, CANADA.

Improved Belt Conveyors



For carrying all kinds of material, gritty and otherwise. Gradual, uniform curve of belt secured without complicated parts.

Bearings thoroughly lubricated and *dust-proof*. Economy and satisfaction—nothing to get out of order.

We manufacture Complete Handling Equipments.

H. W. Caldwell & Son Co.

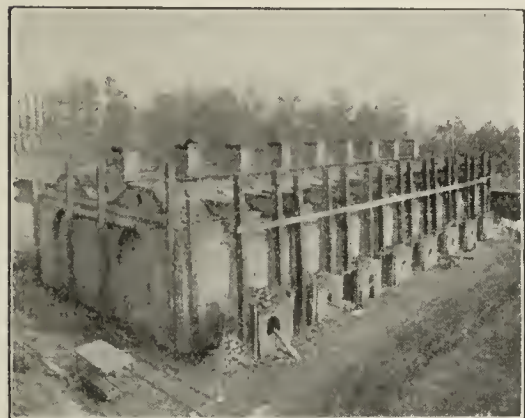
Western Ave., 17th-18th Sts., CHICAGO.

95 Liberty St., New York. Woodward, Wight & Co., Ltd., New Orleans, La.

Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

ANY KILN OF THE MORRISON OR WINGARD TYPE CAN EASILY BE CHANGED INTO THE DENNIS DOUBLE DOWN DRAFT KILN.



Double Up and Down Draft Kiln.

1st. They can be built as cheaply and are more durable than old style up draft Dutch kilns.

2nd. I can change your old style up draft kilns into my type down draft,

3rd. My type kiln needs no roof, consequently saves lumber, reduces fire risk, saves labor of removing and replacing kiln roof each burn.

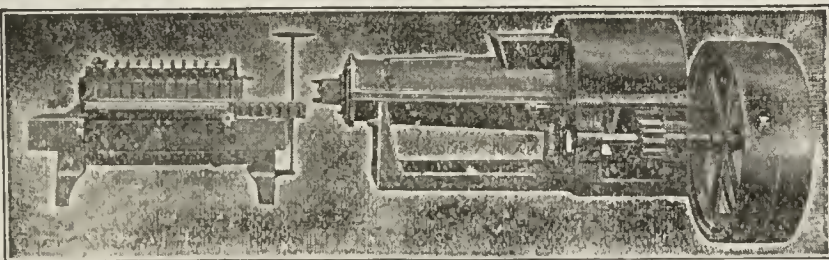
4th. Less skill required in burning; draft under perfect control; easier to direct heat to any desired point; practically burns all hard brick.

In conclusion, you cannot afford to ignore these statements, as their truth is easily verified through investigation, these kilns being no experiment, but being in use by many intelligent, practical and successful brickmakers, whose names I shall be pleased to furnish you, whose plants are easy of access and whose statements cannot be biased by personal interest.

Wood burning kilns changed to coal burning. Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

F. W. DENNIS,

145 WATER ST., NORFOLK, VA.



THE PIONEER.

Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-working industry for the past thirty years.

It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

The Kells Foundry and Machine Co.

ADRIAN, MICH.

C. K. WILLIAMS & CO.,
EASTON, PA.

Largest Manufacturers in
United States of

**Brick and Mortar
COLORING.**

Correspondence solicited.

Samples and estimates cheerfully furnished
on application.

Chattanooga Paint Co.,

Chattanooga, Tenn.

Manufacturers of

**Red Oxides for Brick-
makers' Use.**

**Eclipse
Mortar Colors,**

Red, Brown, Buff, Black.

GABRIEL & SCHALL

P. O. Box 1712.

205 Pearl Street.

NEW YORK.

Sole Importers in the United States of the

Precipitated  Carbonate
of Barites

The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

**The
COLOR**

That Never fades.

Tried out for 20 years.

For mortar, brick, cement,
stone, etc.

Red, brown, buff, purple and
black.

RICKETSON MINERAL PAINT WKS.,

MILWAUKEE, WIS.

EXPERT SERVICE.

Instructions how to improve burning Paving Brick, Drain Tile and Face Brick. Saves Coal, Time and Labor.

New simple method to create draft from the start of the fires.

Down-draft kiln plans for sale.

The least expensive and most effective kiln on the market.

ANTON VOGT,
Care Clay-Worker.

H. H. Wright, Maitland, Mo., writes under date of May 22, 1907, "I am just emptying a kiln today—splendid burn. I can say truly that I never before burned a kiln so easy, as I have this one under your instructions. We always made hard work of it."

ATTENTION.

Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

Do you want to buy a

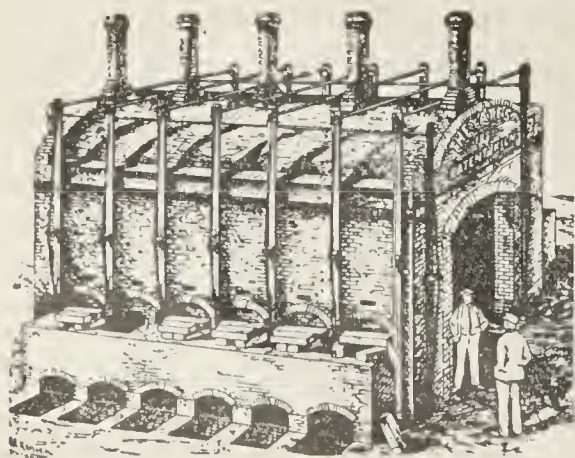
Good Clay Screen?

If So

Correspond with

Stedman's Foundry & Mach. Works

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For Economy of Fuel and Percentage of Hard Burned Brick,

This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

ALFRED YATES,

SHAWMUT, PA.

Or Eastern Terra Cotta, Brick and Tile Co.,
327 Old South Bldg., Boston, Mass

White Pine Pallets

**For Brick, Roofing Tile,
And Sewer Pipe Boards.**

The Best Are the Cheapest.

Send Specifications and Get Prices.

Mershon, Schuette, Parker & Co.,

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Converted to Leviathanism.

"Enclosed herewith please find our check for the elevator belt recently ordered from you. It is probably unnecessary for us to say that the belt is all we could wish for it to be, in fact, it is much more satisfactory than the rubber one which it replaced.

"Thanking you for your courteous dealing, and assuring you of our patronage for anything in your line we may need in the future, we beg to remain,

"Yours very respectfully,

"Signed: VALLEY BRICK & TILE Co."



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BUFFALO—40 Pearl St.

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TRIPLE PRESSURE BRICK PRESS

The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

We build and equip complete

SAND-LIME BRICK PLANTS,

SHALE AND CLAY BRICK PLANTS.

Ross-Keller Triple Pressure Brick Machine Co.,

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MANGANESE.

BEST QUALITY MANGANESE, CAREFULLY AND UNIFORMLY PREPARED FOR BRICKMAKING. WRITE US FOR SAMPLES AND PRICES.

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MINERS AND GRINDERS.

If you intend to build or rebuild your brick plant acquaint yourself with the

Chmelewski Patent Kiln

That's just the thing you need to get prosperous.
For descriptive booklet write to

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Sole Agent in the U. S. A. and Canada.

24 Cottage Ave., Fitchburg, Mass.

The Improved Flue System.

The most profitable kiln on the market
for burning any clay product.

Absolute Draft Control. Economy of Fuel and Time.
All Hard Brick.

Kiln and Yard Rights, with Plans, Specifications, etc., sold at very reasonable rates. Booklet, estimates and full information cheerfully furnished.

GEO. E. SNOWDEN & CO.,

[Formerly J. P. Bradley & Co.]

New Cumberland, W. Va.

PHILLIPS & McLAREN CO.

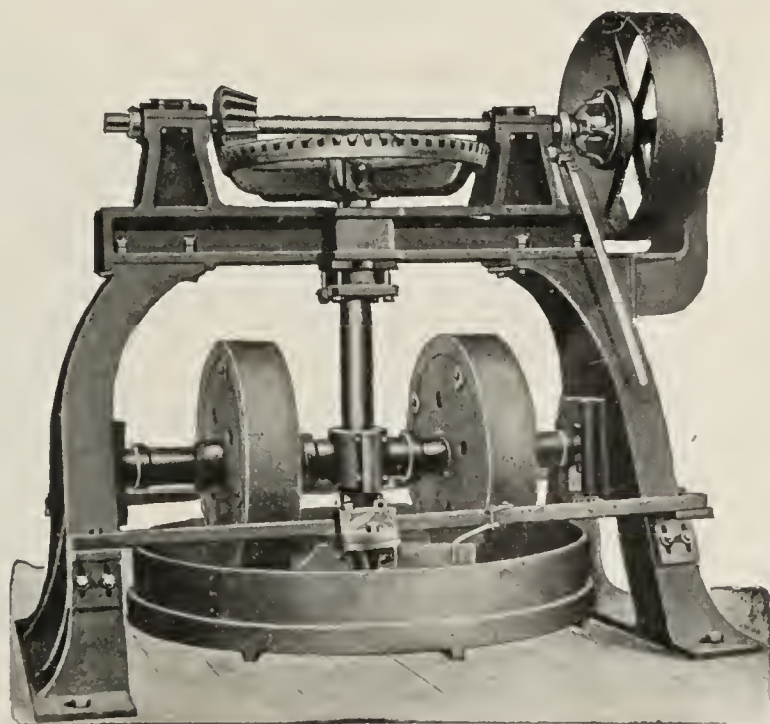
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Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.

Also
Rock and Ore Crushers.

When writing for Prices state
kind of Clay or Material to be
ground and capacity desired.

Eastern Office,
Stephen Girard Bldg.,
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TAPLIN, RICE & CO.,

AKRON, OHIO.

Sewer Pipe and Clay-
Working Machinery.

ESTABLISHED 1862.

— AN —

Attractive Proposition!

Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the



for sewer pipe plants, paving and pressed brick plants and potteries. Full information furnished upon application. In writing please be specific in your inquiries.

Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

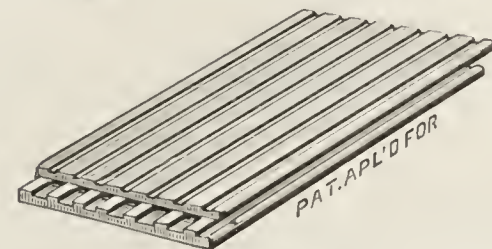
M. SCHULTER,

Industrial Commissioner,

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1144 Frisco Building, ST. LOUIS, MO.

Roofing Tile Machinery.



Patent Revolving and Hand Presses for Interlocking Tiles, Dies for all shapes, Hips, etc., in metal or plaster.

Special Roller and Auger Presses for Shingles, Interlocking Spanish Tiles, Automatic Shingle Cutting and Punching Tables. Special Tile Tables.

Stiff Mud Machinery for smaller capacity and horse power, stiff mud brick and hollow block dies, dry press liners.

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Mention The Clay-Worker
When Writing to Advertisers.

\$2—The CLAY-WORKER One Year in Advance—\$2.

IF YOU ARE HAVING TROUBLE

with your machine, or your drying or kiln burning, send for an expert who will soon put you right and teach your employes how to do it. Will go East as far as Montana and South as far as Mexico. Address the Brick Machine and Kiln Burning Expert,

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Terms
reasonable.

First-class
references.

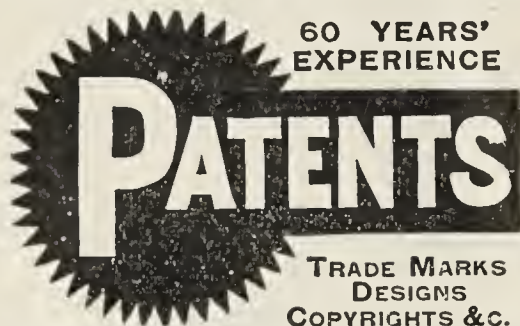
If you have trouble with Clay, Machinery or Kilns, then consult

THE BRICKMAKERS' ADVISOR,
Julius J. Koch,
(25 years practical experience)

3325 Caroline Street, St. Louis, Mo.

Special attention paid to dry clay press processes and down-draft kilns.

Contracts made contingent upon success.



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Send model, drawing, rough sketch or photograph of your invention and I will examine the records FREE of charge and advise you whether you can obtain a patent.

All patents taken out by me are advertised FREE in the leading mechanical, electrical and scientific magazines in the country.

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Loan and Trust Building,
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LACLEDE=CHRISTY FIRE BRICK

"CHRISTY" PLANT
formerly
Christy Fire Clay Co.

Are the Best for

"LACLEDE" PLANT
formerly
Laclede Fire Brick Mfg. Co.

BUILDING KILNS.

Laclede=Christy Clay Products Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

**Fire Brick for
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Factories:

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General Office:

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CHICAGO, ILL.

Phone Yards 525.

Evans & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

— Made by —

MITCHELL CLAY MFG. CO.,

5627 Manchester Avenue.

ST. LOUIS, MO.

\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

Waste Heat Fans.

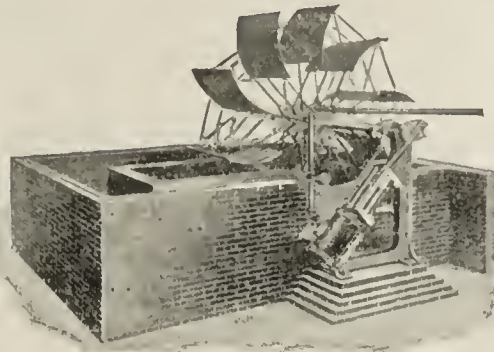
While we frequently have to repair other fans than ours we have never yet in years had to repair our own.

Durability is a strong feature and the use of a Brick fan house insures low first cost.

Efficiency is proved by the many thousands of these fans sold for Mining purposes. Outside journals. No water cooled boxes to make trouble.

ESTABLISHED 1869.

Crawford & McCrimmon Co., - Brazil, Ind., U. S. A.



A New Clay Feeder and Mixer.

Send for full descriptive circular.



BOSTON BRICK COMPANY,

Main Yard and Office, South Boston, Va. Branch Yard, Banister River Branch N. & W. Ry.
Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

South Boston, Va., Jan. 19, 1907.

Marion Machine, Foundry and Supply Co., Marion, Ind.:

Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men, besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

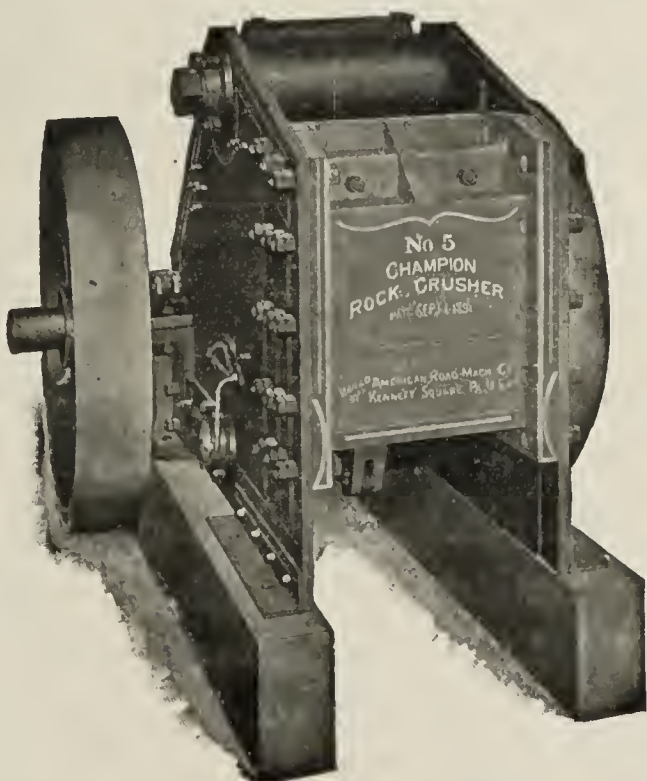
(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.



NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good

on paper.

It Looks Better

crushing shale, fire clay, rock and other hard material.

THE CHAMPION CRUSHER

is expensive, to do without, because it saves you money.

Catalogue is free on application. Address

AMERICAN ROAD MACHINE CO.

KENNETT SQUARE, PA.

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable recipes. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers.

Address, T. A. RANDALL & CO., Indianapolis, Ind.



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You Want to Sell or Buy...

Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

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for any position or a position in any connection with the Clayworking Trades use the

For Sale and Want Columns of...

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RATES

For all transient advertisements, such as "For Sale," "Wanted," etc., the rate is 25 cents a line per insertion. Average of seven words to line. Head line counts as two lines.

The Best, Quickest, Cheapest Method of Securing Results.

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

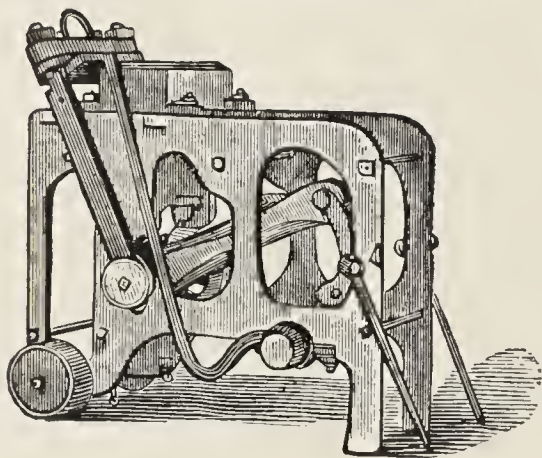
Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

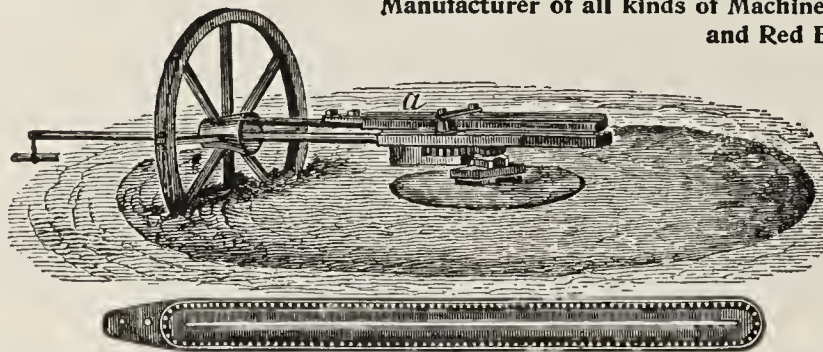


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

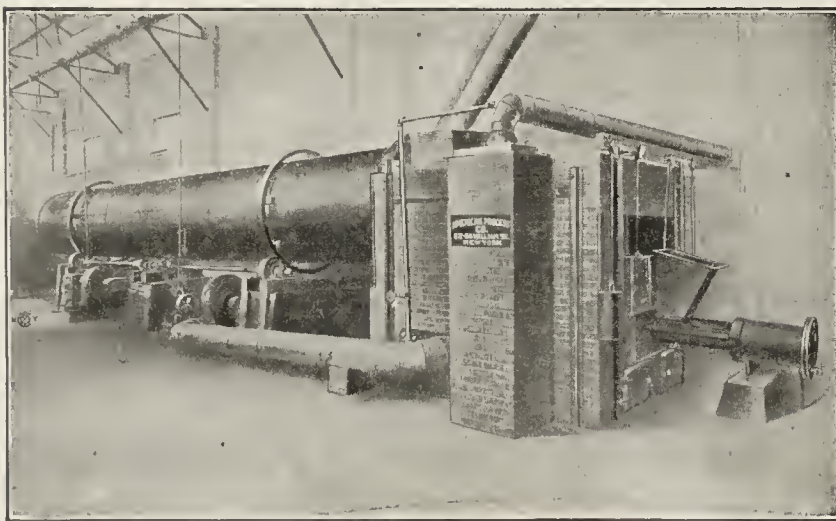
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL, 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

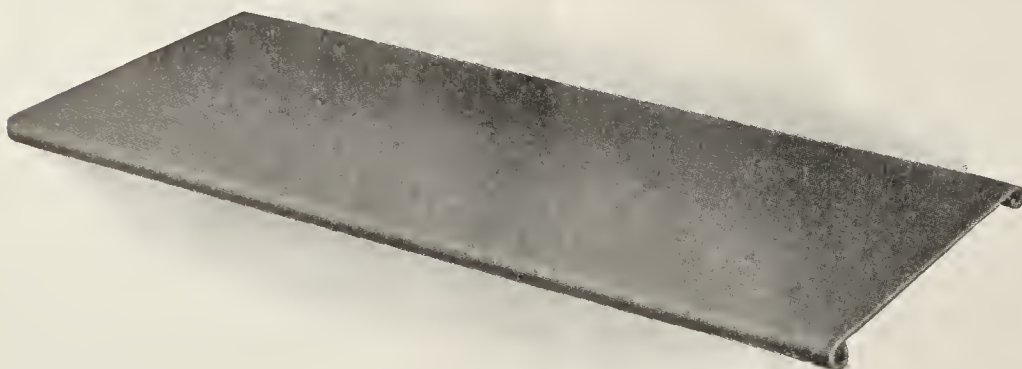
For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel. Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.



Draining Clay Pits.

For this purpose you need a pump that is simplicity itself—one that will handle any kind of dirty, muddy, gritty liquid without suffering the least injury, in short a

PULSOMETER STEAM PUMP.

We don't ask you to take our word for these statements. To responsible parties who will state for what purpose and under what conditions they wish to use it, we will make a special trial proposition. Write for our booklet which tells all about these pumps.

The Pulsometer Steam Pump Co., 14 Battery Place,
New York.

The
**ROESSLER-HASSLACHER
CHEMICAL COMPANY,**

100 William Street,
NEW YORK.

As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

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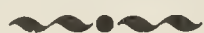
General Sales Office—Chamber of Commerce Bldg., Chicago.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

An Old-Time Favorite.

**Morrison's
Latest Improved Kilns**
for Burning Building Brick.

It has no rival. Some of the largest brick plants in the country use it exclusively. Cost of construction within reach of every brickmaker. Price for license so reasonable that no one can object.

Write us for descriptive pamphlet, prices, etc. Address

R. B. MORRISON & CO.,
P. O. Box 756. Rome, Ga., U. S. A.



B. E. BECHTEL.

**We Are
PRACTICAL BRICKMAKERS.**

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Ripley, Ohio, Sept. 11, 1906.

John C. Boss, Esq., Elkhart, Ind.:

Dear Sir—We herewith enclose you our check in settlement of our account in full.

I neglected to tell you that we burned the first kiln with 1,800 bushels of coal, whereas we have been using with a kiln of that size 1,500 bushels of coke and 3,000 bushels of coal. So you see we will soon make our money back which we paid for your system. We are delighted with it and are glad to praise it at any time. With kindest regards, I beg to remain,

Yours very truly,
THE RIPLEY BRICK CO.,
Per Leon Swiles, Sec'y.

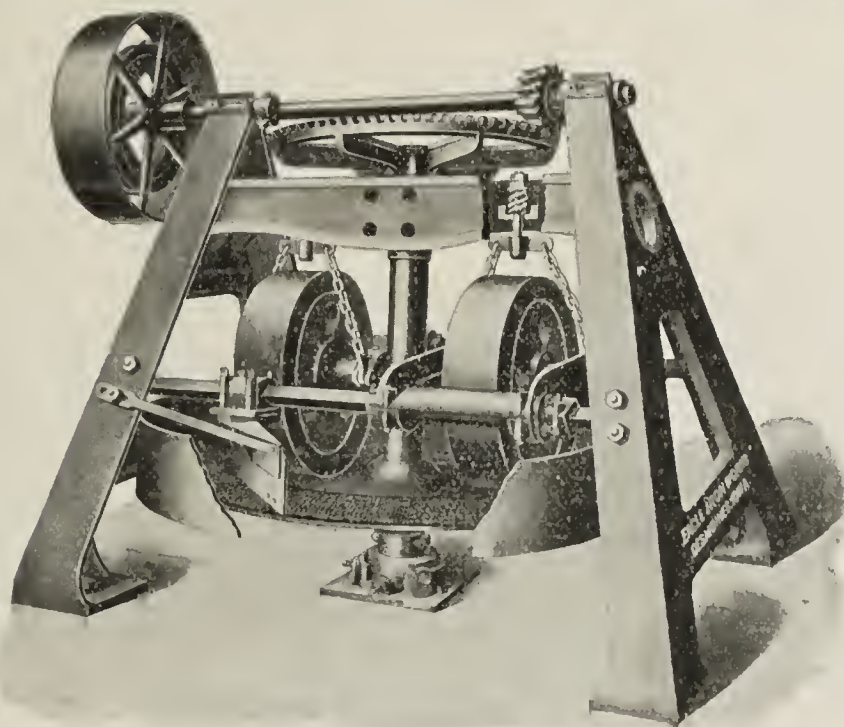
Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

ELKHART, IND.

Independent and Suspended Mullers the distinguishing feature of our **DRY PANS.**



Other valuable features which our catalogue
fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906

Pittsburg Kiln Construction Co.,

Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we set in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of	5,000 each,	15,000
2 " 4 "	"	3,000 "	6,000
1 " 5 "	"	2,040 "	2,040
2 " 10 "	"	550 "	1,100
2 " 12 "	"	415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.
The 10 " " 6 ins. and 4 ins.
The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am
Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.



HARRIS SMOKELESS FURNACE—Patented.

ALBANY BRICK COMPANY,

Capacity, 10,000,000 per Annum.

Terms, Strictly Cash.

Albany, Ga., Sept. 2, 1907.

The Milledgeville Brick Works, Milledgeville, Georgia:

Gentlemen—Replying to yours of the 29th., we beg to advise you concerning the Harris furnace as follows:

It certainly consumes the smoke, and the only time that we can see even the slightest bit of smoke from the exhaust fan on our dryer is when the fireman is putting in fresh coal.

We are using this furnace successfully with our dryer. In regard to fuel saving, I have not the slightest doubt that we save considerable, although I have not made official tests; however, I have given instructions to our engineer to use only the least desirable grade of coal that we have on the yards, and he seems to be burning this very successfully.

As to whether we would advise you to install this furnace, we do not care to take the responsibility, but will say that we ourselves have installed one evidently for the same purpose that you are considering its installation.

Yours truly,

ALBANY BRICK COMPANY.

Later—Milledgeville Brick Works have installed our furnace and taken Georgia State Agency.

Our furnaces are easily and cheaply installed, last forever with little repairs. Absolutely smokeless on soft slack coal, so waste heat of stack can be carried to brick and lumber dryers—impossible for sparks to leave furnace when burning shavings, slab and sawdust. For further information address

J. B. HARRIS, M. D.

921 Fatherland Street.

Nashville, Tenn.

A SURE CURE FOR THE CONCRETE CRAZE

"BURNT CLAY PRODUCTS IN FIRE AND EARTHQUAKE"

AN ELABORATE PUBLICATION

Cover in 4 Colors.

Ninety-Six 10x12 Pages.

Eighty-three 7x5 Half-tones.

Issued by the

BRICK CONSTRUCTION ASSOCIATION,

which is composed of the leading brick manufacturers of Los Angeles, Cal., and formed for the purpose of promoting the use of brick and tile.

Every brick man should have a book, and see to it that everyone interested in construction in his locality has a copy.

The Brick Construction Association has distributed gratis, locally, over 3,000 copies among Architects, Engineers, Bank Directors, Builders, etc. **Do your share.**

Books sent prepaid at the following rates:

Single copies, up to 100.....	\$ 1.00 each
100 lots.....	75.00
500 lots.....	250.00

Brick Construction Association,

707 Lankershim Building.

LOS ANGELES, CALIFORNIA.

STEAM SHOVELS FOR BRICK YARDS.

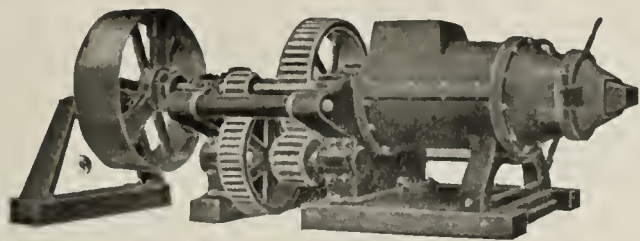
We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

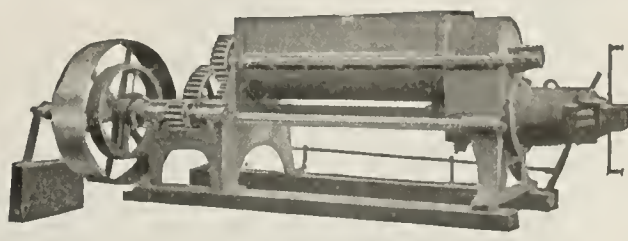
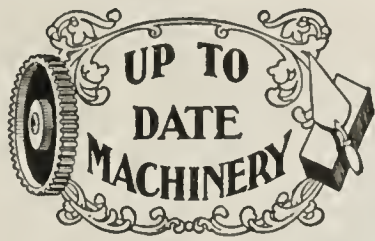
GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

Marion, Ohio.

F. H. HOPKINS & CO., Agents,
Montreal, P. Q.



Auger Machine.



Combination Machine.

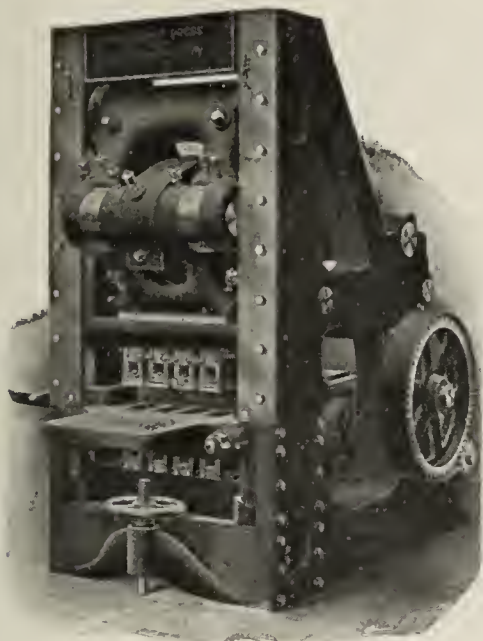
Up-to-Date Machinery

For Making

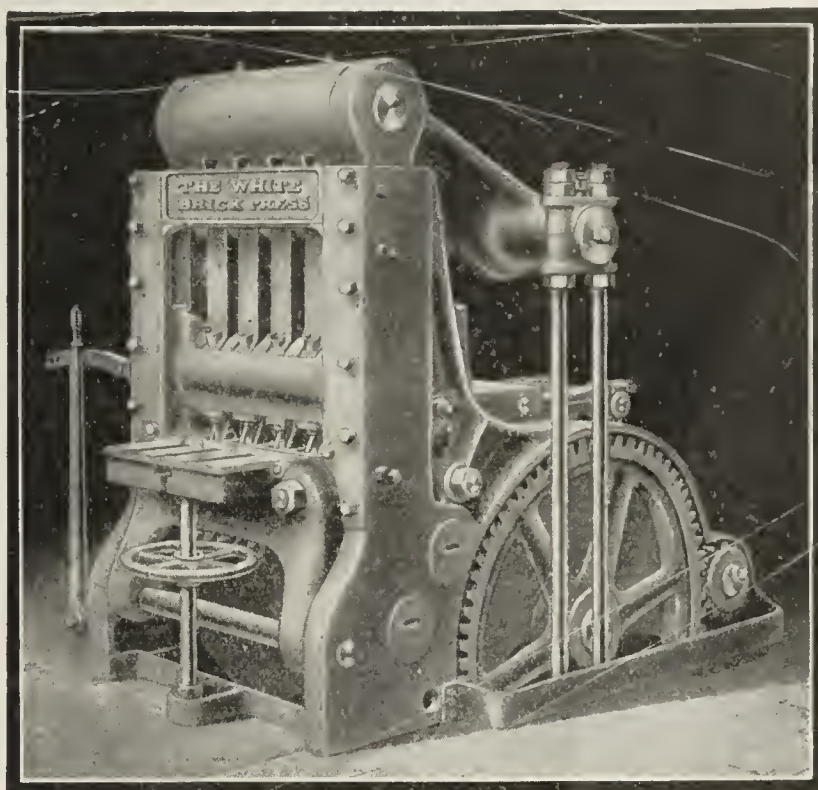
**ALL KINDS OF
BRICK.**

Specialty for 1907
**Rocking Grates
for Kilns.**

**CHICAGO
BRICK MACHINERY
COMPANY,**
77 JACKSON BLVD.,
CHICAGO.



Berg Press.



White Press.

**Handle Your Clay
With One Man and**

The Thew Steam Shovel.



Type No. 1—Traction Wheels or Car Wheels, $\frac{3}{4}$ -Yard or One-Yard Dipper.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

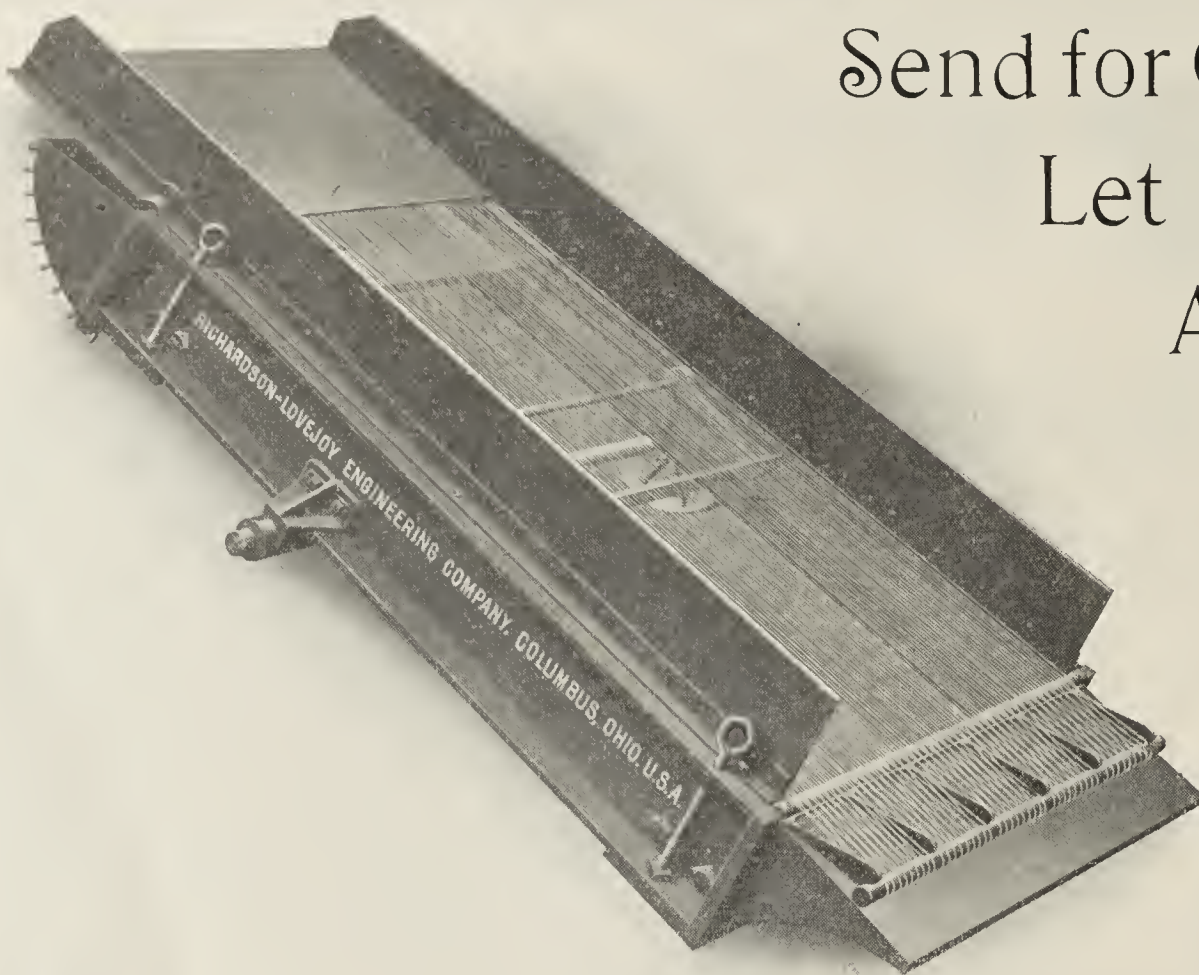
WRITE US FOR CATALOGUES OR INFORMATION.

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

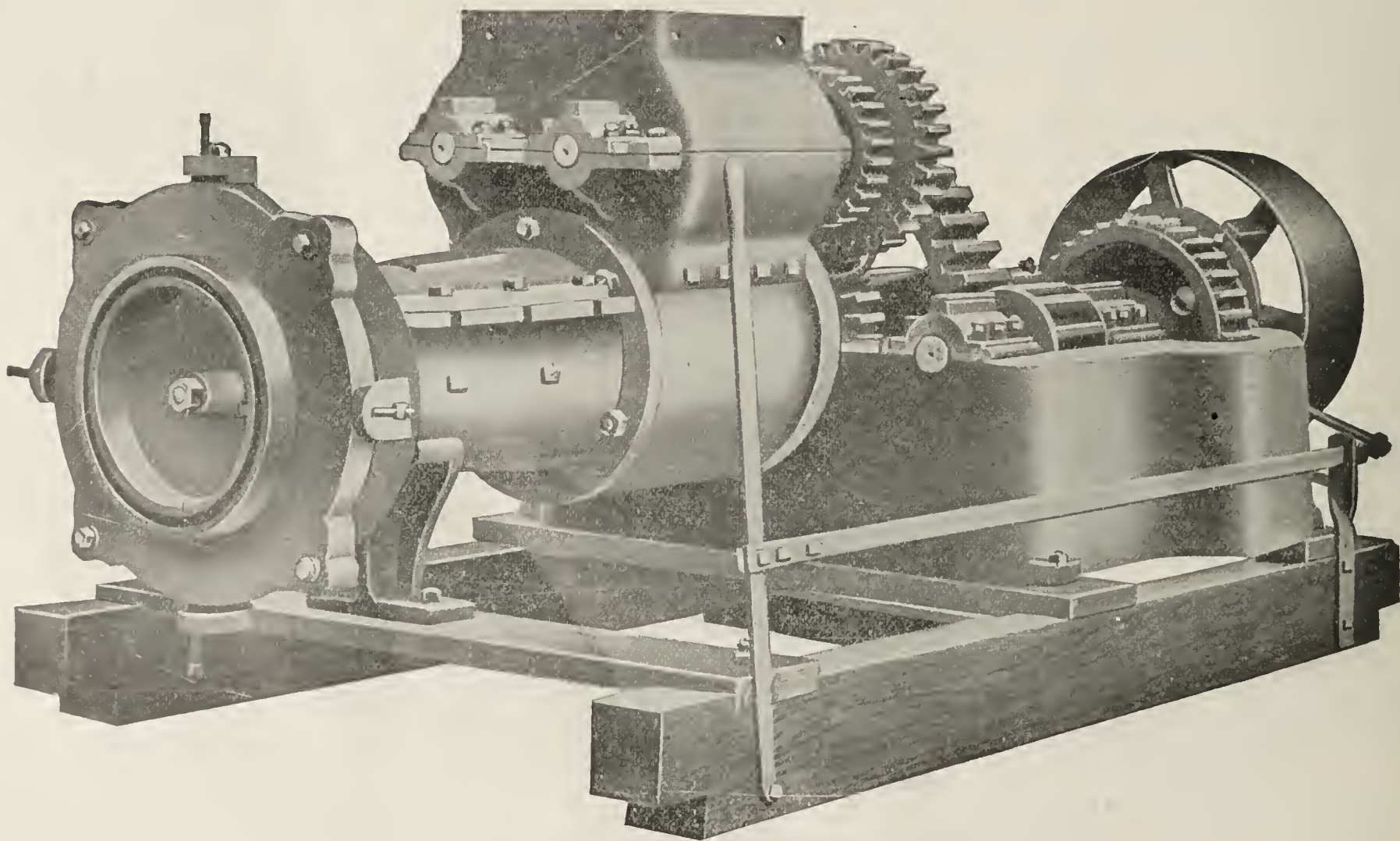
THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.



Send for Catalog and
Let Us Tell You
About the
Best Clay
Screen
on
Earth.



THE RICHARDSON-LOVEJOY ENGINEERING CO.,
1534 NORTH HIGH STREET, COLUMBUS, OHIO.



NEW MODEL STIFF MUD MACHINE.

Write us for
information.

MADDEN & CO., Rushville, Ind.

BRICKMAKERS WHO FAIL

to take advantage of every opportunity to reduce the cost of manufacturing their products are working on a smaller margin than is necessary.

Every dollar's worth of labor or fuel saved is clear profit to the brickmaker.

Our new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud or soft mud brick.

THE DRYMORE SYSTEM

7TH AND CHESTNUT STS., ST. LOUIS, MO.

EXHAUST STEAM DRYING.

THE LAWRENCEVILLE BRICK AND TILE CO.

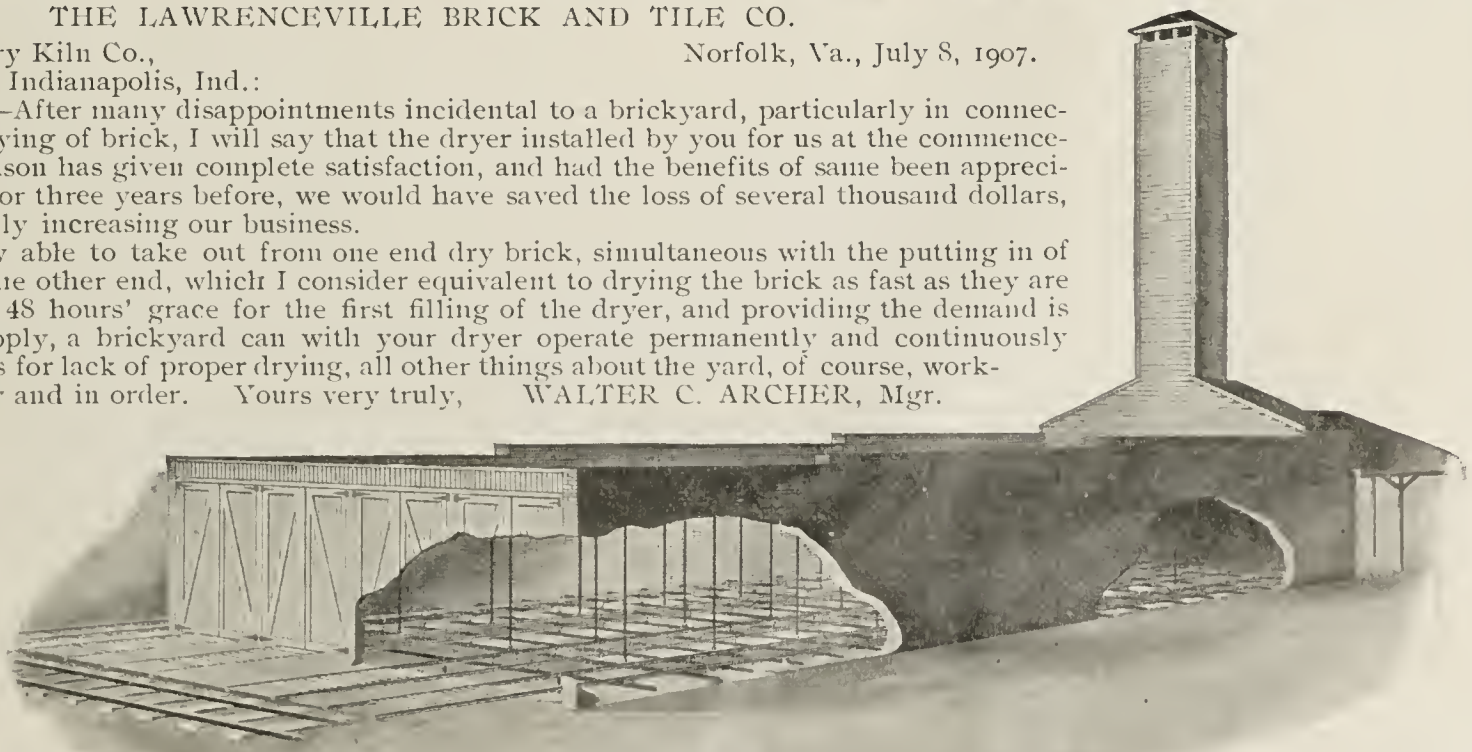
The National Dry Kiln Co.,
Indianapolis, Ind.:

Norfolk, Va., July 8, 1907.

Gentlemen—After many disappointments incidental to a brickyard, particularly in connection with the drying of brick, I will say that the dryer installed by you for us at the commencement of this season has given complete satisfaction, and had the benefits of same been appreciated by us two or three years before, we would have saved the loss of several thousand dollars, besides materially increasing our business.

We are now able to take out from one end dry brick, simultaneous with the putting in of green brick at the other end, which I consider equivalent to drying the brick as fast as they are made, allowing 48 hours' grace for the first filling of the dryer, and providing the demand is equal to the supply, a brickyard can with your dryer operate permanently and continuously without setbacks for lack of proper drying, all other things about the yard, of course, working satisfactorily and in order. Yours very truly, WALTER C. ARCHER, Mgr.

No Fan
No Engine
No Fire
Danger



STEEL Foundations, STEEL Roof Supports, Roller Bearing Cars, Transfers and Turntables.

Send for our large catalogue.

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

THE NATIONAL DRY KILN CO., Indianapolis, Ind.

Portable Excavating, Screening and Loading Machines
For Sand and Gravel of Jeffrey Construction.



Elevating-Conveying Catalog No. 80 Mailed Free With Others on
Drilling, Screening, Mining, Crushing, etc.

THE JEFFREY MFG. COMPANY, Columbus, Ohio, U.S.A.

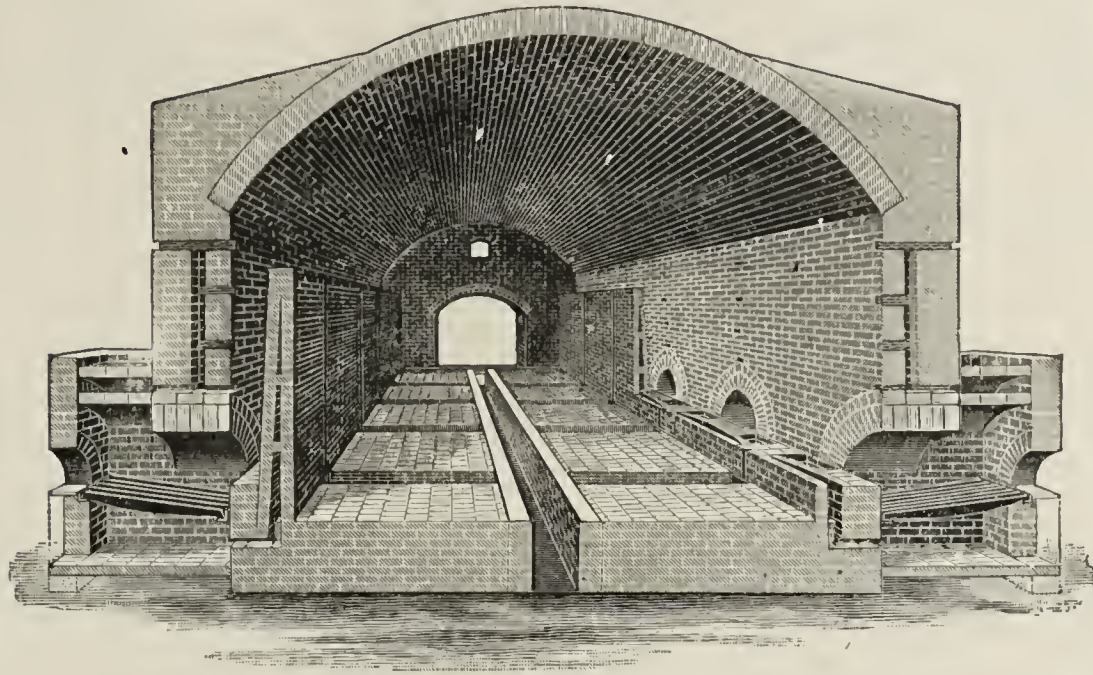
New York Chicago Boston Denver St. Louis Pittsburg Knoxville Charleston, W. Va. Montreal

WE have moved to our new office, 504 Goodwyn
Institute Building, where our friends and cus-
tomers will at all times be welcome. We are, as here-
tofore, able to give you prompt service, and will be
glad to figure with you on your requirements. We
please others, we know we can please you. When in
the market write us.

Success Brick Machinery Co.,
Memphis, Tenn.

The EUDALY DOWN DRAFT KILNS

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

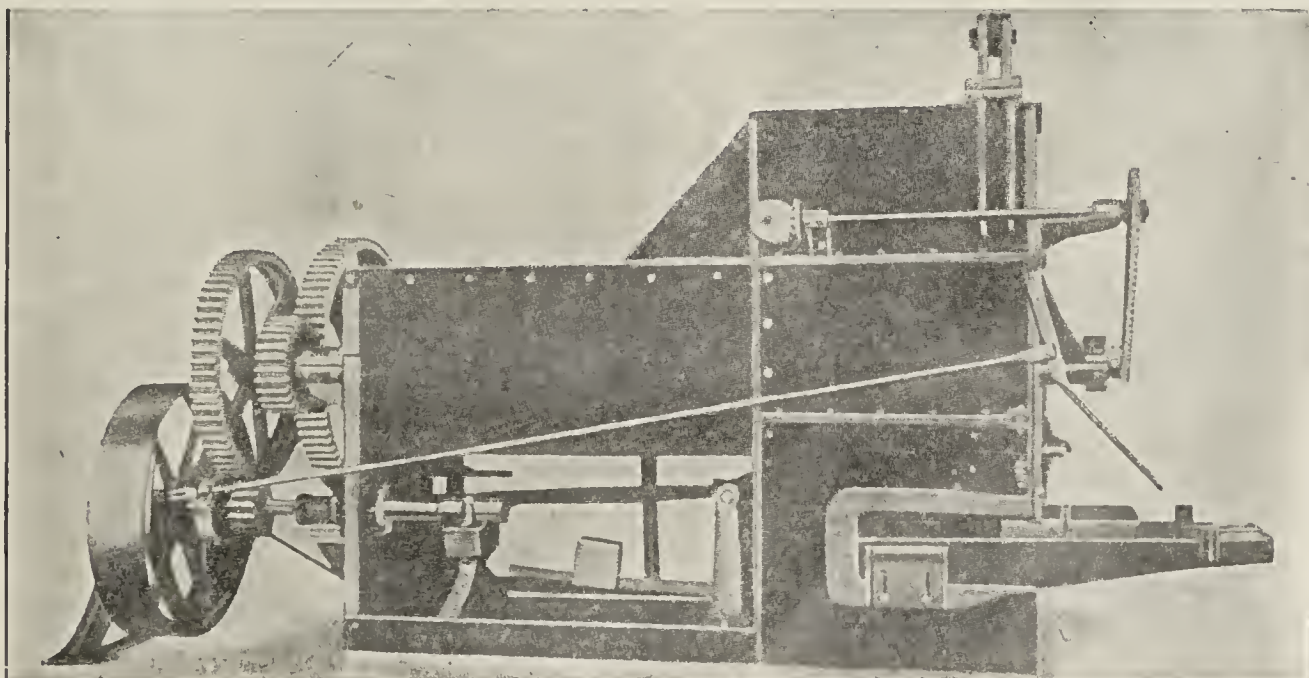
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal, or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg., Cincinnati, Ohio.

The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine, of large capacity strong and heavy, with vertical press. To meet this demand we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

For small capacity yards there is nothing that is quite as good as the "QUAKER" Machine, which is made for horsepower as well as steam.

James W. Hensley,

Indianapolis, Ind., U. S. A.

Let me give you full particulars.

List of users furnished on application.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO
Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untieing knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the issue. Enclosed find \$.

Name

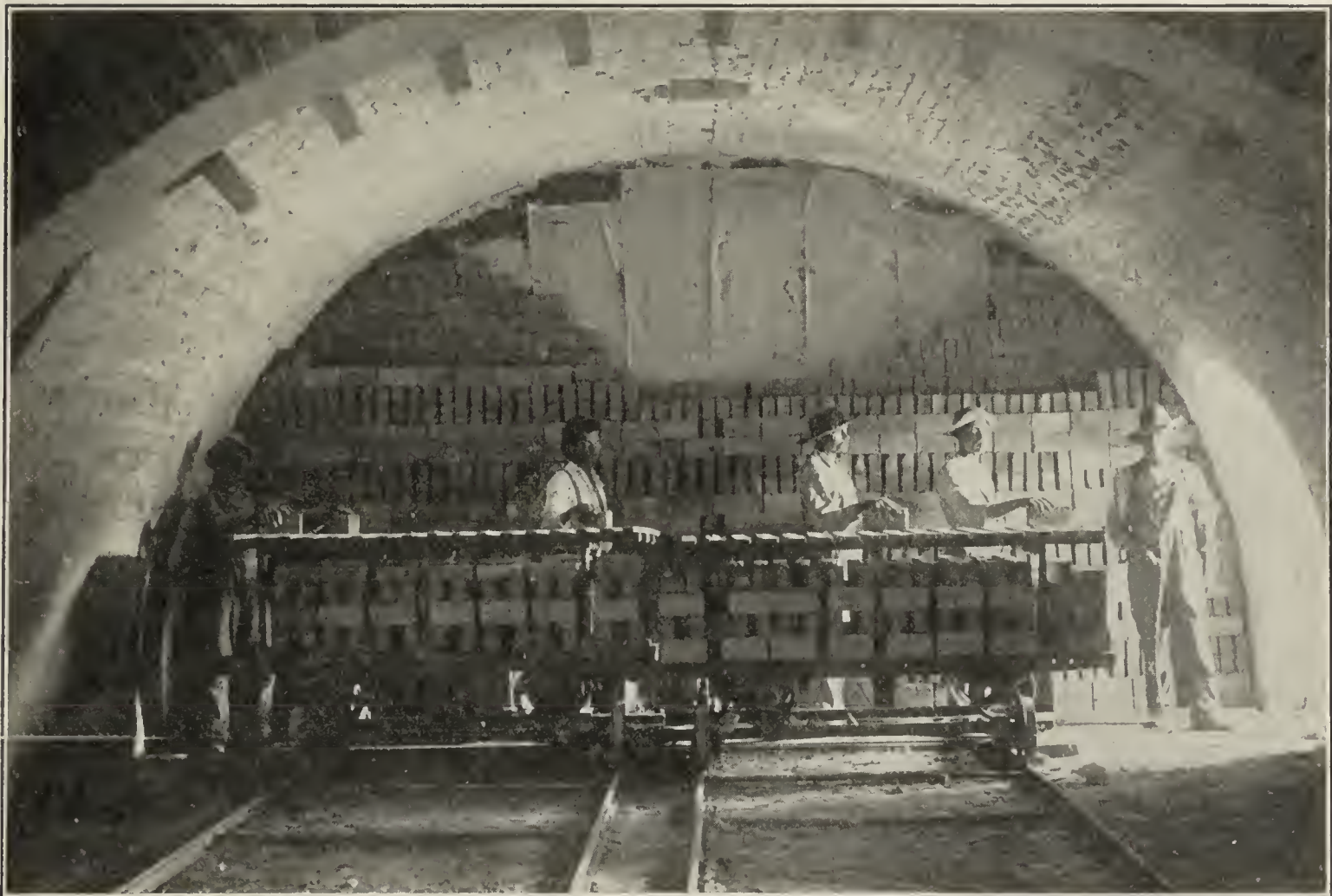
Postoffice

Street and Number

County State

The Youngren Continuous Kiln

Producer Gas Fired.



SETTING BRICK IN THE YOUNGREN CONTINUOUS TUNNEL KILN.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

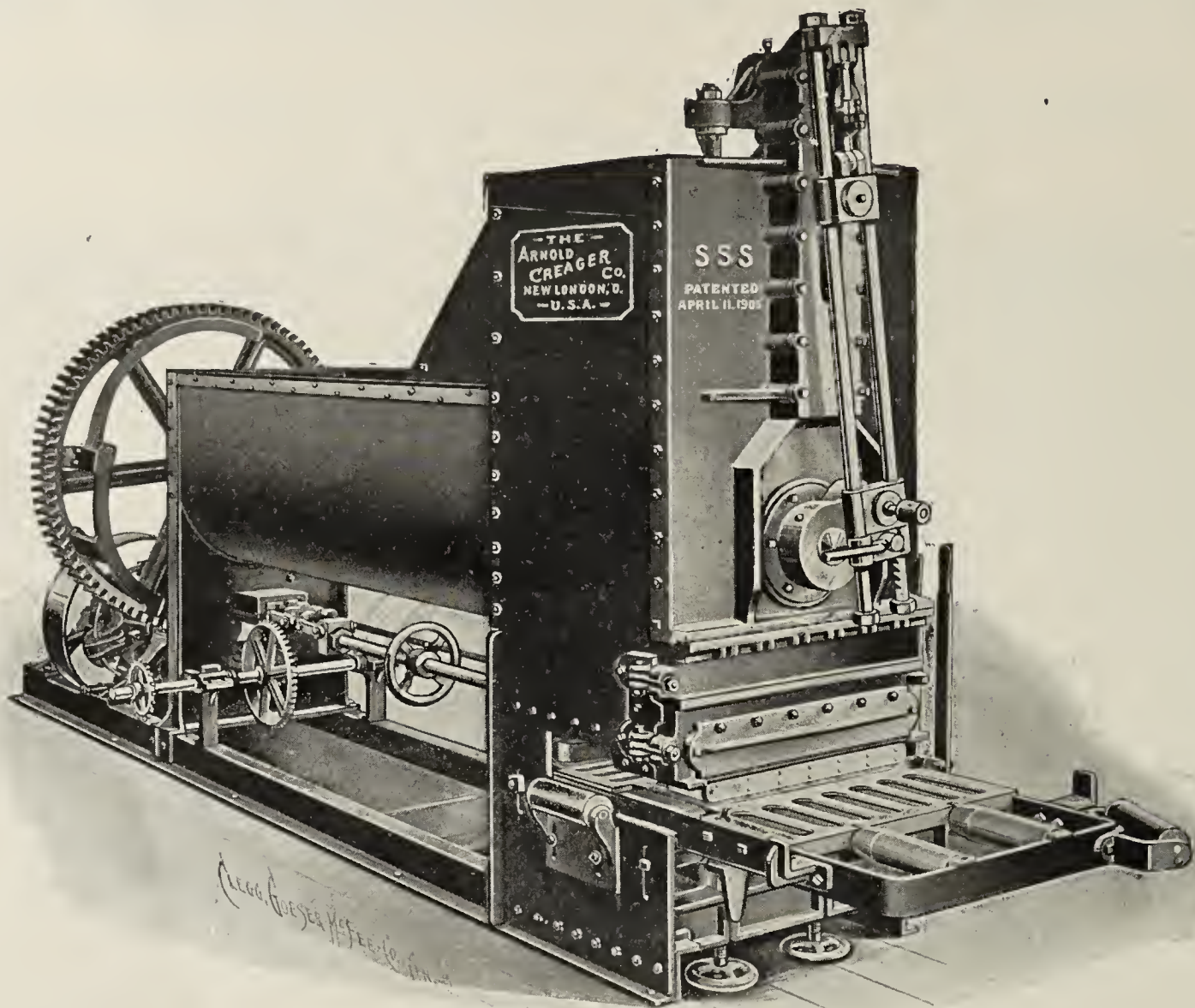
Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

299 Twenty-fifth St.,

MILWAUKEE, WIS.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

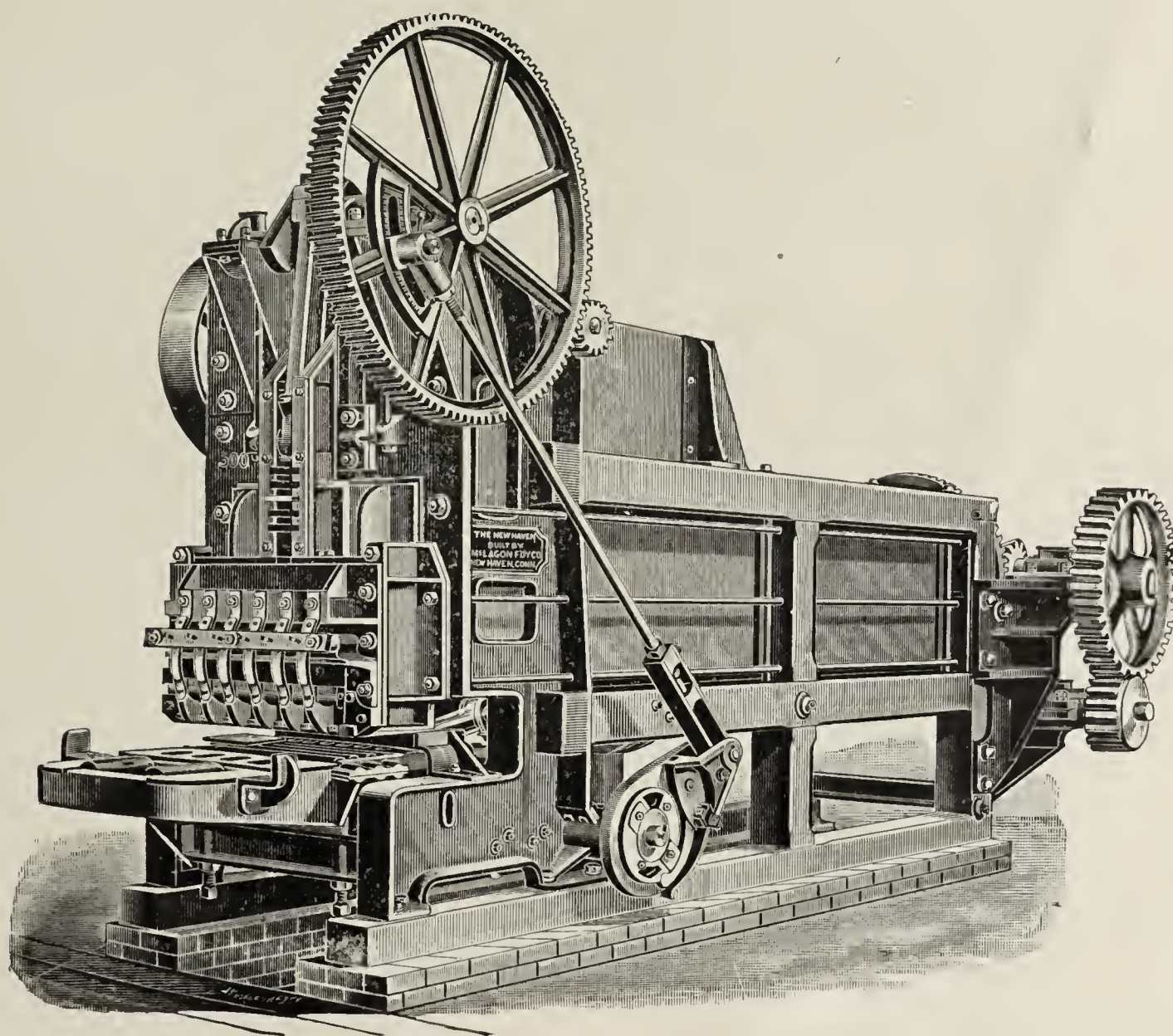
CINCINNATI, OHIO.

CABLE "AUTOMATIC".

History of New Haven Machines a Record of Success.

The following quotation from the letter of the manager of the L. I. and F. I. Brick Co., Sag Harbor, L. I., N. Y., tells the story of a Horizontal brick machine purchased by them May, 1891, sixteen years ago.

"I wish you could see how nice this old New Haven Horizontal Machine works. It has been running steadily all summer and I don't think there has even been a belt off the pulley. I never saw anything work nicer."



"New Haven" Horizontal Brick Machine.

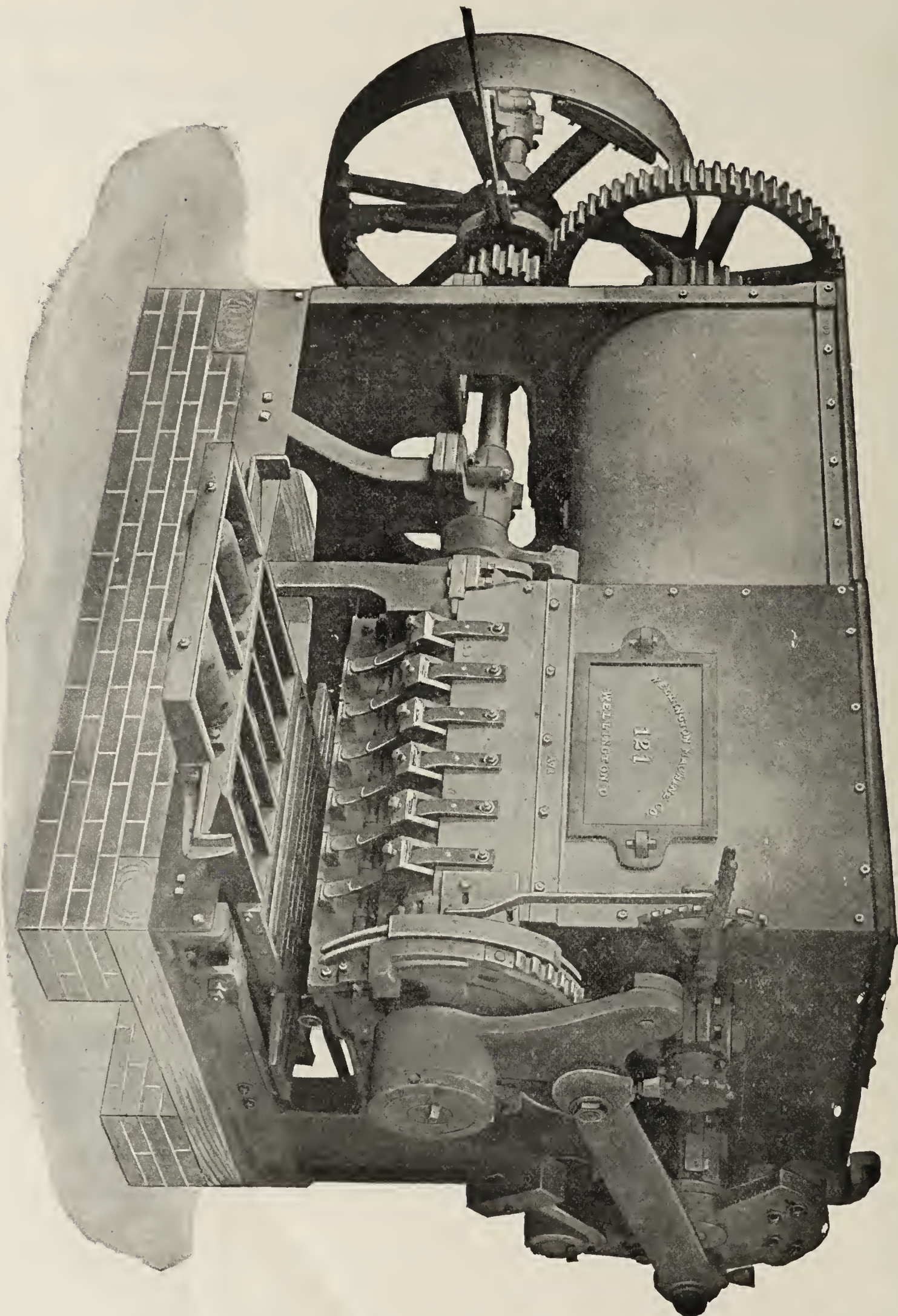
We build only SOFT MUD BRICK MACHINES and we build them so well that first cost is last cost. The New Haven machines are the least expensive machines to operate because they WORK EVERY DAY.

The EASTERN MACHINERY CO.,
NEW HAVEN, CONN.

OVER
235
"Monarch"
Brick
Machines
in use

OVER
565
"Quaker"
Machines
in use.

WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

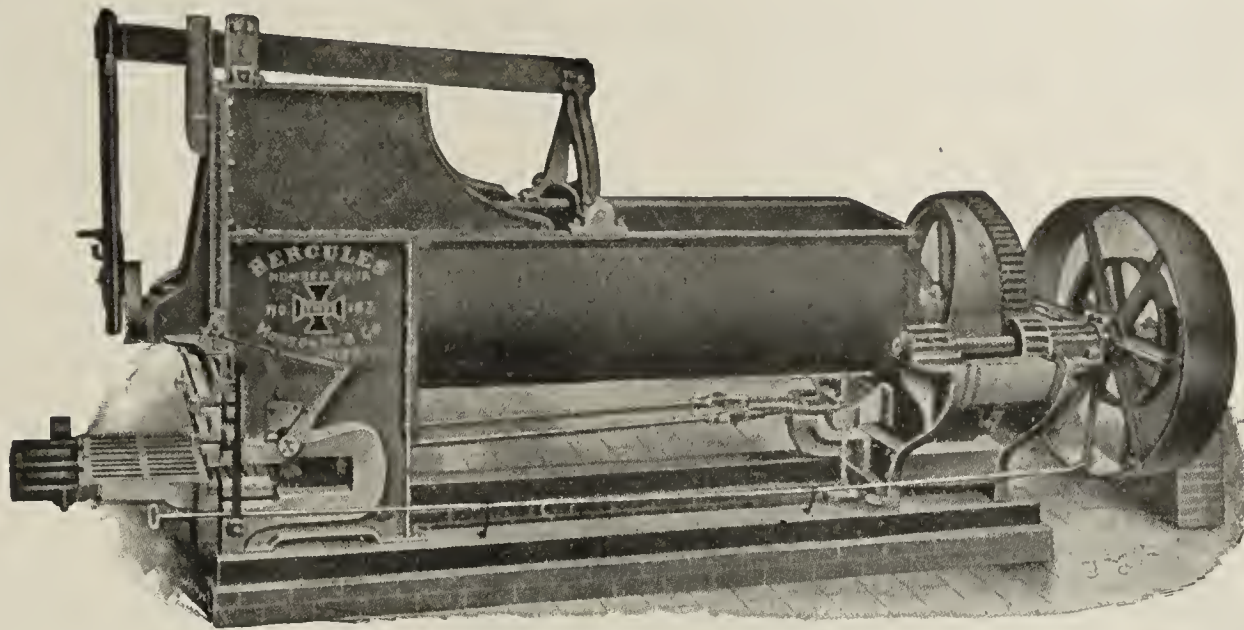
You are losing
money wheeling
brick unless you
have our

**ROLLER-BEARING
BARROWS.**

The Wellington Machine Co.,
WELLINGTON,
OHIO.

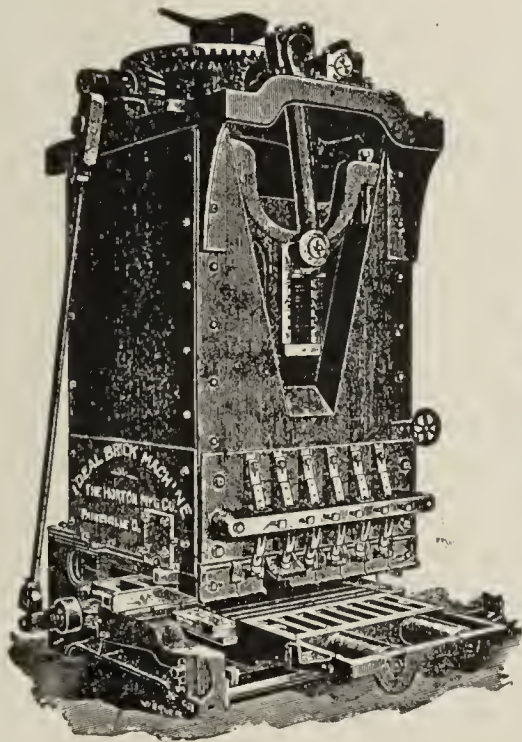
Send for Catalogue.

Do Not Miss This Opportunity.

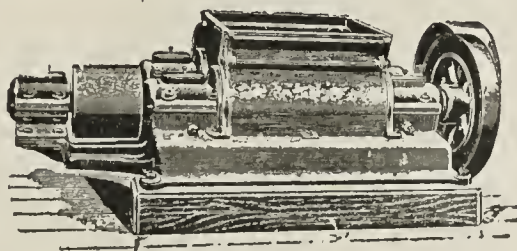


Hercules No. 4 Brick Machine.

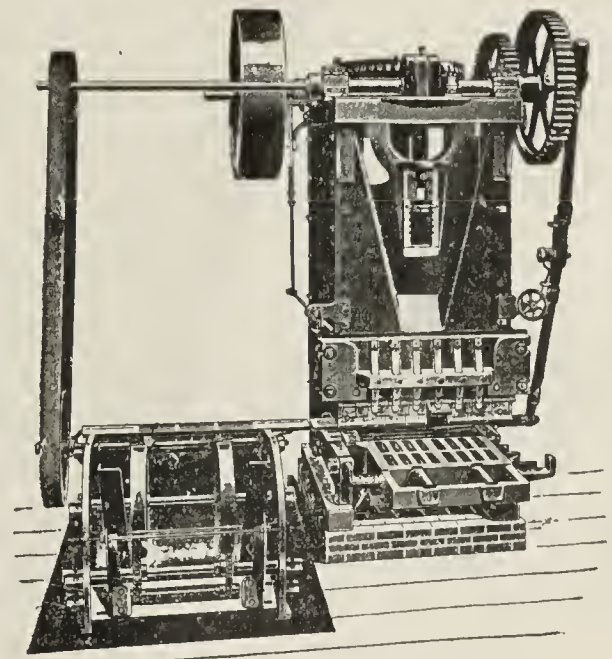
Let Us Have Your Inquiries Today.



Ideal Horse Power.

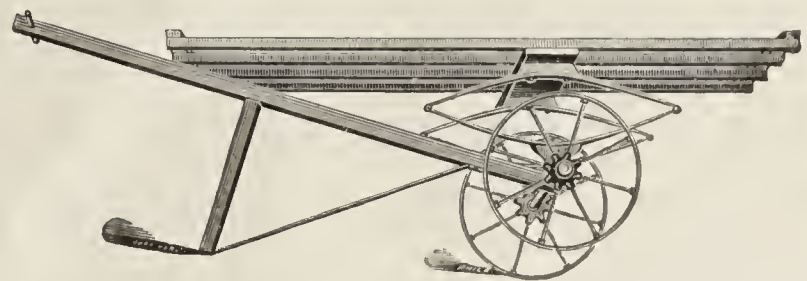
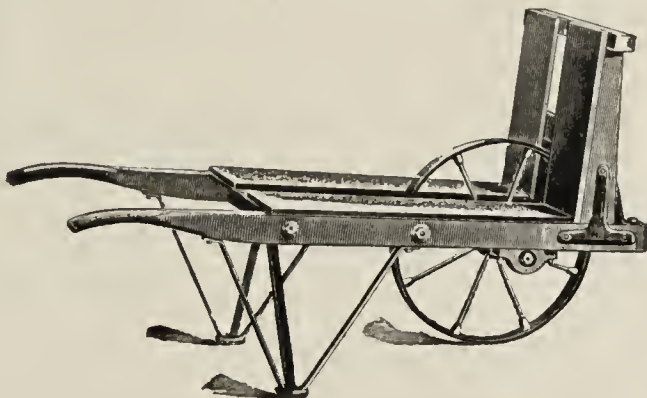


Disintegrator.



Ideal Steam Power and Sander.

OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.



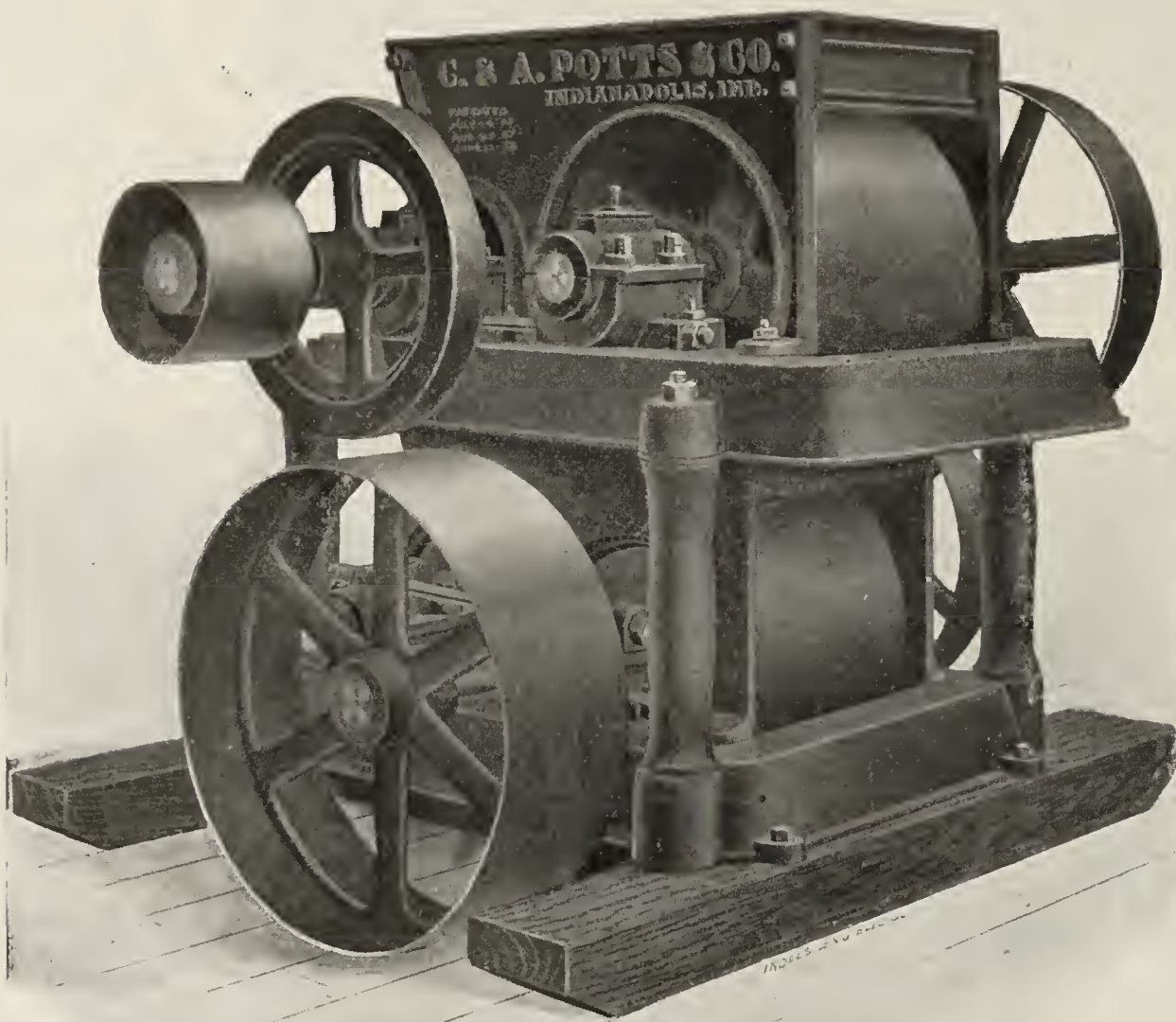
Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

Potts Clay Disintegrators and Compound Disintegrators and Crushers

Have a National Reputation as Being The
Standard Machines of This Class.

When you get a POTTS you have the Best.



**Disintegrators in
six sizes.**

**Capacity from
25M to 100M
Brick per Day.**



**Compound
Machines
Capacity from
25M to 75M Brick
per Day.**

COMPOUND DISINTEGRATOR AND CRUSHER.

These machines are well built of good material. Rolls thoroughly chilled. Adjustable steel cutting bars. Ring oiling journals.

We manufacture a complete line of Sand Mould Brick Machinery and Brick Dryers. Our specialty is erecting complete plants.

Let us know your wants. We will be pleased to quote prices.

C. & A. Potts & Co., Indianapolis, Ind.

Mention The Clay-Worker.

BOOKS FOR CLAYWORKERS.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Clay Glazes and Enamels, by Henry R. Griffen. Price \$5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application

Tables of Analyses of Clays, by Alfred Crossley. Price \$1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

Clays; Their Occurrence, Properties and Uses, by Heinrich Ries. Price \$5.00.

A valuable and reliable treatise on the origin of clay, chemical and physical properties, kinds of clay, methods of mining and manufacture and distribution of clay in the United States, including a chapter devoted to Fuller's Earth, its distribution in the United States, mining and uses, etc. The book is well illustrated, which adds much to its value.

Bricklaying, by Owen B. Maginnis. Price \$2.00.

This book contains extensive explanations of the most improved modern methods of bricklaying, and is the current practice and experience of the best authorities, making an invaluable work of reference for architects, engineers, contractors, builders and mechanics.

The Clayworkers' Handbook, by the Author of "The Chemistry of Clayworking." Price \$2.00.

A manual for all engaged in the manufacture of articles from clay, containing chapters devoted to Materials Used in Clayworking, Preparation of the Clay, Machinery, Transport, Conveyors, etc., Drying and Dryers, Engobing and Glazing, Setting or Charging, Kilns, Firing, Discharging, Sorting, Packing and Dispatching, Defects, Tests, Analysis, etc., etc.

Burning Brick in Down Draft Kilns, by W. D. Richardson. Price \$1.00.

A manual on the "Burning of Brick," covering all the essentials of good burning, including chapters on kiln repairs, stages of burning, oxidation period, vitrification period, cooling, with valuable tables and illustrations of various testing apparatus.

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Giving instructions for laying out and constructing drains for the improvement of agricultural lands intended for the use of those who are charged with the responsibility of making plans for and executing drainage improvements.

Kiln Records, by W. D. Richardson. Price \$1.00.

To establish a successful system of burning, observations and records should be made regularly, carefully and conscientiously, and this can be done to best advantage by the use of Mr. Richardson's Kiln Records.

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A review of present practice in the manufacture, testing and uses of Vitrified Paving Brick.

Practical Farm Drainage, by C. G. Elliott. Price \$1.00.

A Treatise on the Benefits of Farm Drainage, with plans and illustrations for making and laying tile.

These Books will be Mailed, Postage Prepaid, to Any Address in the United States or Canada, on Receipt of Price.

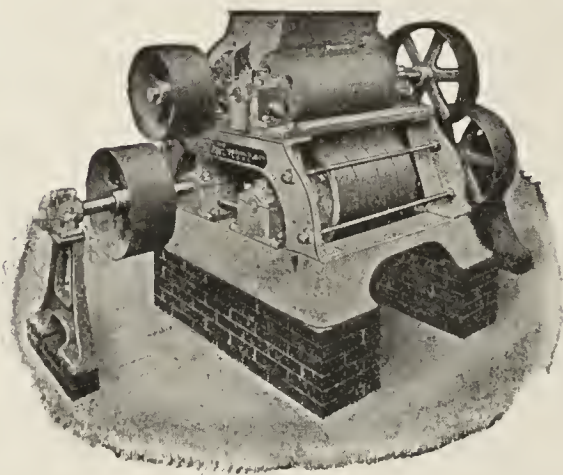
T. A. RANDALL & CO.,
Indianapolis, Ind., U. S. A.

"MARTIN SYSTEM"

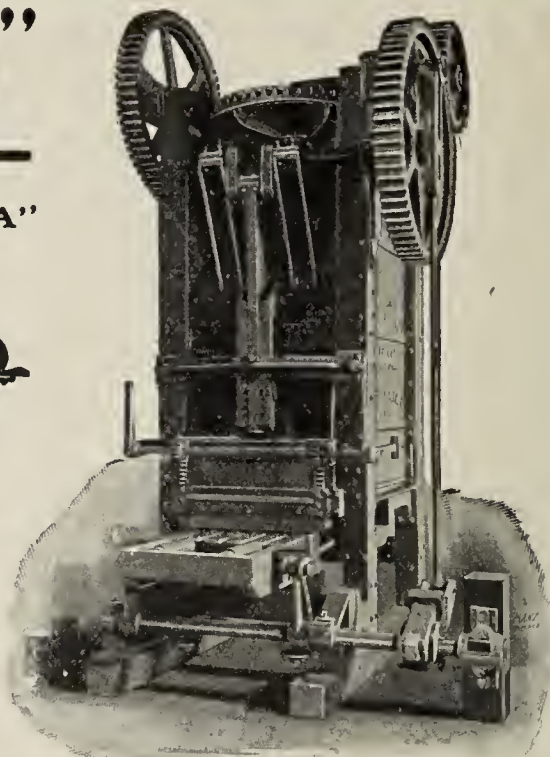
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OF

STYLE "A"

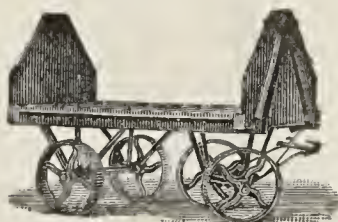


HANDLING
THE RAW
MATERIAL
DIRECT FROM THE
BANK TO THE FIN-
ISHED PRODUCT--
IS THE MOST SAT-
ISFACTORY "SYS-
TEM" YET DEVISED



HANDLING SOFT MUD BRICK
FROM MACHINE TO A "MARTIN"
PATENT "SYSTEM" DRYER

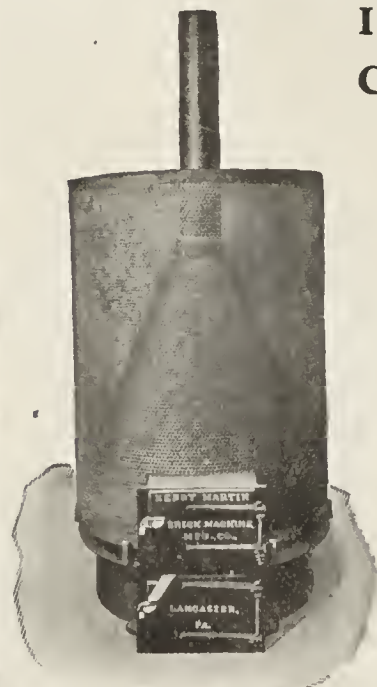
The "Martin" System
is Labor-Saving
Throughout



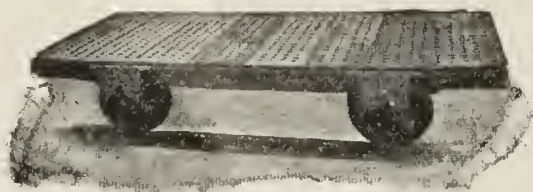
We have the most com-
plete line of Up-to-
Date Yard Supplies



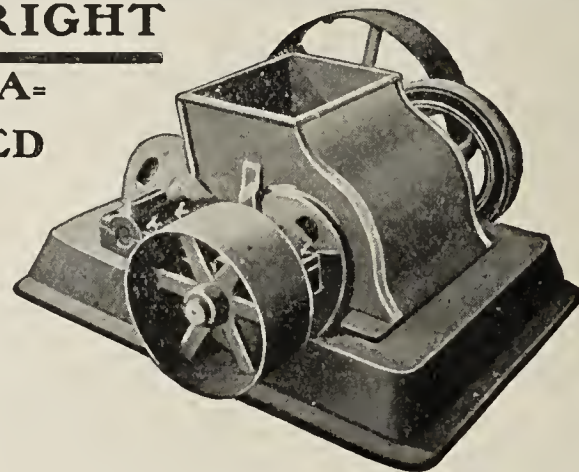
LET US SHOW YOU PLANS THAT ARE RIGHT
IN EVERY DETAIL--ALL OUR MA-
CHINERY IS FULLY GUARANTEED



SAND DRYERS



ALL STYLES OF DRYER CARS
LET US FIGURE WITH YOU?



HIGH SPEED DISINTEGRATORS

THE HENRY MARTIN
BRICK MACHINE MFG. CO.
LANCASTER, PA., U. S. A.



BRICK DRYERS

The "MARTIN SYSTEM"
STEAM RACK PIPE
DRYING & CONVEYING

BRICK--ARE FULLY COVERED BY "PATENTS" GRANTED



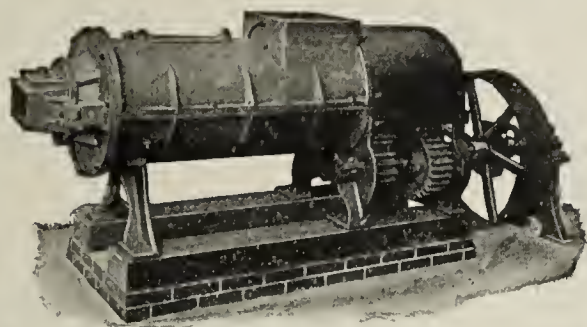
NOTICE

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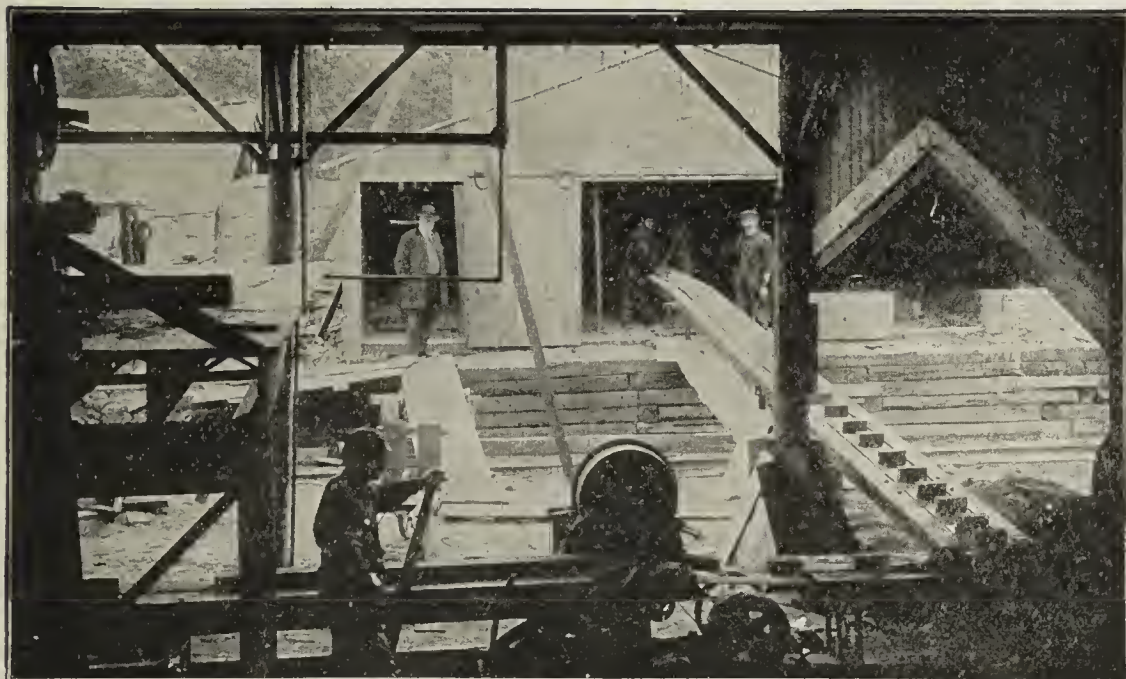
February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.

OWNED AND
CONTROLLED
BY THE

HENRY MARTIN BRICK MACHINE
MFG. CO., INC.==LANCASTER, PA.

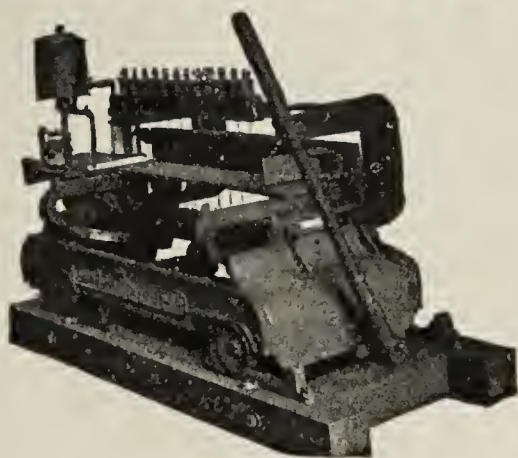


ADAPTED FOR SOFT-MUD OR STIFF-MUD
BUILDING BRICK--LABOR-SAVING THROUGHOUT
NO FANS, BLOWERS, TUNNELS, ENGINES OR CARS



Handling Stiff-Mud Brick
From Machine to a "Martin
Patent System" Dryer

The "Martin Patent
System" of Drying is
Superior in Every
Respect to Any Other
System--Quick to In-
stall and Low in
Price and Takes up
Very Little Yard Room

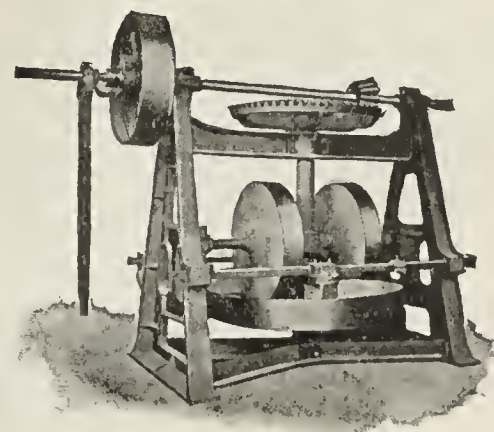


HAND OR AUTOMATIC BRICK
CUTTERS.

THE SALE AND THE CONSTRU-
TION OF THE "MARTIN PATENT
SYSTEM" DRYER IS UNDER
THE DIRECT SUPERVISION
OF THE FACTORY OFFICE
AT LANCASTER, PA., U. S. A.

LET US MAKE
YOU AN INTER-
ESTING OFFER

THE HENRY MARTIN
BRICK MACHINE MFG. CO.
LANCASTER, PA., U. S. A.



DRY OR WET PANS



BARROWS



TRUCKS

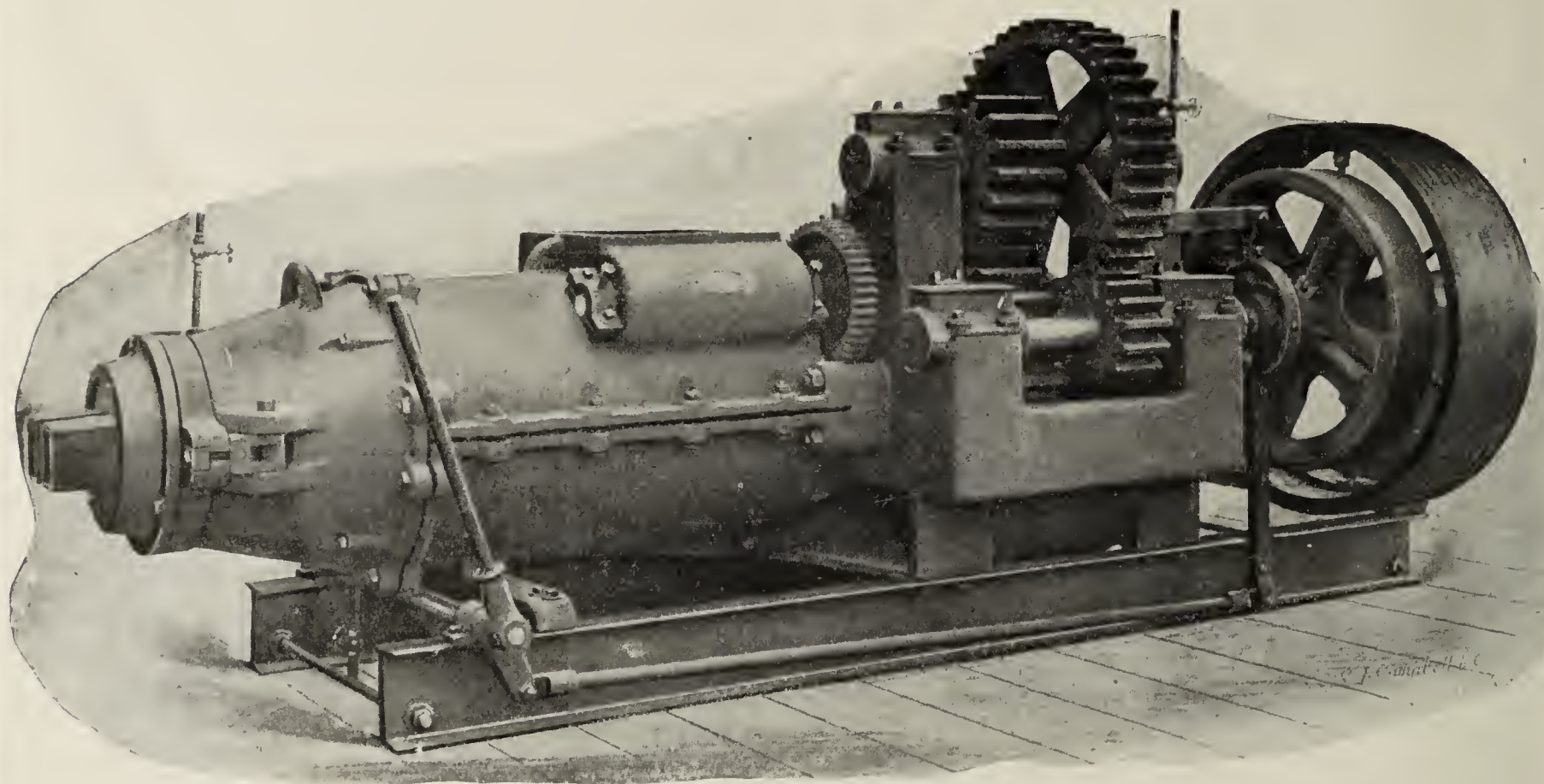


ROCK CRUSHERS



THE DIFFERENCE.

There is only a few dollars difference between the cost of a good machine and a poor one. A good machine will stand where a poor one will break. A few breaks and the difference in cost is invested in repairs. A few more and the poor machine has cost more than the good one ; and it keeps on breaking.



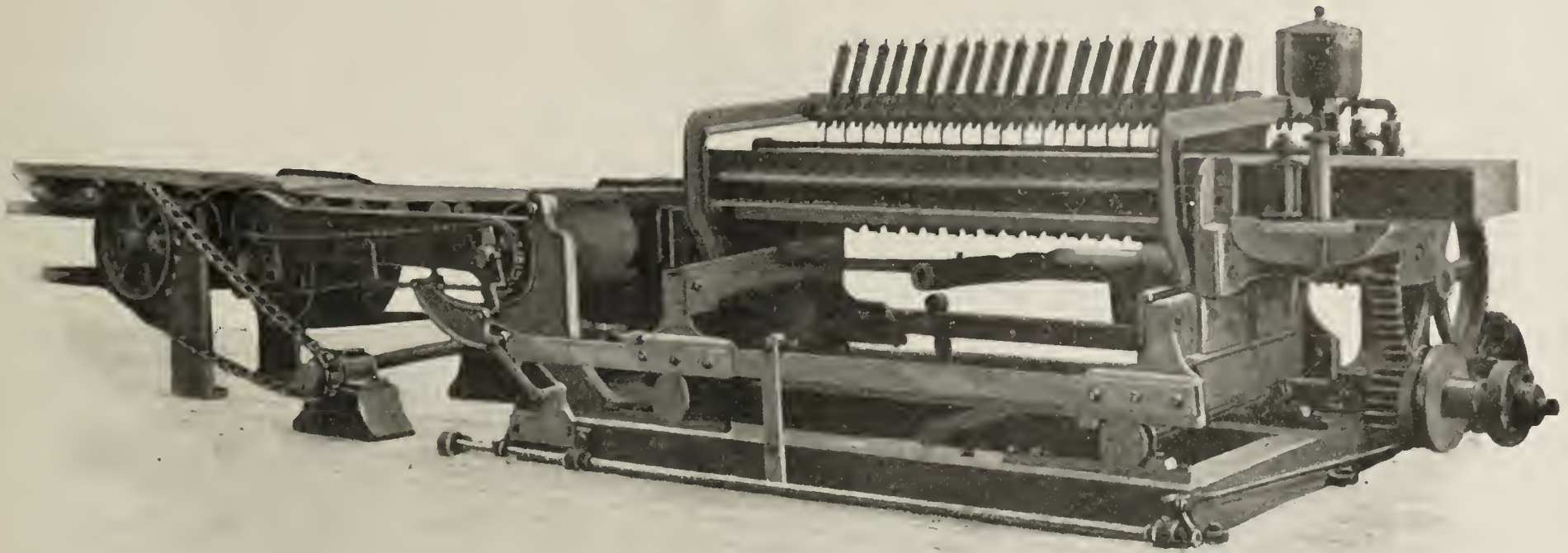
BREWER BRICK MACHINES

are built to avoid breaks by putting a plenty of good material in the right places. Take the gear frame for instance ; it is cast in one piece ; no struts or stay-bolts to tie it together, and not dependent on its foundation to hold it in line. And the knives ; they are FORGED from high-carbon steel ; are independently adjustable for pitch, and can be set out when worn. The expressing screws and casings are of white-iron. The Back Thrust provides for moving the expressing screw ahead when worn. The Bearings are self-oiling.

Show us another machine as good and we'll show you a dozen that are not.

**H. BREWER & CO., TECUMSEH,
MICHIGAN.**

Modern Clayworking Machinery.

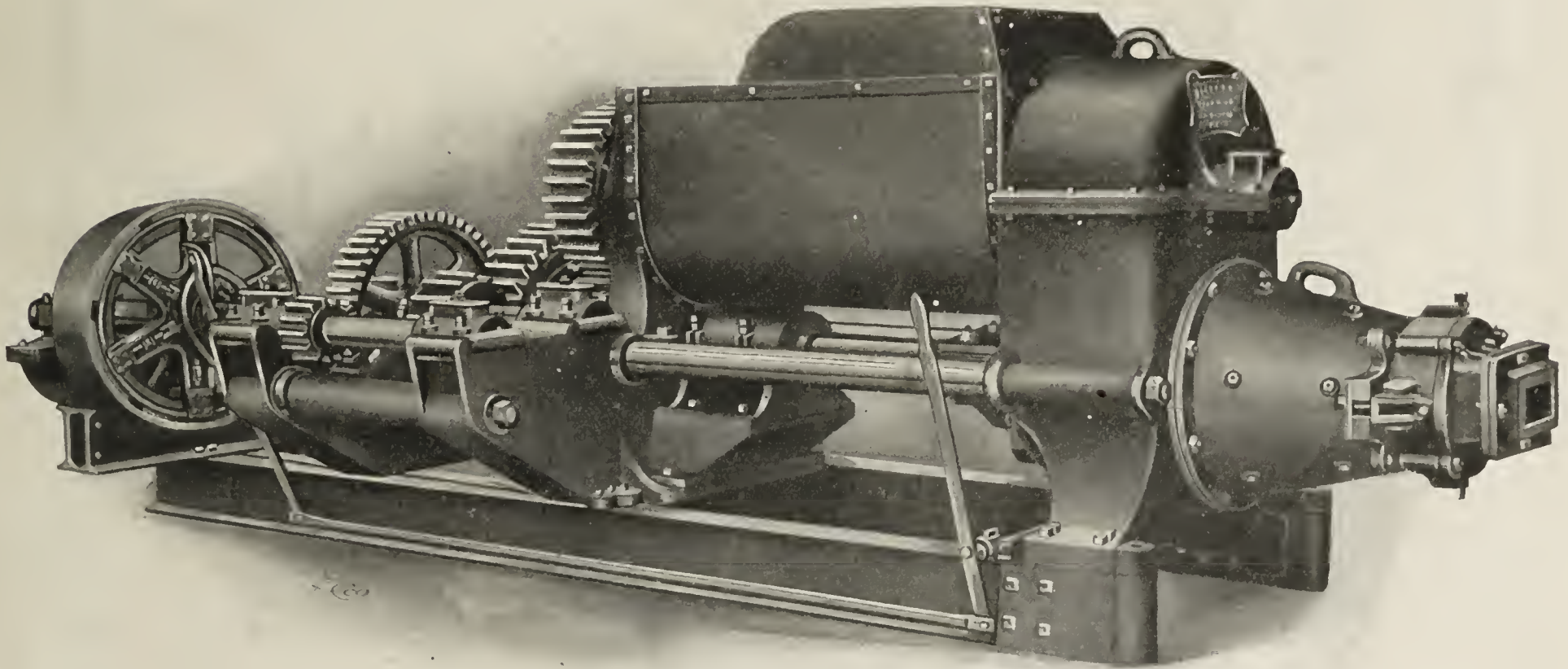


Automatic Side-Cut Table.

Cuts brick 28 inches from brick machine die.

Short cutting wires.

Capacity 25,000 to 125,000 brick in 10 hours.



No. 6 Combined Brick Machine and Pug Mill.

Steel gears throughout.

Self-contained on steel I beams.

Length of pug mill five to thirteen feet.

Interlocking hubs and independent knives.

Capacity 50,000 to 75,000 brick in ten hours.

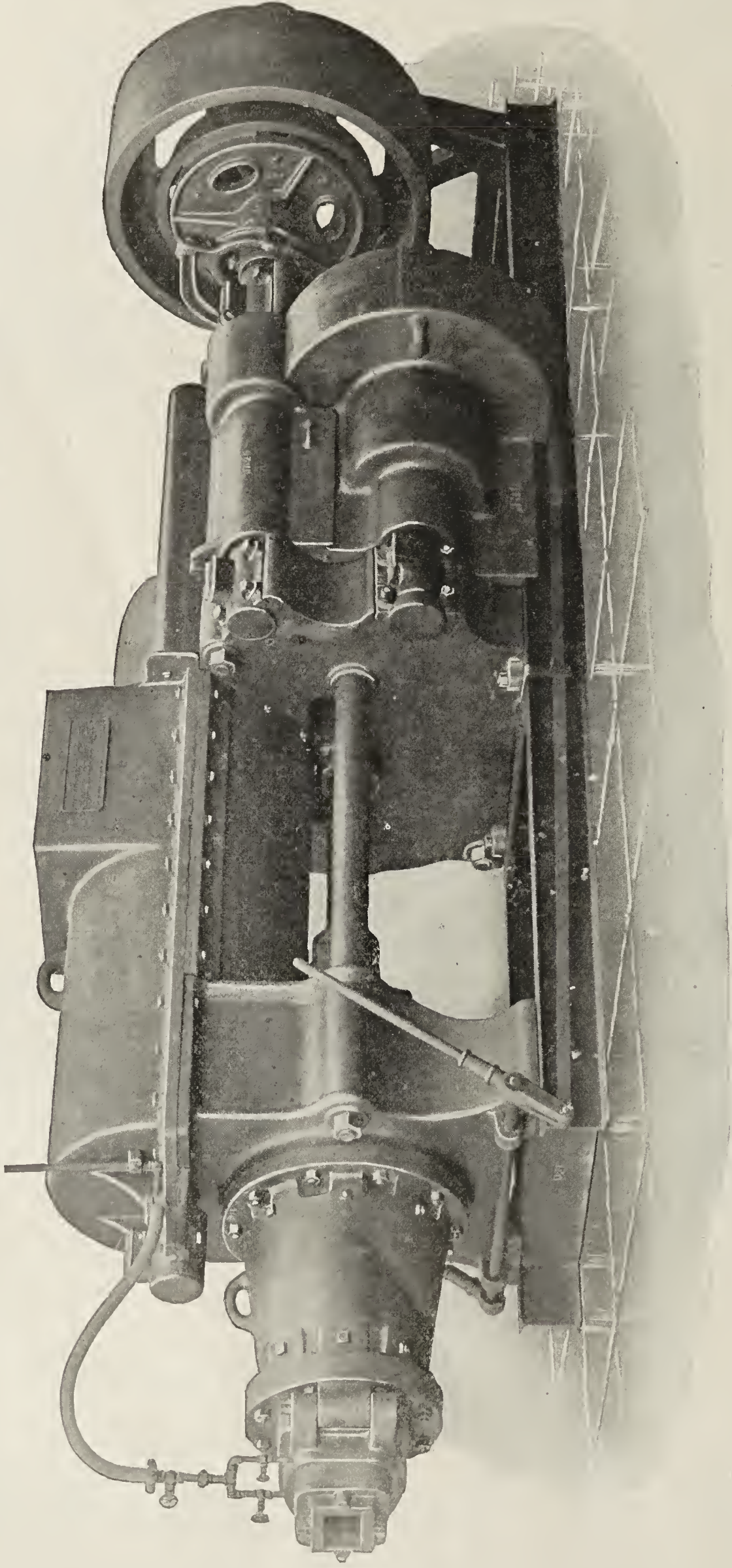
Our Piano Wire Screens Are Doing Excellent Work.

THE BONNOT COMPANY, Canton, Ohio.

Write for Circular No. 12.

Mention The Clay-Worker.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

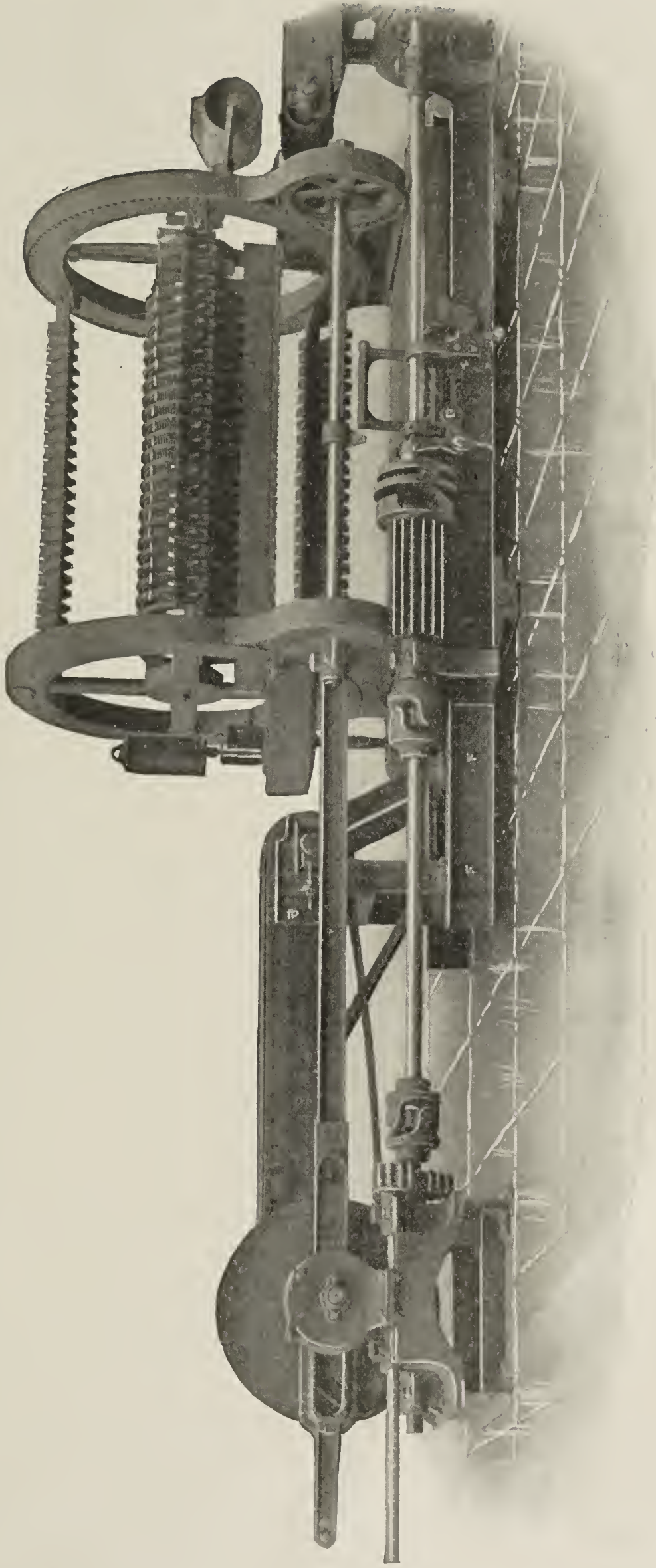
Height from floor to top of hopper, 5 ft. 8 in.

Weight of machine about 26,000 pounds.

E. M. FRIESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.



Fig. 1.



Fig. 2.

Hanover Brick Company, Whippany, N. J.

The Scott Kiln=Drying System

**Does away with the Drier, with its cars, rails, decks and pallets.
Eliminates 50 per cent. or more of the usual labor about the yard.**

In this System the main conveyor belt takes the place of the customary off-bearing belt from the brick machine. It receives the bricks from the cutting table and carries them down the yard under a shed built along in front of the line of kilns.

A shaft running the whole length of the conveyor has pulleys opposite the end of each kiln or chamber. These pulleys drive the portable cross conveyors which carry the bricks from the main conveyor into the kiln.

At the junction of the main and cross conveyor belts the bricks are transferred from one belt to the other. (Fig. 1).

The cross conveyor extends through the kiln or compartment, being supported from the roof or crown, and is easily raised by the setters inside the kiln. This conveyor travels just a little above the tier of bricks that are being set, at a convenient height for the setters to take the bricks off the belt. (Fig. 2.)

The bricks are dried in the kiln.

Ask for catalogue No. 213 C.

American Blower Company

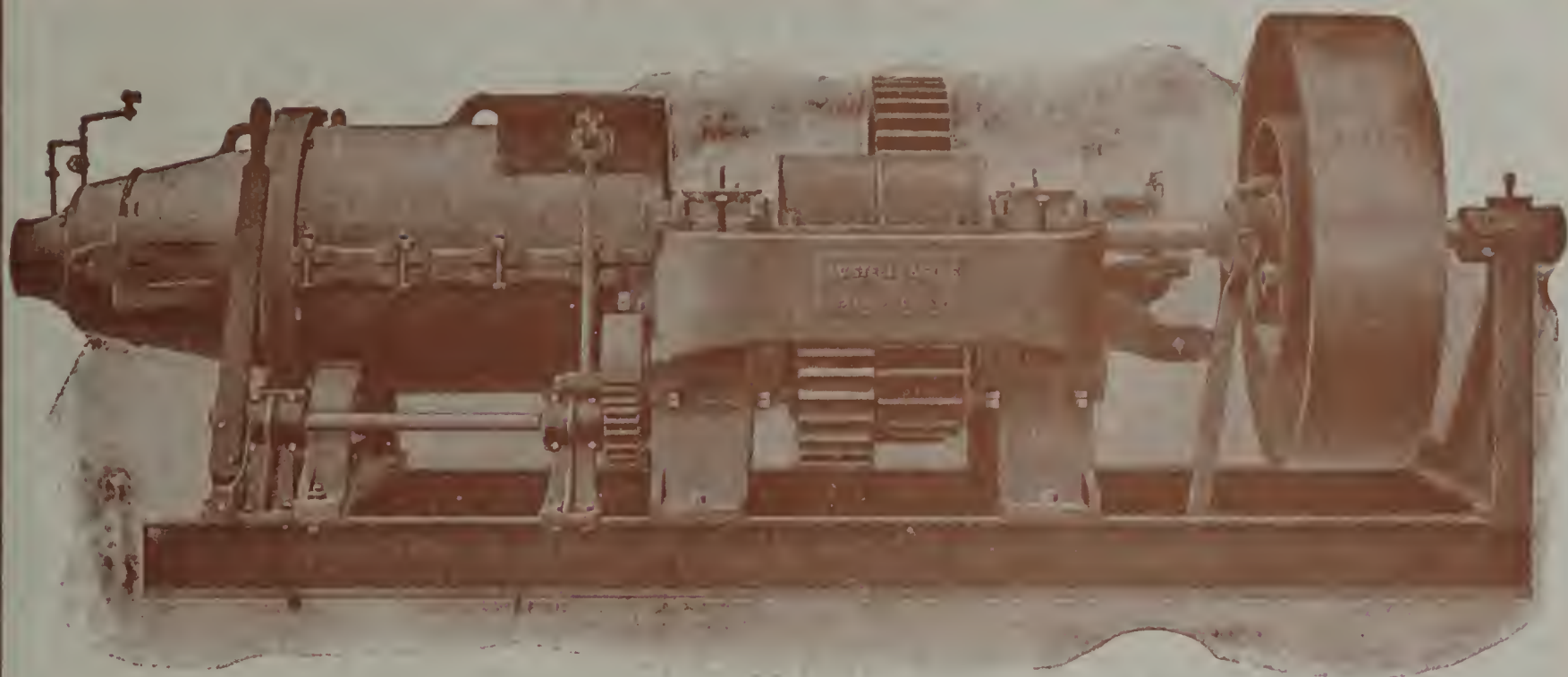
Detroit, Mich.

[LICENSEES ALEX A. SCOTT PATENTS]

141 Broadway
New York

1550 Marquette Bldg.
Chicago

1019 Empire Bldg.
Atlanta



**No. 5. CAPACITY 50,000 to 100,000
PER DAY.**

**Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.**

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen :—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

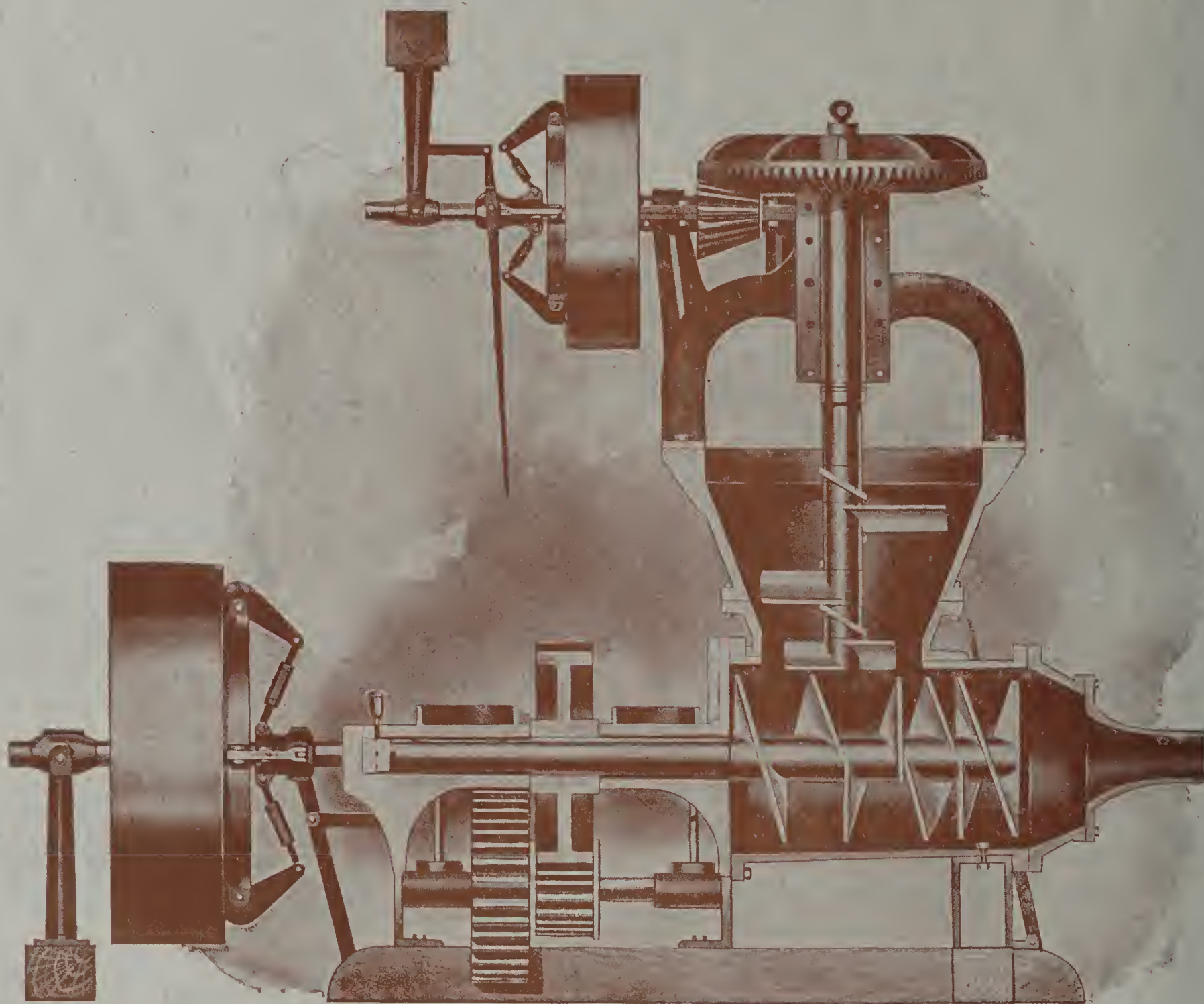
J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.

WHY NOT GET THE BEST?

Buy a Modern Machine That Has Merit, at a Low Figure.

Write and let us show you what our customers say about our machines. Simplicity and durability are features of our machines, insuring a careful buyer a great saving each year in cost of repairs.



SPECIAL "ELI" BRICK AND TILE MACHINE.

Latest Improved. Large Capacity. Runs Easy.

We have a full line of "ELI" Brick, Tile, Hollow Brick and Hollow Block Machines, ranging in capacity from 20,000 to 100,000 per day.

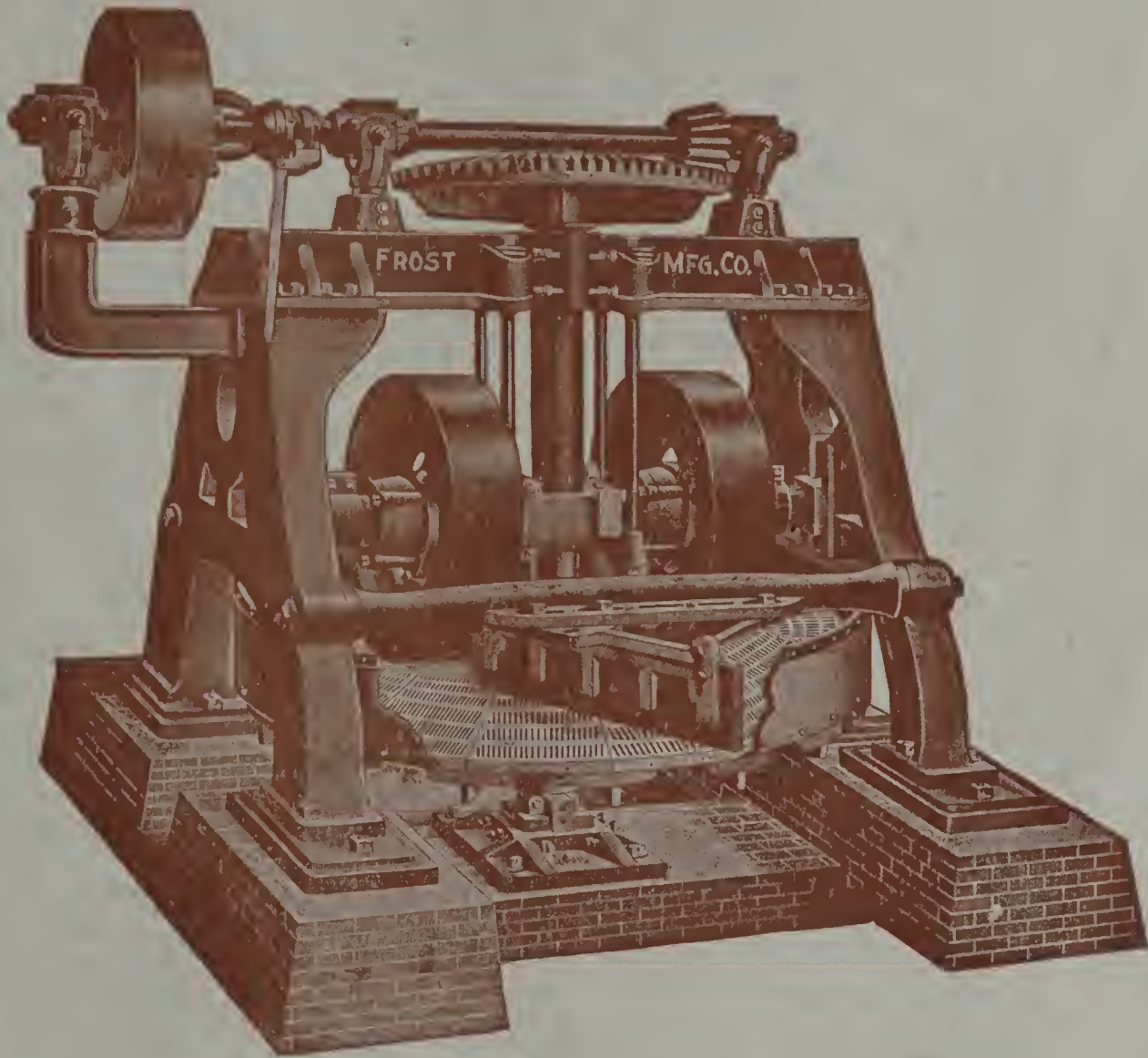
Write for illustrated Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,

[ESTABLISHED 1856]

MORENCI, MICH., U. S. A.

FROST DRY PAN



When you buy a Pan buy a FROST Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.

SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN

After the fires are out, a kiln holding 200,000 bricks will throw off more heat than a 100 h. p. boiler would require for two weeks' operation. Why waste this enormous amount of heat when it can be successfully utilized for drying purposes in an

"A B C" DRYER.

Shall we send you Catalogue
No. 159C?

American Blower Co.
Detroit Mich.

The Perfect Clay Screen in a New Dress.



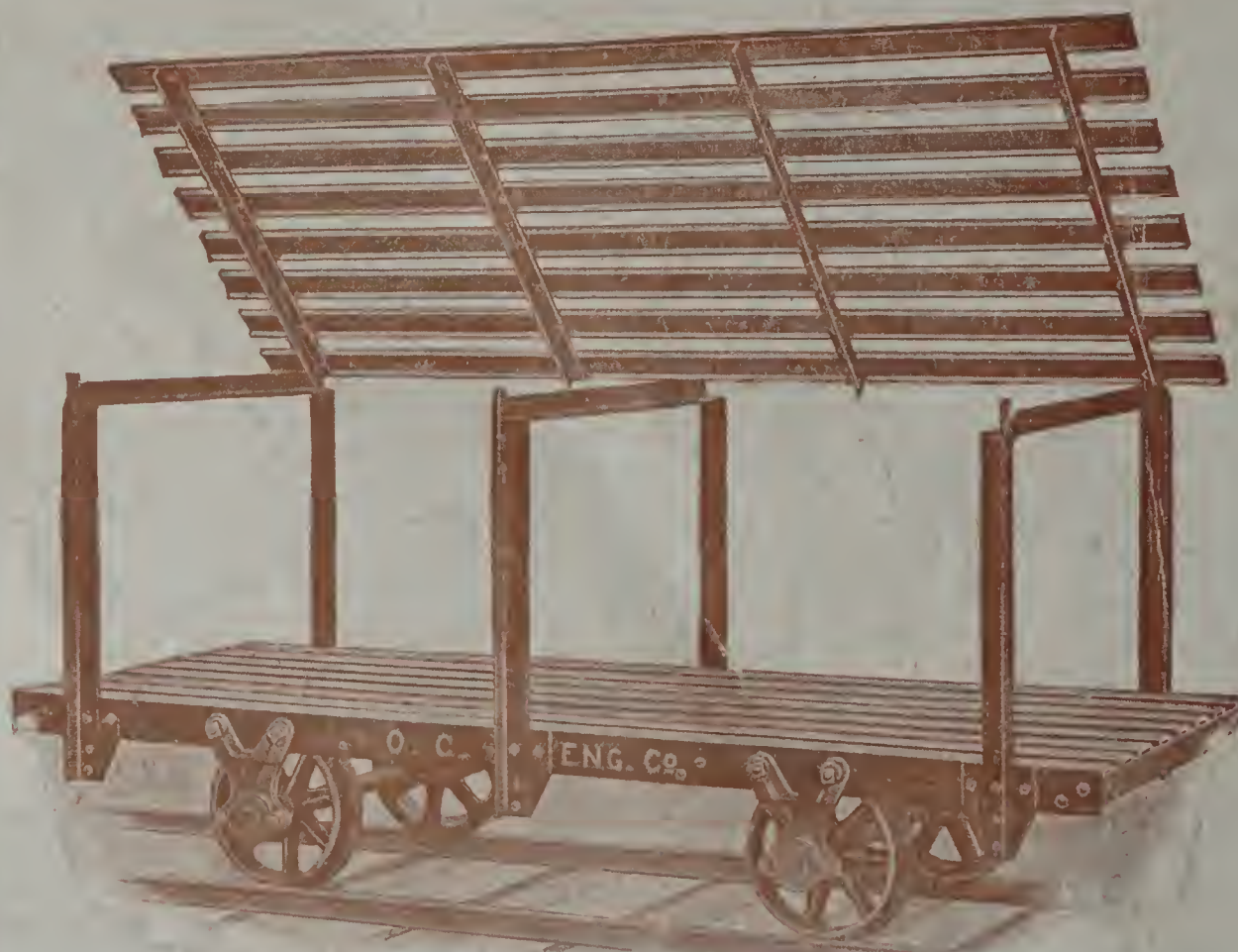
A piano wire plate that fits just the same as our perforated metal plates.

By using every third plate, you get more screening surface than is had with any other screen of this kind.

SPECIAL FEATURES. Short wires do not require high tension and are less liable to break. If a wire does break, take out the plate, put another one in its place. This can be done in an instant. If you want a piano wire screen without the frame and mechanical parts, four of our plates more than equal the area of any screen of this kind now offered. But with the mechanical features **THE PERFECT CLAY SCREEN** fills all requirements.

DUNLAP MFG. CO.,
Bloomington, Ill.

The Ohio Ceramic Engineering Co. CLEVELAND.



Our Improved No. 167
Double Deck Dryer Car
for Brick, Tile, etc.

Uprights outside of side rails.

Decks free from obstruction.

Easiest loaded car on market.

Top deck slats placed across if desired.

Length over all, 6 ft. 11 in.

Width over all, 35½ in.

Track gauge, 24 to 28 in.

Weight, 550 lbs.

Cap, 500 to 600 brick.

**TURNTABLES, TRACK
CARS, ETC.**

THE CLAYWORKER

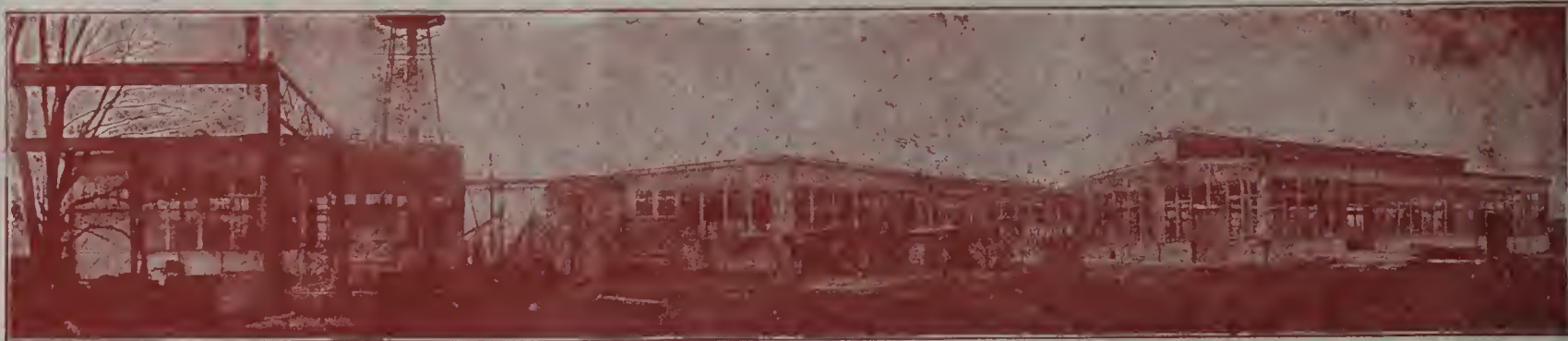
PUBLISHED MONTHLY BY
T A RANDALL & CO
INDIANAPOLIS..



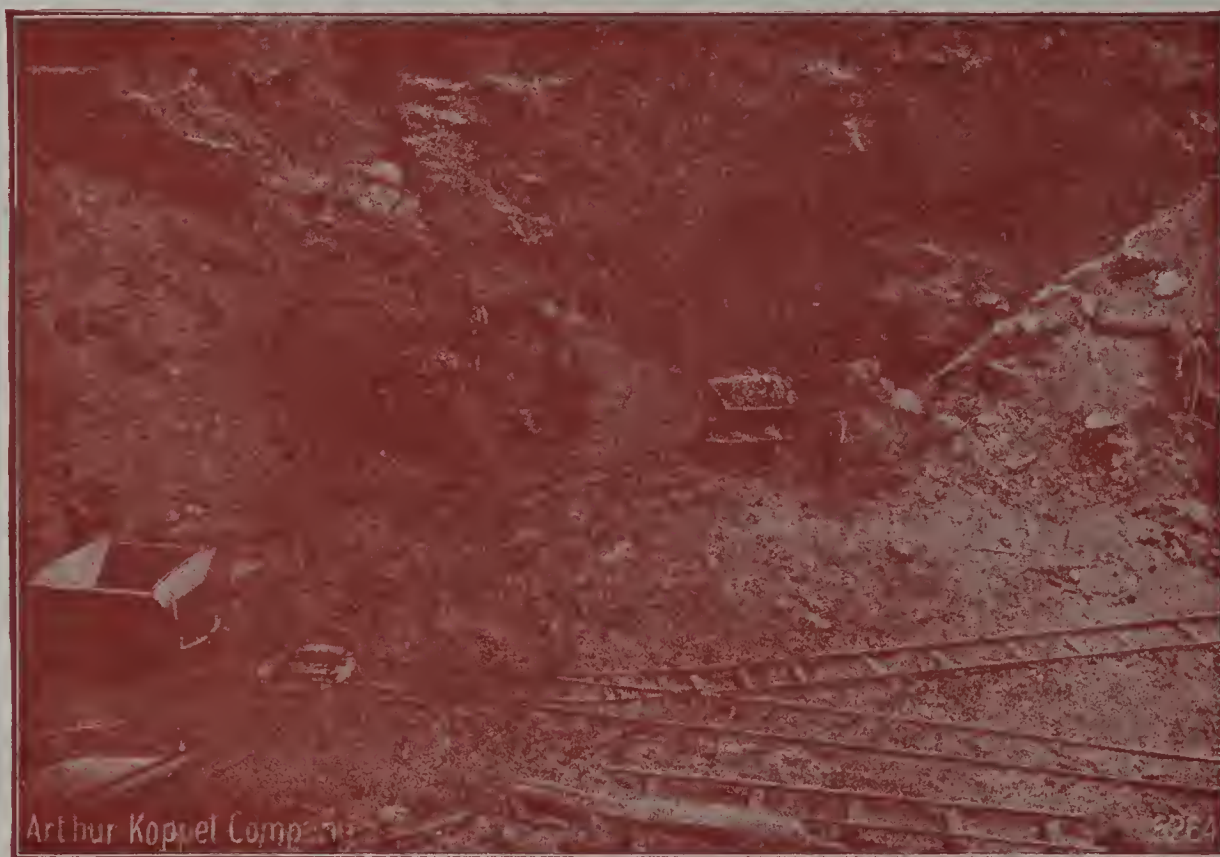
Table Contents, Page 530.

NOVEMBER, 1907.

Index to Ads, Page 540.



We Are Manufacturers and Consulting Engineers of
INDUSTRIAL and PORTABLE
— RAILWAYS —



This illustration shows the **CLAY MINES** of the National Fireproofing Co., Pittsburgh, Pa., with **KOPPEL'S COMPLETE INSTALLATION OF INDUSTRIAL AND PORTABLE RAILWAYS**, Portable Track and Switches, Turntables and Steel Dump Cars.

WRITE FOR CATALOG NO. 41

ARTHUR KOPPEL COMPANY

PITTSBURG
1607 Machesney Bldg.

NEW YORK
136 Morris Bldg.

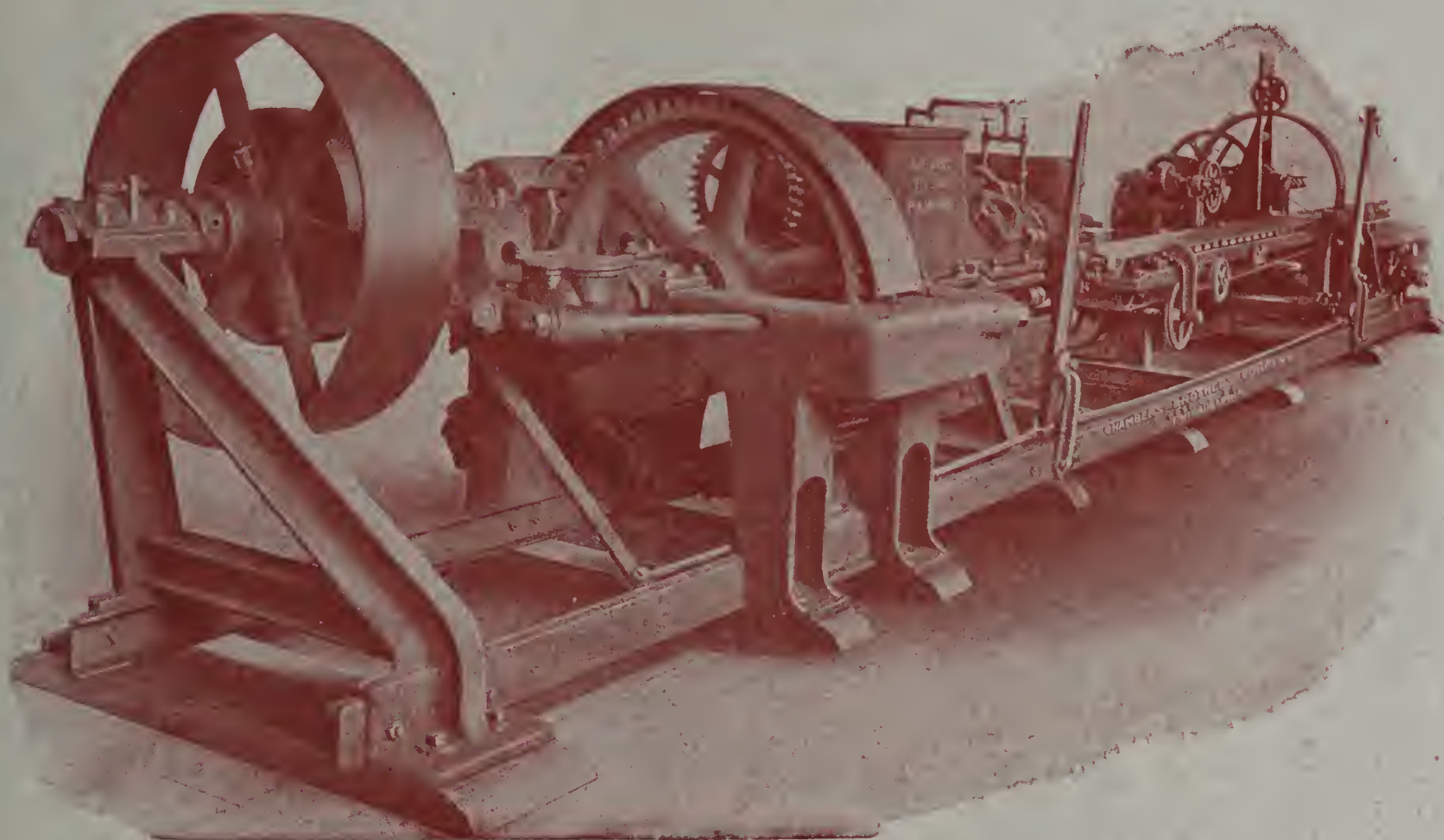
CHICAGO
1639c Monadnock Bldg.

BOSTON
53 Oliver St.

SAN FRANCISCO
1515 Chronicle Bldg.

THE NO. 10 CHAMBERS BRICK MACHINE

With No. 6 Automatic Side Cutter.



This is a new machine and embodies a number of novel and interesting features. The No. 6 Side Cutter has been tested to as many as 110 brick per minute, and is confidently guaranteed for a capacity of 40,000 bricks daily. It is a single wire rotary cutter with a down shear cut, cutting but one brick at a time and cutting them absolutely square and smooth. Provision is made for the escape of stones, should they come in the path of the cutting wire, and the flexibility of the wire does not affect the squareness of the cut.

Note the new gear frame and large diameter heavy gear of broad face. Observe how the end thrust is provided for, as well as the position of driving shaft and clutch pulley. No trouble to get at the journal bearings when necessary to rebabbit. Clutch pulley 44 inches diameter by 12 inches face. Driving Shaft $3\frac{7}{8}$ inches diameter. For hard work and a daily capacity of 20,000 to 40,000 bricks this machine is in a class of its own.

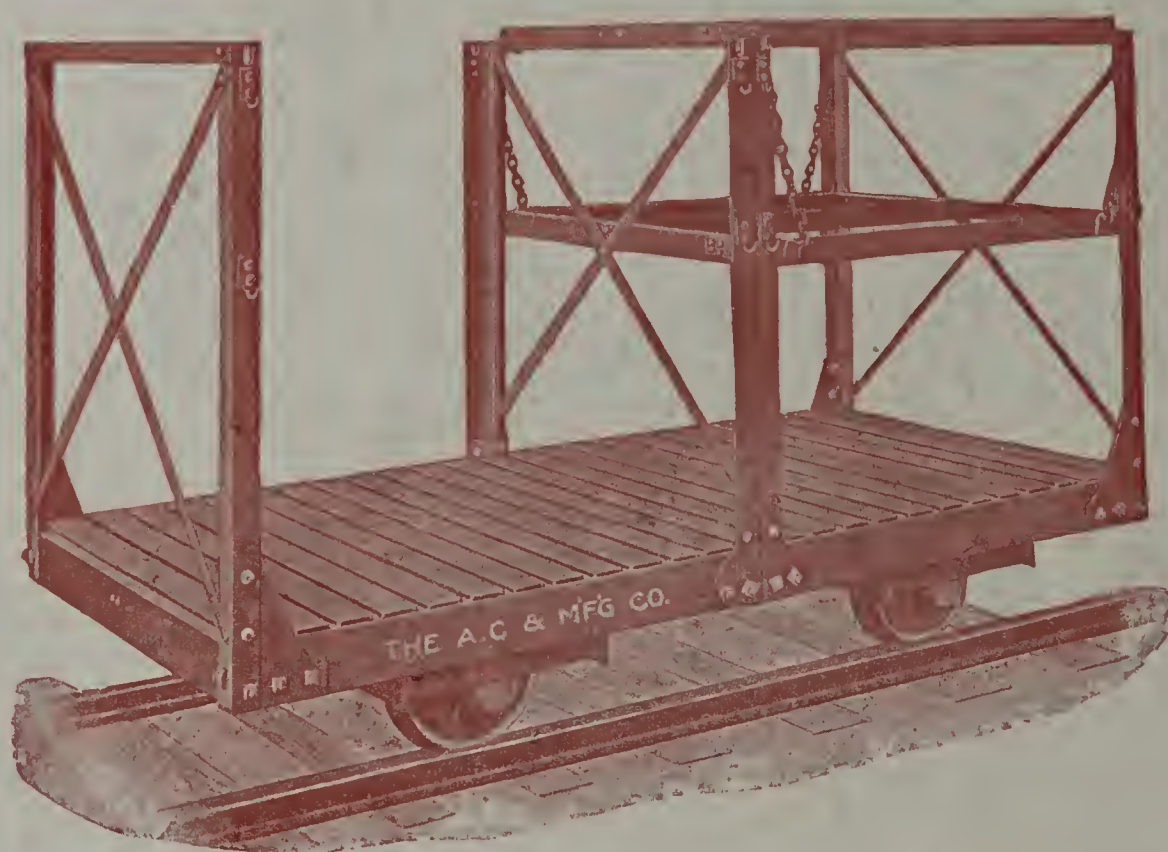
CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets, PHILADELPHIA, PA., U. S. A.

59 West Jackson Boulevard, CHICAGO.

SEE AD ON PAGE 537.

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,
as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 535.)

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



~~~~~ Jacob Buhrer's Technical Bureau, ~~~~~ CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In Buhrer's Shortened Kiln (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in $1\frac{1}{2}$ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

THE HARRINGTON AND KING PERFORATING CO



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,

CHICAGO, ILL., U. S. A.



AGAIN WE SAY ECONOMIZE.

Cut down the running expenses of your plant by drying your brick
with a

RODGERS WASTE HEAT DRYER.

Of course the waste of your waste heat wastes YOUR money—not
ours

BUT

Can you afford to waste it?

L. E. RODGERS ENGINEERING CO.,

Waste Heat Dryer Specialists,
Brick Works Engineers.

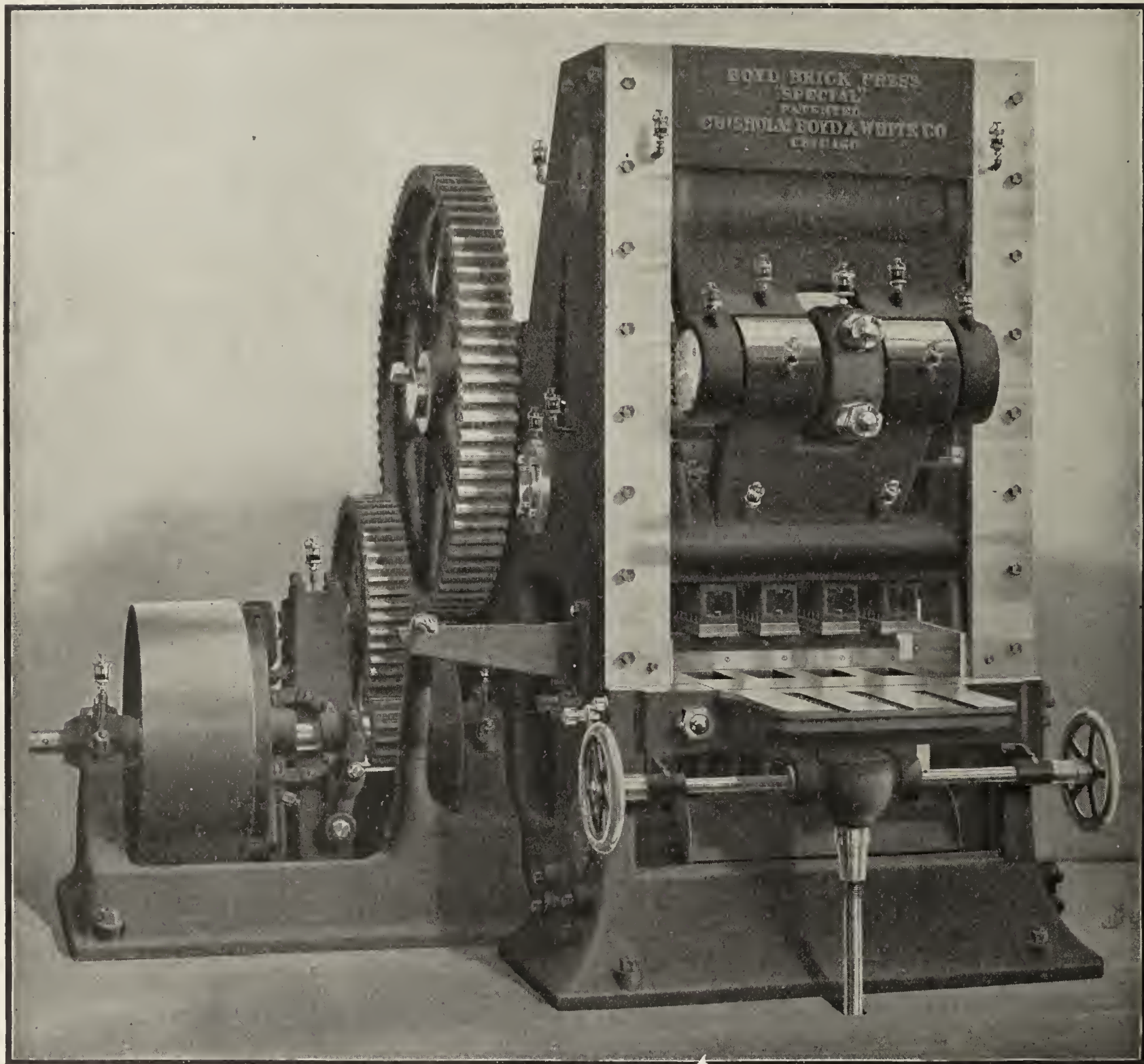
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Built in Two, Four and Six-Mold Sizes.



FOUR-MOLD SPECIAL.

BRICK PLANTS designed and complete machinery equipment furnished. Machinery and product guaranteed.

More Boyd Presses in use than all other Press Brick Machines combined.

The Boyd Press has great strength and endurance, great pressure and long dwell. Boyd Presses built 18 years ago are still in use and doing good work. Brick presses that last are the cheapest in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

N. C. POTTER, PRESIDENT

JOSEPH WELTE, GEN'L. MANAGER

THE SUMMIT PRESSED BRICK & TILE CO.

MANUFACTURERS OF

HIGH GRADE PRESSED BRICK.

OFFICE AND YARDS,
FOURTEENTH AND WATER STREETS

TELEPHONE, MAIN 795.

PUEBLO, COLO. October 10, 1907.

Chisholm, Boyd, & White Co.,
57th & Wallace Sts.,
Chicago, Ill.

Gentlemen:

We have recently noticed in the Clay-Worker several letters from your customers giving their experience with the Boyd Brick Press, and as we are using one you may be interested to hear from us also.

It is now over five years since we installed our Four-Mold Boyd press, which has been in constant operation since that time. It shows practically no wear for the five years' use, and it is in first-class condition, running every day and doing as good work as when first started, and has given us entire satisfaction.

As you doubtless know, we are working shale, which requires heavy pressure, and with your press we never have any trouble to get all the pressure we want to make a good, hard, solid brick.

Before buying the Boyd we made a thorough investigation of all other dry press machines, and we are pleased to state that we have never had cause to regret the selection of your press. We desire to thank you for your prompt and courteous treatment.

We are, Yours very truly,

SUMMIT PRESSED BRICK & TILE CO.

Joseph Welte
MGR

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

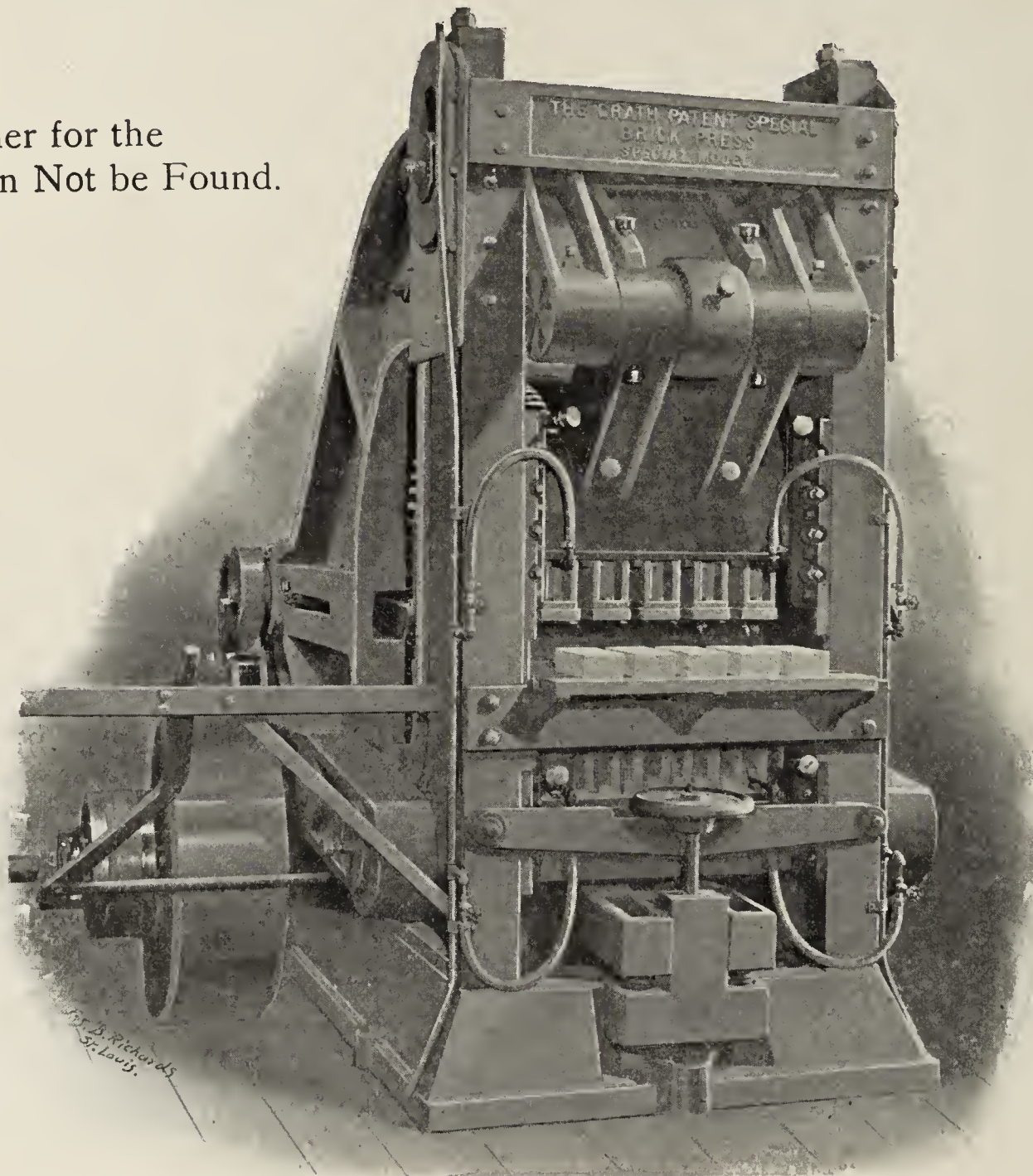
THE ONLY PERFECT BRICK PRESS

For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

FIVE MOULD MODEL.

Seek No Further for the
Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufac-
turer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

THE PRESS OF TODAY.

THE ALBERTA PORTLAND CEMENT CO.

W. P. Grath, St. Louis, Mo.:

[Copy]

Sandstone, Alta., Sept. 26, 1907.

Dear Sir—Replying to your favor of recent date regarding Grath Special press purchased from you, would say that after working your press alongside another well-known make, your press has proved itself vastly superior in every way; it is stronger, simpler, easier of adjustment, makes more brick, and of much better quality.

After a long experience with presses, having operated five (5) different presses each of different makes, I consider yours "THE BEST YET," in short, "AN IDEAL PRESS."

Wishing you the success your press merits

Yours truly, G. W. DELLER, SUPT.
Alberta Portland Cement Co., Limited.

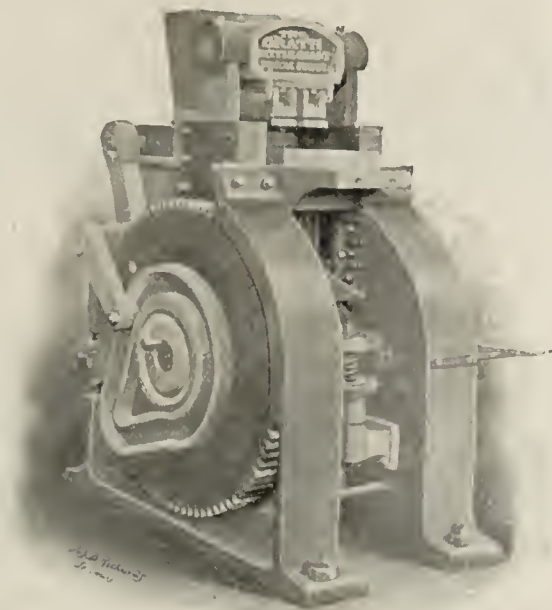
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

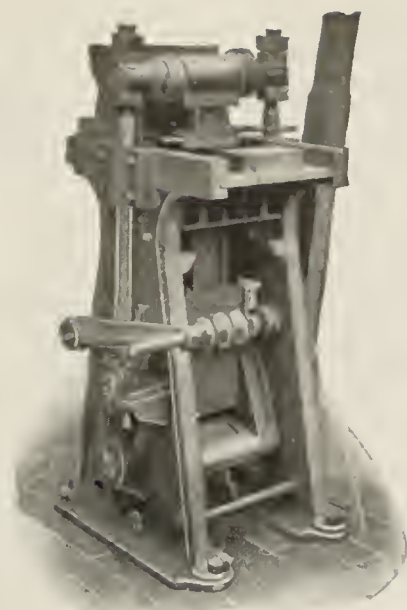
St. Louis, Mo., U. S. A.



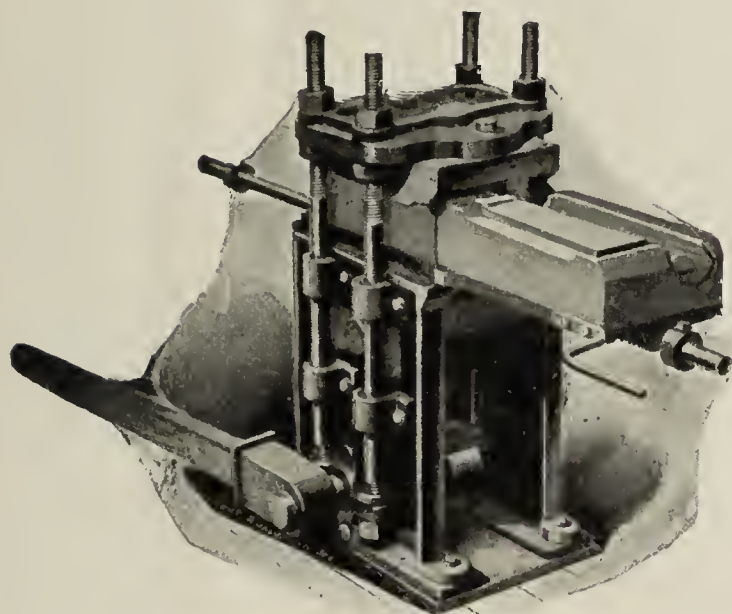
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



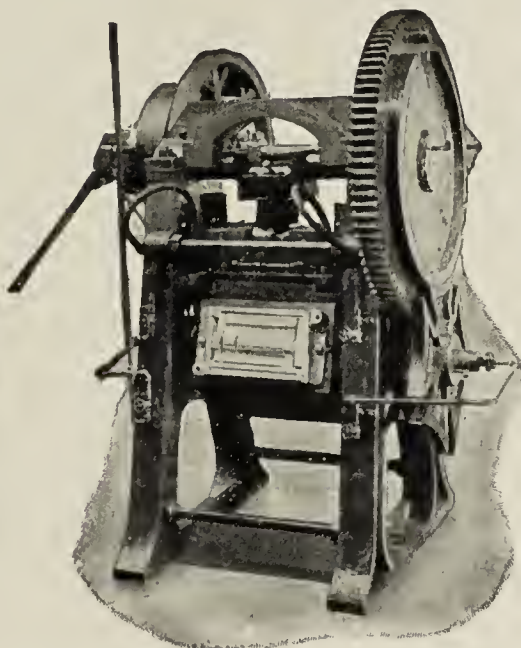
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



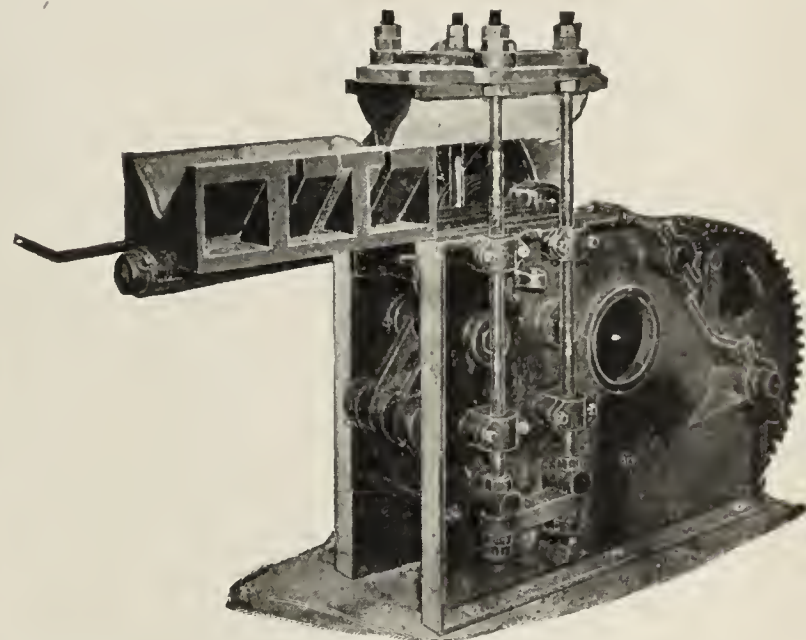
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

The New Grath Down-Draft Continuous Kiln.

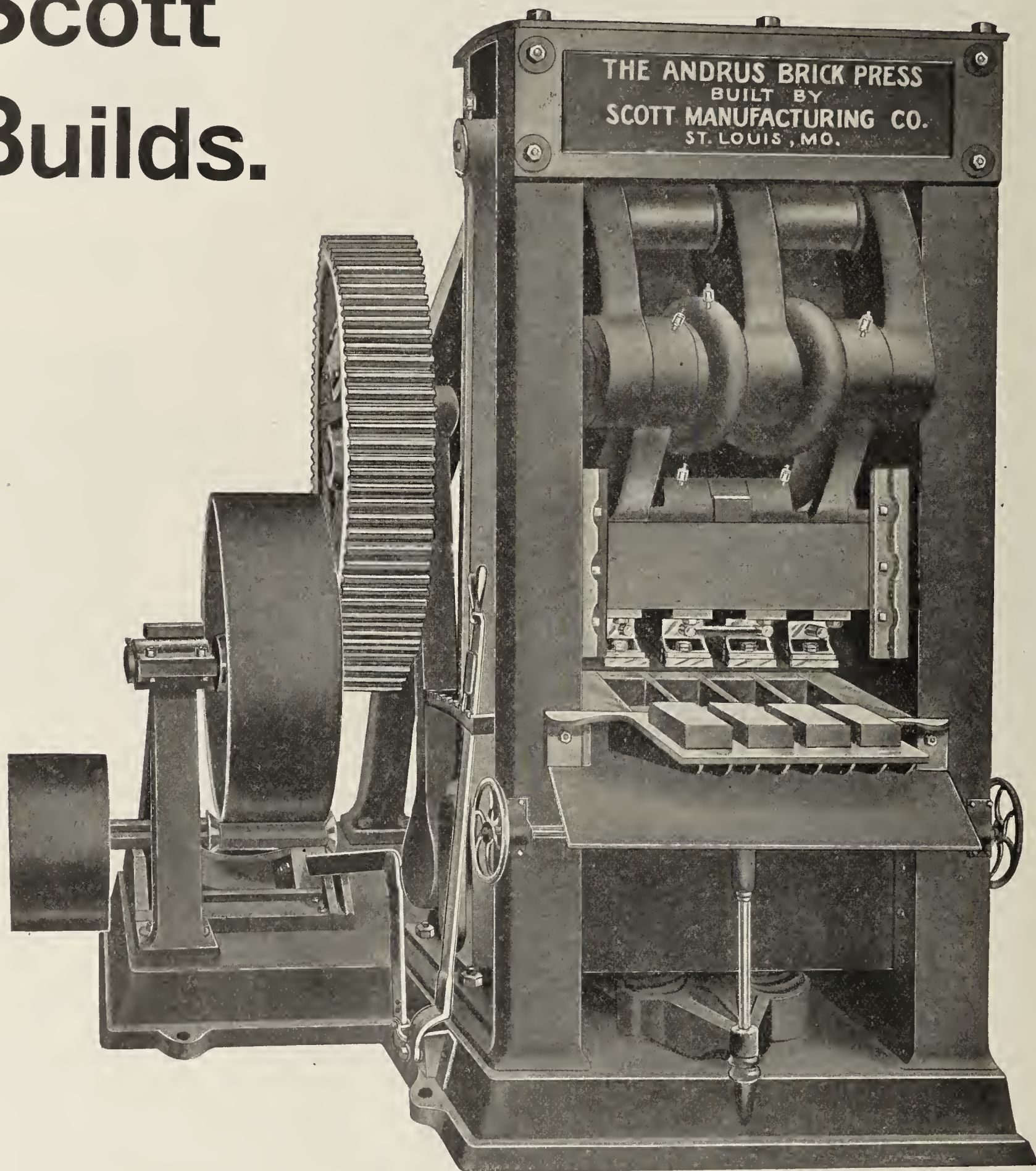
Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the **ordinary single** down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get **advantage** of all **waste** heat from your burning chamber, which you **lose** and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in **same** manner as the direct, through the furnaces up the bag and down through the ware. **Simple** and **sure** in operation. GUARANTEED.

Lieber's Code.
Cable Address,
GRATH, St. Louis.

Illinois Supply & Construction Co.
HOLLAND BLDG.. ST. LOUIS, MO.

Long Distance
Phone
Bell, Main 235.

This is the Press that Scott Builds.



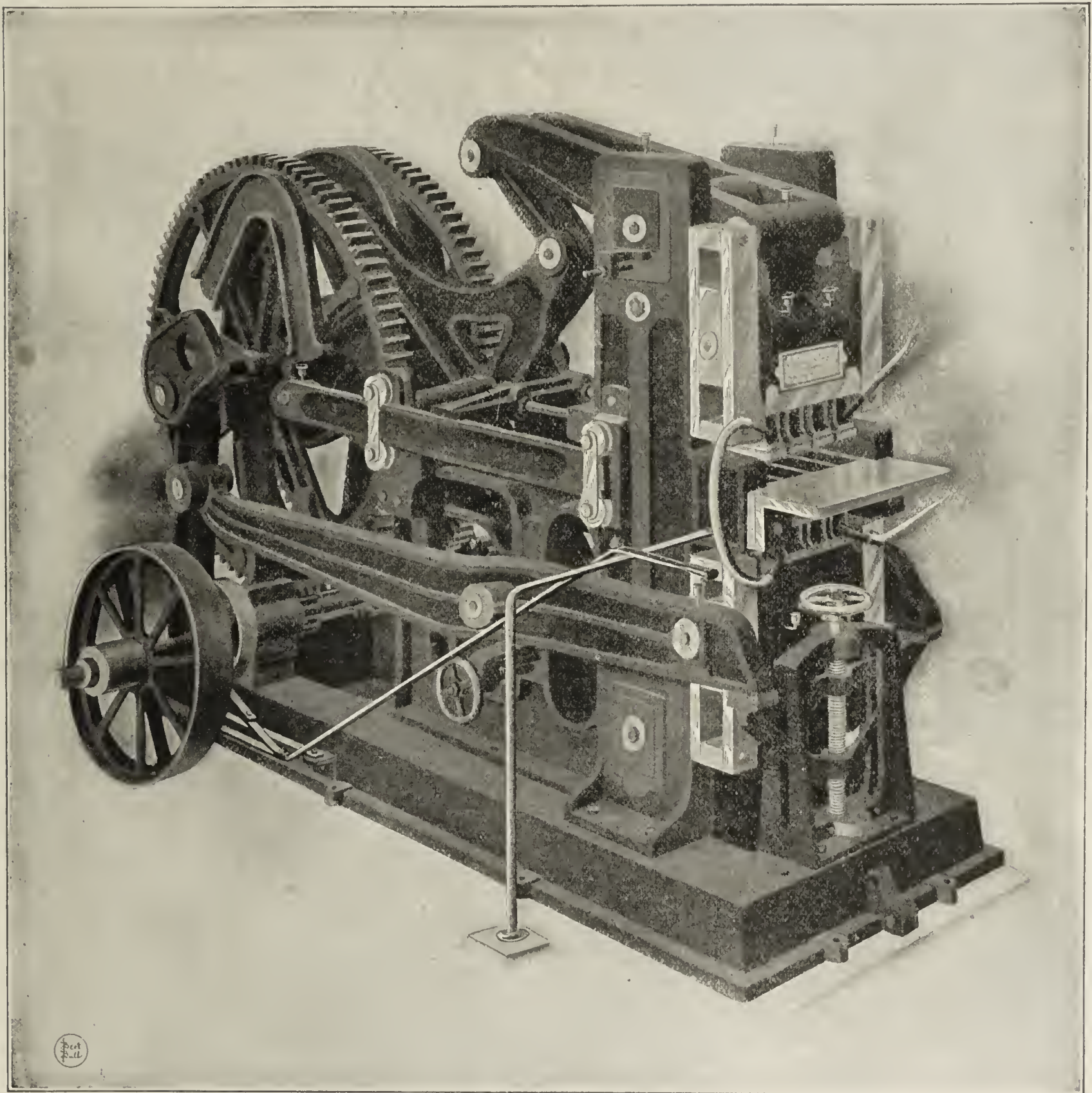
Our Latest Model.

Scott Manufacturing Company,
421 Olive Street, St. Louis.

A postal will bring
you its description
and price.

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.

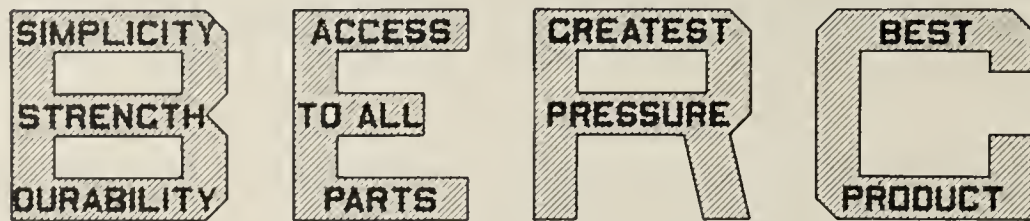


If you want an up-to-date Dry Press, one that will give you
RESULTS—See this machine in action.

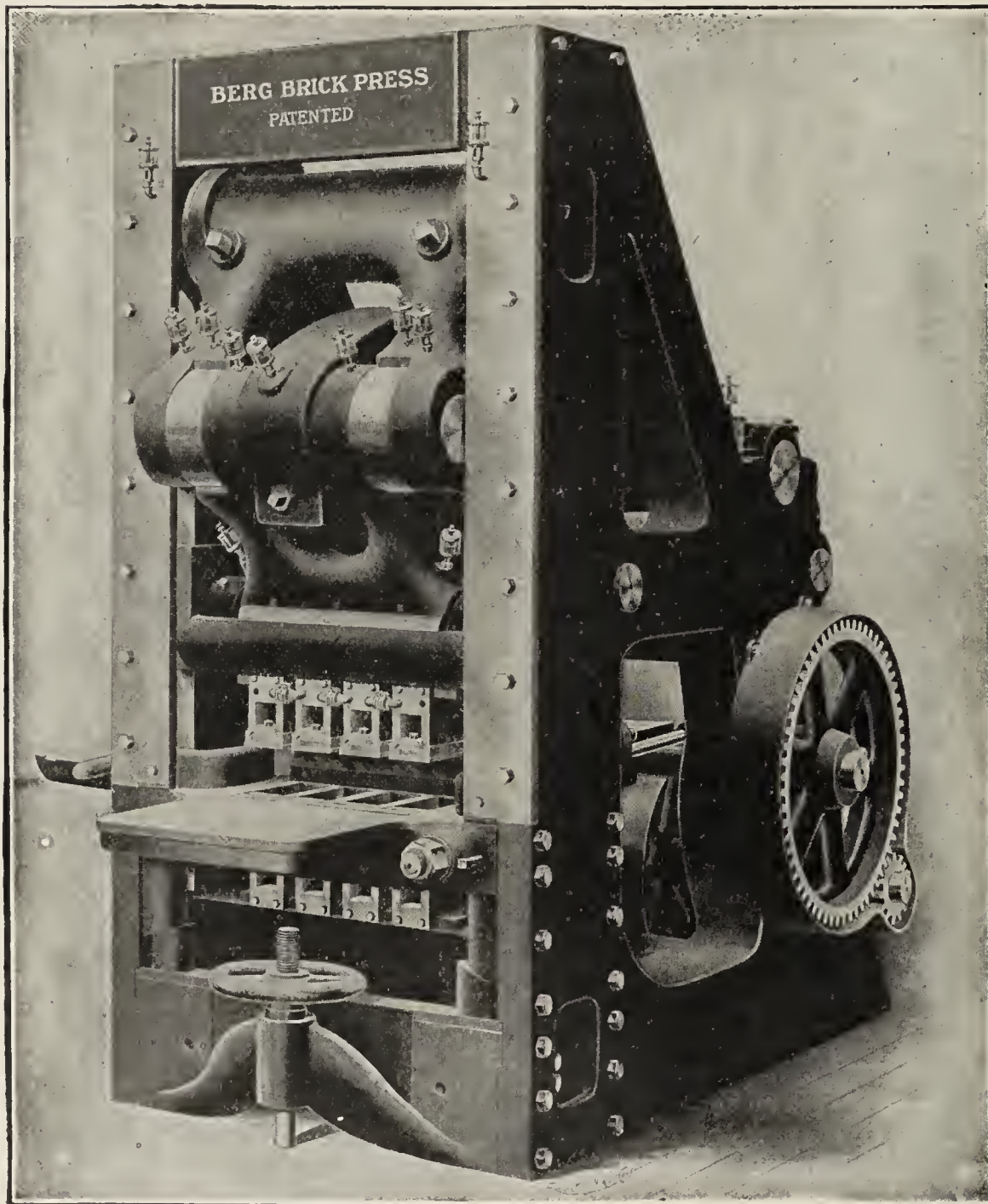
The Fernholtz Brick Machinery Co.,

Boyle Avenue and Old Manchester Road, St. Louis, Mo.

WHAT'S IN A NAME?



The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick-
makers, and which many OTHERS
have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship. Fully Guaranteed* as to its *Success*.

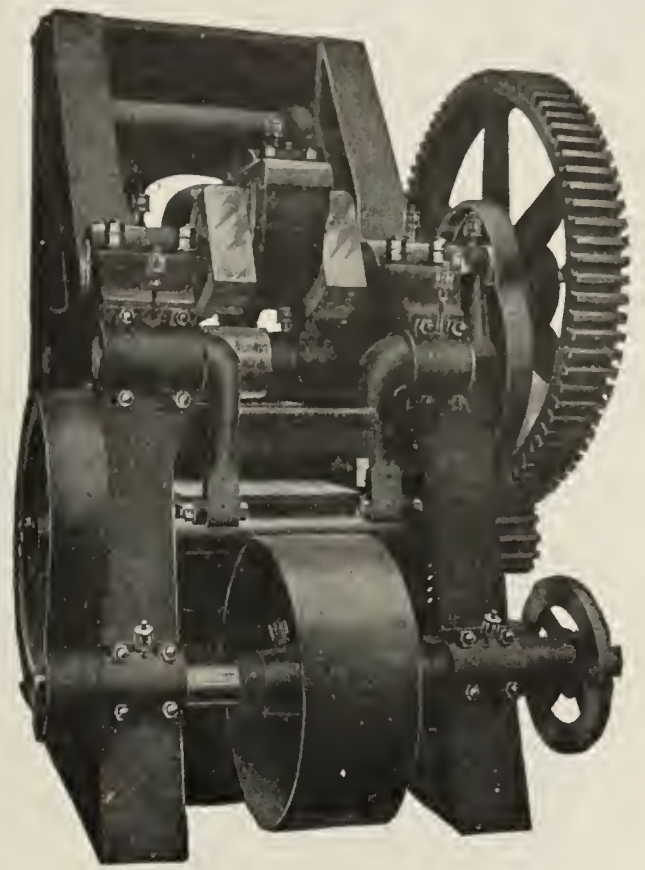
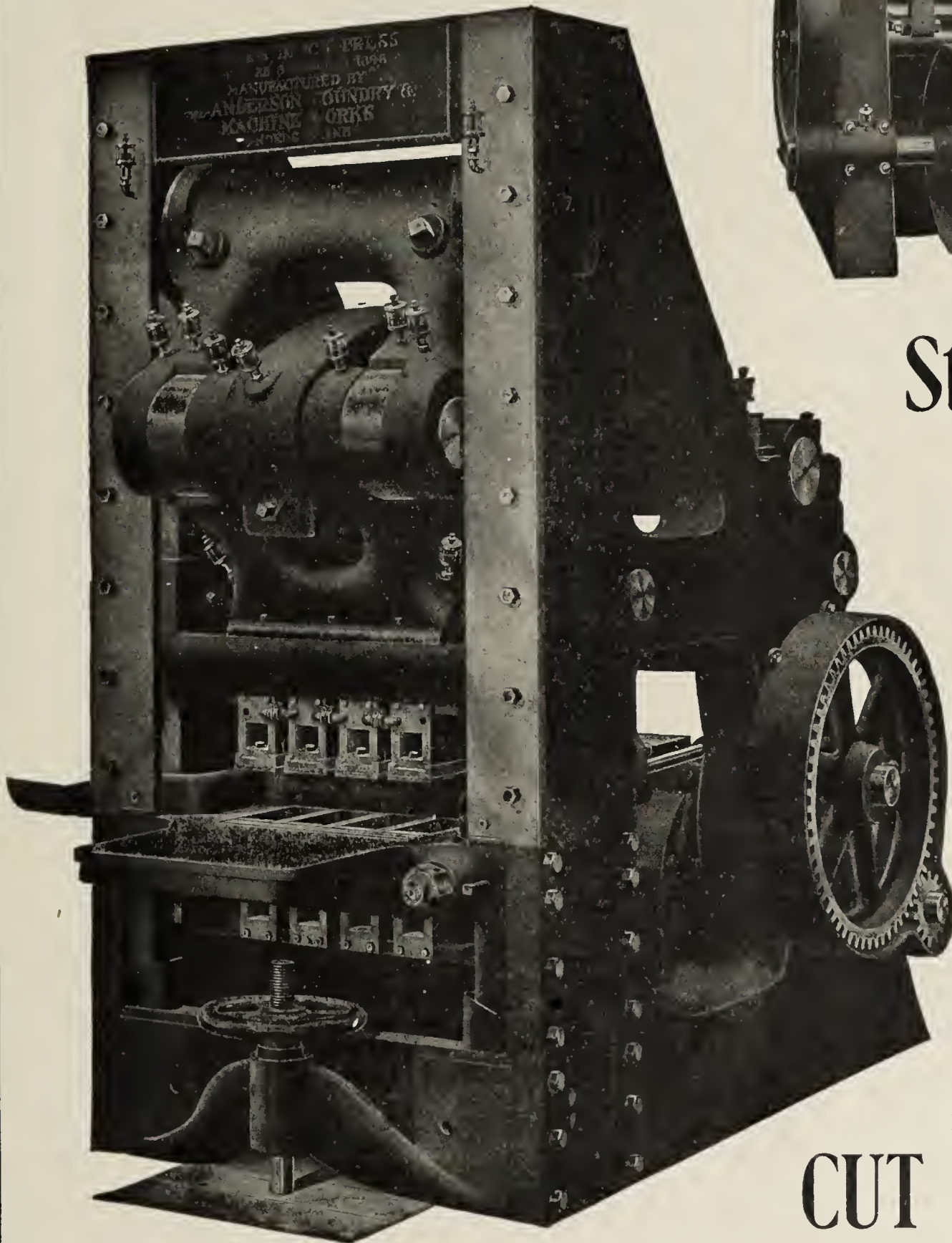
Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make *Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick* and *Fire Brick*. Correspondence solicited.

A. BERG & SONS,

Mention The Clay-Worker.

Manning Chambers, TORONTO, ONT., CAN.

New Model Berg Brick Press



Back View.

Still in the
Lead
and
One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

CUT GEARING

of either iron or steel, if desired.

Sold by

CHICAGO BRICK MACHINERY CO.,
Great Northern Bldg.
77 Jackson Blvd.
CHICAGO.

Manufactured and Sold by

Anderson Foundry & Machine Works,

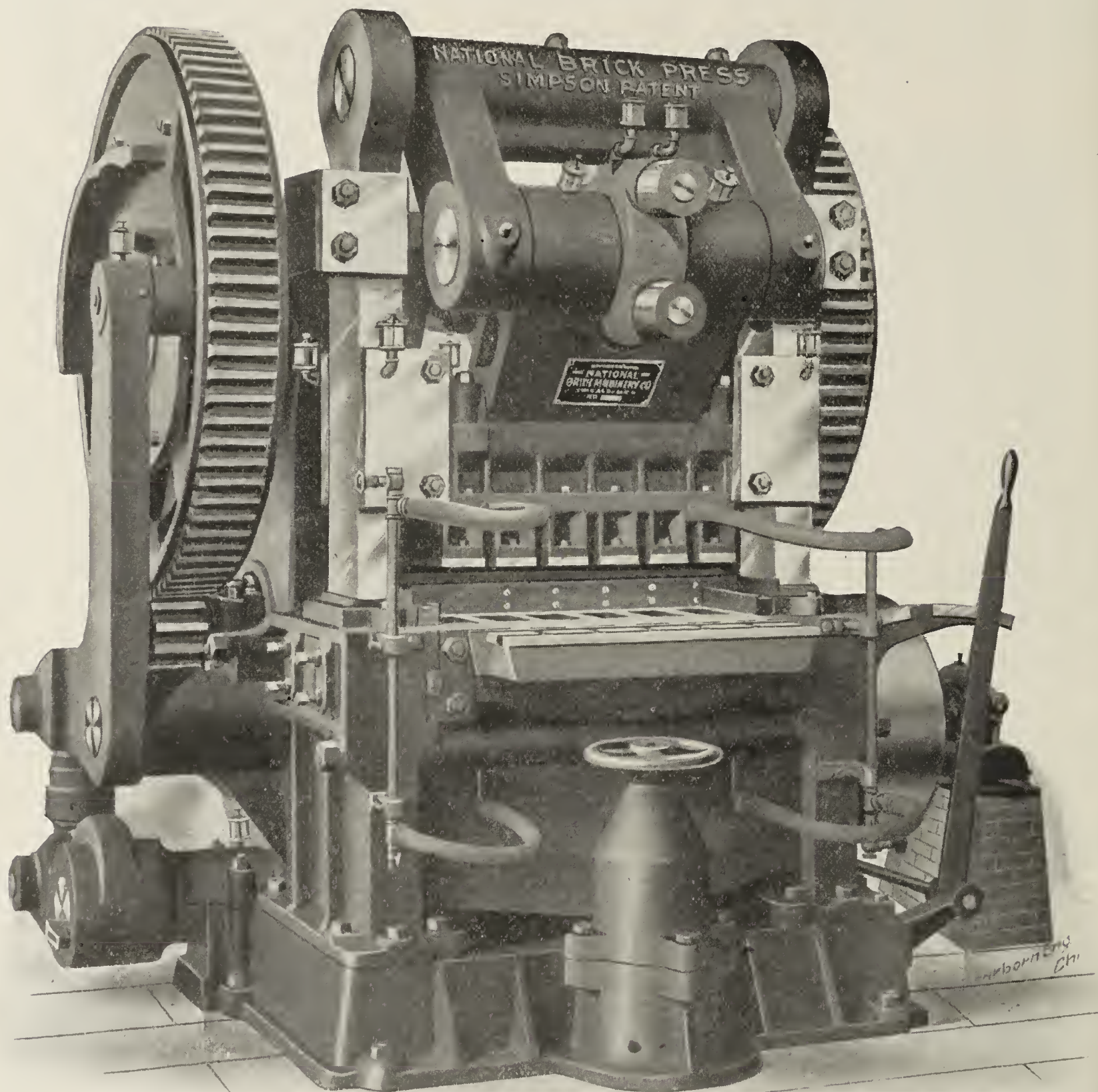
New York Office, No. 39 Cortlandt St.

ANDERSON, IND.

The National Brick Press

Simpson Patent

SIX MOLD



Read What Our Customers Think of It.

National Brick Machinery Company, Chicago, Ill.:

Rochester, N. Y., July 6, 1907.

Gentlemen—We beg to inform you that the new Six Mold Brick Press, Simpson Patent, which we recently purchased from your company, is turning out a very high grade of brick at the rate of 27,000 per ten hours. We find the press to be smooth running, strong and compact with its parts easily accessible, and in every way it is equal to all of our expectations. It has been installed beside our four Mold Model C Press which we understand was designed by the same inventor and which has been doing very satisfactory work for the past two years. It gives us pleasure to state that we are glad that we decided on a Simpson Press for the increased equipment of our factory.

Very truly yours,

ROCHESTER COMPOSITE BRICK COMPANY.

R. W. Holden, Treasurer.

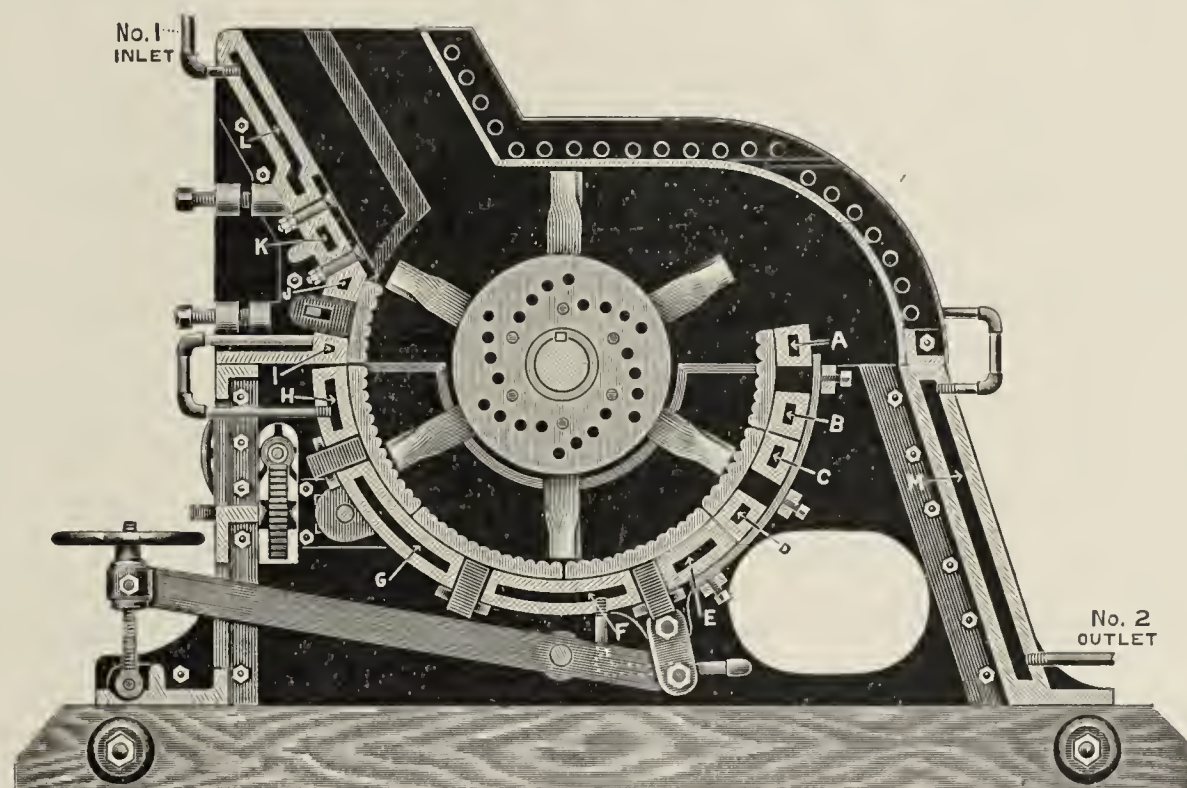
Built in Four, Five and Six Mold Sizes.

National Brick Machinery Co.,

General Office, Chamber of Commerce Bldg.,

CHICAGO, ILL.

JUST OUT! DECK SWEEPER.



We will guarantee this machine to reduce any clay or shale from the dry shed, from the shale bed or from the bank, in a satisfactory condition for making burned goods of any description at one operation.

For further information write to the

Williams Patent Crusher and Pulverizer Co.
St. Louis, Mo., U. S. A.

Write for Bulletin 21.

Over 1200 of the Williams Hinged Hammer Crushers and Pulverizers in daily operation.

The National Paving Brick Manufacturers' Association

Will send you free, upon request, any or all of the following booklets:

"Directions for Laying Brick Street Pavements."

"Why Vitrified Brick Street Pavements Are the Best."

"Why Should You Pave at All?"

"A Directory of Manufacturers of Vitrified Brick."

Address

WILL P. BLAIR, Corresponding Secretary, Terre Haute, Ind.

PRESTON BRICK COMPANY,

Manufacturer of

Vitrified Shale Paving Brick,

SEWER AND HARD BUILDING BRICK.

Hornellsville, N. Y.

JOHNSONBURG VITRIFIED BRICK CO.

Johnsonburg, Penn.

Street
Paving

Brick and Block.

Samples on Application.

SHAWMUT VITRIFIED PAVING BRICK WORKS,

Shawmut, Pa.

Alfred Yates, Gen. Mgr.

Vitrified Shale and Fire Clay Paving Bricks and Blocks.

Burned in Yates' Patent Kiln.

Samples and Prices on Application.

**Kushequa Shale
VITRIFIED PAVING BLOCKS, CHOCOLATE-RED
BUILDING BRICK.**

KUSHEQUA BRICK CO., Kushequa, Pa.

PAVING BUILDING • **BRICK AND BLOCK** • SIDEWALK FOUNDATION

The Barr Clay Co.

C. C. Barr, Pres. - Streator, Ill.

**POSTON BLOCK and
ORIENTAL BUILDING BRICK.
Poston Paving Brick Co.,
Crawfordsville, Ind.**

THE COLLINWOOD-DECKMAN-DUTY COMPANY,

Manufacturers of

High Grade Paving Brick.

Factories at Collinwood, Malvern and Carrollton, Ohio.

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**Thurber Vitrified Paving Brick
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Made of the finest shale, absolutely free from lime.
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Is the largest and best equipped plant in the East for the manufacture of Paving Brick. All brick sold under a guarantee. Correspondence solicited.

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**The Danville Brick Company,
Manufacturers of the Unsurpassed
Danville Paving Block.
Danville, Ill.
LET US QUOTE YOU PRICES.**



**The Best
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**SIX FACTORIES
DAILY OUTPUT
400,000**

**The Metropolitan Paving
Brick Company
CANTON, - - OHIO**

How to Properly Construct Brick Streets.

Drop us a postal and we will send you free of charge
a complete set of

DIRECTIONS.

TERRE HAUTE VITRIFIED BRICK CO.

Successors to
TERRE HAUTE BRICK AND PIPE CO.,
Terre Haute, Ind.

New York Brick & Paving Co.,

Manufacturers of

VITRIFIED PAVING BRICK,

Sewer and Hard Building Brick,

... ALSO ...

Berlin Vitrified Brick that Withstands all Acids.

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The Wabash Clay Company,

MANUFACTURERS OF ALL SHALE

PAVING BLOCKS and PIONEER BUILDING BRICK.

Our leading brands are CULVER BLOCKS, WABASH STANDARDS,
"SPECIALS," for crossings on macadam streets, GUTTER BLOCKS,
COLUMBIAN SIDEWALK BRICK and PIONEER BUILDING BRICK.

Our material has for nearly fifteen years successfully stood the
heaviest traffic of Indianapolis, Terre Haute, East St. Louis and
dozens of other large cities of Indiana and Illinois. We ask inves-
tigation and comparison by those seeking the best paving material.
Samples furnished on application.

Office and Works at VEEDERSBURG, IND.

Clinton Paving Brick Company,

Manufacturers of the Highest Quality of

Paving Brick

Which are offered to the municipalities of the Cen-
tral States under positive guarantee as to wearing
quality. None better.

Prices and samples sent on application.

Correspondence solicited.

Office and Works: Clinton, Ind.

Do You Want Clay?

WE OWN AND OPERATE EXTENSIVE DE-
POSITS OF THE VERY BEST GRADES.

Fire Clays, Terra Cotta Clays, Kao-
lin, and Fire and Moulding Sands.

Have been in the business for TWENTY-FOUR
years, and are prepared to meet every reasonable demand.
Unsurpassed shipping facilities. Prices and samples free.

The BLOOMFIELD CLAY CO.,

(C. A. Bloomfield, Treas. and Manager)

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METUCHEN, N. J.

J. G. BUTLER, JR.,
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CHAS. M. CROOK,
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Youngstown, Ohio,

MANUFACTURERS OF

BESSEMER BLOCK,

An unexcelled repressed shale paver.

Correspondence solicited.

The Purington Paving Brick Co.,

of GALESBURG, ILLINOIS,

HAS the largest and best equipped plant in the United States for the manufacture
of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation
second to none, and this Company points with pride to its record for quality of
material and its methods of conducting its business.

Correspondence respectfully solicited.

They Say They Would Not Exchange "The Standard" Drier for Any Other!

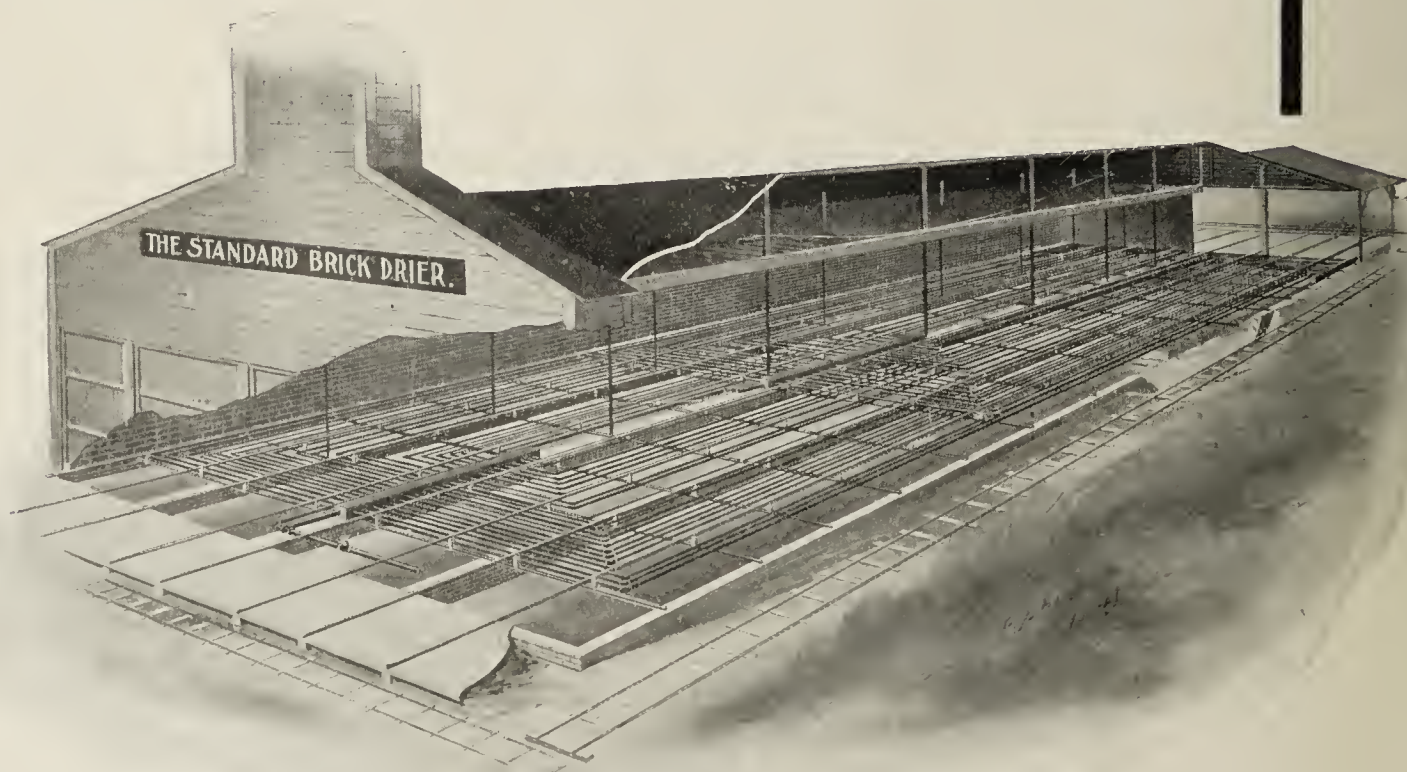
WE HAVE been using an eight-track "Standard" Drier for five years, and three years ago we put in a ten-track "Standard." We would not exchange this Drier for any we have ever seen. The Drier Cars are substantial and rarely ever need repairs, while the steam pipes have given us very little trouble with leakage, etc. It affords us pleasure to recommend "The Standard" Drier to those who contemplate installing a drying system, as we find it first-class in every respect.

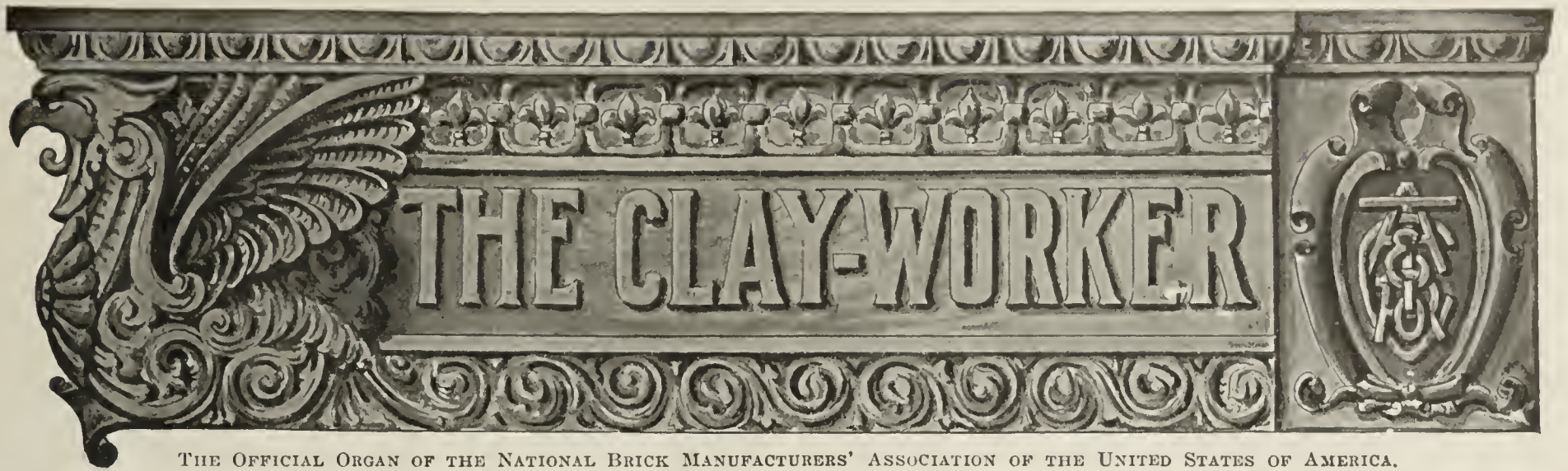
—Letter from Columbus Brick Co.,
Columbus, Miss.

WE CLAIM and are prepared to prove that the New Standard Heating System, for drying all varieties of clays, is more effective in the utilization of *exhaust steam* than any other heating system on the market. Write for the booklet "Money-Saving Drying" and complete illustrated catalogue containing letters from many satisfied users.

THE STANDARD DRY KILN COMPANY

647 South Pennsylvania St., = INDIANAPOLIS, INDIANA





THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLVIII.

INDIANAPOLIS, IND., NOVEMBER, 1907.

No. 5.

Written for THE CLAY-WORKER.

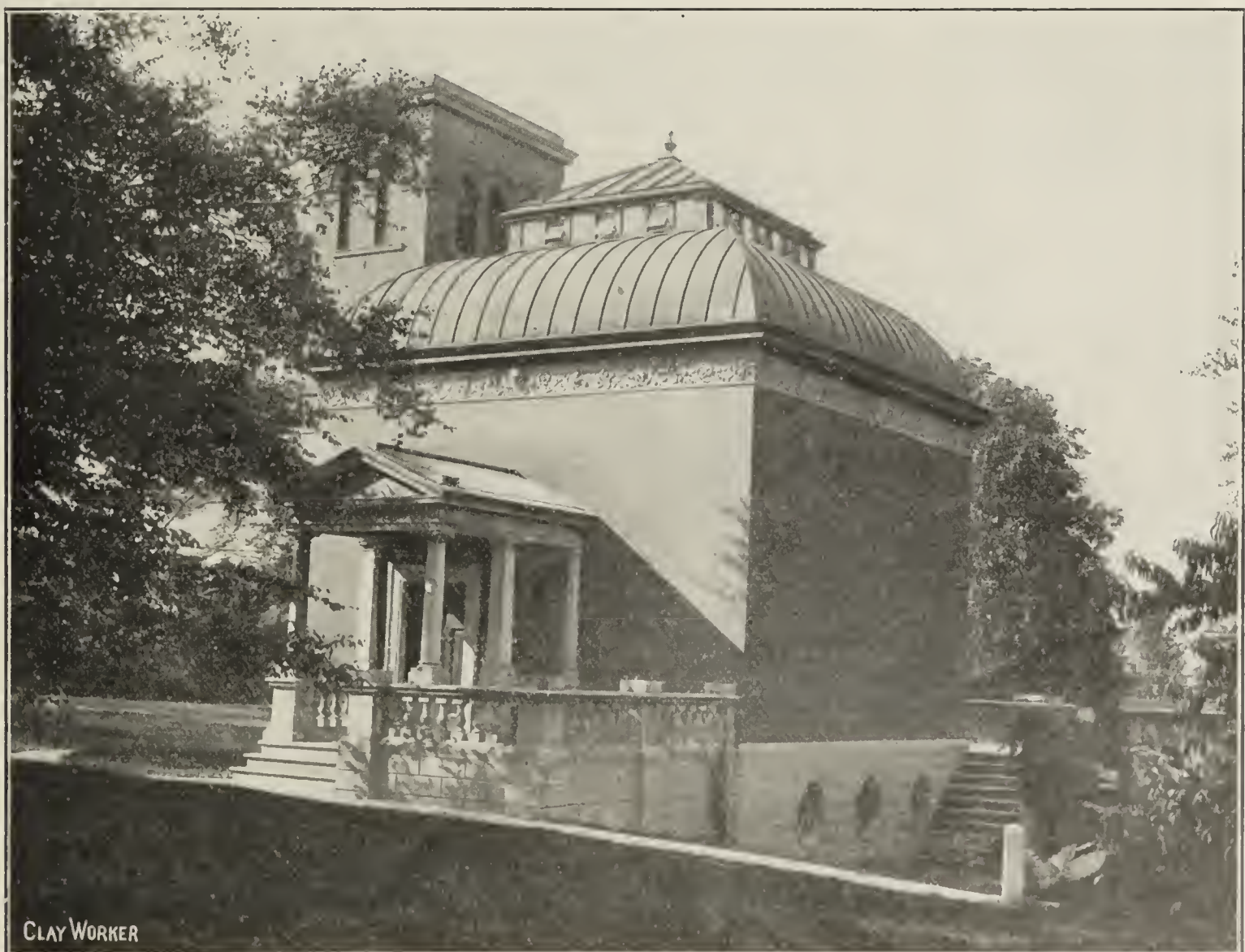
THE HOOSIER ATHENS.

A Well Paved Town With None But Brick Paved Streets.

SOME FORTY MILES west from Indianapolis, with which it is connected by both railroad and trolley lines, the latter known as the "Ben Hur Route," is the flourishing town of Crawfordsville, made famous as the home of the grand author and soldier, Gen. Lew Wallace, who spent the latter days of his brilliant life in his beautiful home here. When not engaged in literary work, General Wallace occupied his time in overseeing and caring for his

manor home, where he loved to welcome and entertain his neighbors and friends. He took special pride in his study, which we illustrate. It is an artistic creation of General Wallace's own designing. It is built of the famous Akron red brick, with terra cotta trimmings, and with the background of beautiful forest trees, with which it is surrounded, it is an exceptionally attractive edifice.

Crawfordsville is sometimes called the Hoosier Athens, owing to the fact, doubtless, that it is the seat of Wabash College. The town has a goodly reputation as a lesser commercial center and has within its borders a number of manufacturing interests, chief of which is the plant of the Poston Building and Paving Brick Company, which was established some six years ago, since which time it has built up an



CLAY WORKER

The "Study" of the Late General Lew Wallace, Crawfordsville, Ind.

enviable reputation for high grade building brick and paving block.

An observing visitor cannot fail to notice that Crawfordsville is distinctly a brick town. Not only are its commercial structures built of brick, but most of its homes are built of the same substantial material. Sometime since the municipal authorities passed an ordinance prohibiting the building of frame structures in the business district, a course that should be followed by every city and town worthy of the name.

Another pleasing feature to be observed is that her streets are all paved with brick. Not a foot of paving material other than vitrified block is to be found in or about the city. There are six miles of fine brick pavement now in use. The oldest brick pavement, which was laid several years ago, is smooth and clean, showing no wear at all. Neither this nor any other or the brick pavements has required any repairing. These

bed, on which there are three inches of concrete and then a two-inch sand cushion.

THE POSTON PAVING BRICK PLANT.

This plant, which furnishes Crawfordsville with its paving blocks and a large amount of its building brick, is located in the eastern part of the city. It has the very best of railroad facilities, the Monon, Vandalia and the Big Four passing its very doors. With such facilities they seldom experience a shortage of cars and are able to market their brick when ready for shipment.

The yard has been stripped of all its stock of first grade brick and there is to be seen but a small pile of seconds or culls near the kilns. The demand for their product has been so great that they are now booked five months ahead. Mr. Poston said to the writer, during a recent visit there, that



One of Crawfordsville's Main Thoroughfares Paved With Poston Block—No Repair Bills Here.

brick pavements are so satisfactory to the taxpayers that an additional six or seven miles of street will be paved the coming year. More Poston block would have been put down during the past year if the block could have been obtained.

The City Engineer, Mr. Burl Raymond Johnston, declares that brick pavements are thoroughly satisfactory, and when they are laid right with proper materials are without doubt the most durable and least expensive of all pavements. Recently he had occasion to take up a strip of pavement beneath which a sewer was to be built, and the contractor experienced great difficulty in tearing up the pavement. It was difficult to take up the block, even when chisels and sledge hammers were brought into play. The pavements are laid on a six-inch grout foundation, with a two-inch sand cushion. The expansion joints are made of an asphalt mixture, and the pavement flushed with a cement filler. The pavement between the car tracks is laid on a three-inch gravel

if he had the brick he could sell ten million without any trouble whatever.

The paving block they manufacture is an excellent one, made of the hardest shale to be found in the country today. It is a peculiar knob-stone shale of a hard, granular structure, and requires the highest grade of dry pans and crushers for grinding. The shale is blasted from a large bluff located a mile and a half from the plant on the banks of the Walnut Fork of Sugar Creek.

The writer enjoyed thoroughly, through the courtesy of Mr. Poston, a drive from the works out into the country to the shale bank. Mother Nature was decorating her children in the most beautiful autumnal colors and the hills and streams were recipients of the falling dead leaves. The arrival at the shale bank was in good season, for the men were making ready to blast the upper portion of a huge wall of shale. One of the illustrations shows the wall of shale be-



Starting the Steam Drill.



The Shale Bank After the Blast.



On the Way to the Bridge.



Where the Shale is Dropped into the Gondolas.



The Creek Over Which the Shale is Hauled.



A Glimpse of Poston Kilns and Stock Piles.

SNAP SHOTS IN AND ABOUT THE PLANT OF THE
POSTON PAVING BRICK COMPANY.

fore the blasting, another the large pile of loose shale at the base of the wall after the explosion. The writer made an unsuccessful attempt to get a view of the mass of rock in the air at the time of the blasting. Eighty pounds of powder were used and the earth fairly rocked from the force of the explosion.

There are six feet of subsoil overlying the shale. This is stripped by hydraulic pressure, the soil being washed down large chutes into a small creek. The company is now working a 45-foot face of shale beneath this subsoil and does not know the amount of shale below the level, but thinks there is untold quantities of the raw material which they will not be able to reach for years to come. The company is operating a steam drill, which is doing satisfactory work.

Unique Method of Getting in Clay.

The method of getting the shale from the pit to the cars for shipment is unique, and perhaps there is nothing like it in this country. Cars are employed with wooden beds which have no gate at the rear. The cars run on small, wide-faced iron wheels, and can be pulled to any part of the shale pit by a horse and left there to be filled. When the car is filled a cable draws it by means of a stationary pulley up to the

of building brick are made, the major part of these being fine "oriental" brick with a rough face, made by means of two loose wires at the mouth of the brick machine, the vibrations of which give the brick a velvety, corrugated effect. These brick are laid on the side, two together, in the kiln and are easily broken apart when burned. They necessarily need careful handling, but when burned to their dark gun-metal finish find a ready market and a good price. Mr. Poston is furnishing these brick for three large buildings in Crawfordsville and has to his credit a number of beautiful structures in Chicago and in other large cities over the country.

The plant also manufactures a gold-tinted brick which makes a beautiful wall when laid properly. The color is produced in the last stage of the burning, at which time a handful of zinc ore is thrown into the fire-box. As soon as it is ignited, burns brilliantly and is well nigh blinding, so bright is the flame. Dense white fumes escape from the stack, showing the reaction taking place in the kiln of brick.

The brick and blocks are taken from the conveyor belt at the repress and placed on cars on which they are run into an eight-track tunnel dryer, where waste heat from the cooling kilns is utilized for drying. The waste heat is carried into the dryer by means of a large American Blower Com-



General View of the Poston Paving Brick Company's Plant.

tracks on which the cars are run to the railroad. The tracks, trough-like in form, have two flanges, the wheels of the cars running between them. By means of drum and cable the cars are drawn over the trestle work which spans the small creek and ends in an abrupt incline which takes the cars up on end over the railroad tracks, and the shale is thus, dumped into the gondola cars below. The empty cars are carried back to the pit by means of specific gravity. This scheme works admirably and displays the inventive genius of the manager.

Six large cars of shale, or 150 tons in all, are shipped to the plant each day. The railroad switch passes directly in front of the crusher. Here the six cars are left, and four men are kept busy throwing the raw material from the cars into the crusher. From the crusher the material passes into a nine-foot Raymond dry pan, and from thence is conveyed by means of belt conveyors to inclined piano wire screens above the pug mill. The screened material is dropped into a Raymond combined pug mill and brick machine, out of which it comes in a stream of hard clay and is cut up into blocks of brick by means of the Raymond automatic cutter. The block are repressed on a Raymond Victor repress.

The general run is on paving block, but a large amount

pany fan, and finally escapes out of the top of a 50-foot stack. The dryer was formerly a direct-heat dryer, so when it was converted into the present form the fire holes were used as the entrance for the waste heat flues. It has a capacity of 40,000 brick or about 30,000 block, being ample, as the capacity of the plant is 25,000 daily. The green brick and block are burned in twelve down draft kilns, eight of which are 30-foot kilns, while the remainder are 26 feet in diameter. The brick are dried in a day's time.

Mr. Poston is the inventor of the type of kilns used here and has been getting fine burns out of every one of them since the start. The floor in this kiln is the feature, being so constructed that the flues can be cleaned without much delay and affords a fine regulation of the draft in all parts of the kiln. The floors of many of these kilns have been in two and a half years without repair.

The Boss system of burning has been installed, and nothing but slack coal is used for fuel. Mr. Poston declares that he has been able to cut down his fuel bills to much lower figures than what they formerly were by reason of the economy of this system. The paving block have not the flinty, glass-like structure which most vitrified shale pavers have, and burn to the tough consistency of a granular structure.

The power of the plant is furnished by means of a Bates

Corliss engine of 250 h. p. and a 125 h. p. boiler. A small engine operates the fans. It is the intention of the firm to install an electric power plant in the near future.

The present officers of the company are: Col. I. C. Elston, president; C. E. Poston, vice-president; I. G. Poston, treasurer and general manager; H. H. Ristine, secretary.

They employ in all about 75 men, ten of whom work at the shale bank. The only worry the company has to contend with is the labor troubles. They have suffered considerable from this during the past few years. At the present time the plant is shipping large orders of brick to Minnesota and Illinois and have an order of 50,000 yards of block to furnish in the immediate future.

The K. of P. and Elks buildings in Crawfordsville have lately been completed, the Poston "oriental" brick being used. These buildings are the most handsome structures to be seen in that vicinity.

Making as they do a high grade of paving brick, which has been tested and not found wanting, and giving to the builders an ornamental building brick, which has distinctive features both in color and texture, the Poston Paving Brick Company certainly has a bright future before it.

J. E. R.

BRICK PAVEMENT BETWEEN STREET CAR TRACKS WHOLLY SATISFACTORY, SAYS CITY ENGINEER JEUP.

PAVING BETWEEN TRACKS and along rails was the subject of a paper recently read before the Indiana Engineering Society by B. T. Jeup, of Indianapolis. He stated that in that city they have various forms of construction: asphalt between tracks with a stretcher of brick or granite on each side of the rail, or a header of brick with two stretchers of brick alternating; also asphalt placed directly against the rail, or against a Hayden block on the inside of a girder rail.

"With brick or stone block pavement, the practice has been, in this and other cities, to put in nose brick or nose block, or a cast-iron block on the inside of the rail, with the paving between the rails laid in courses at right angles to the rail. The paving of the 18-inch strip on the outside of the rail has been either of brick or stone block, laid in courses at right angles to the rail, or in courses parallel to the rail. Some cities are still using wooden block between the tracks, laid in a manner similar to the method of construction with paving brick. The experience of this city is opposed to the use of creosoted wooden block, however well they may be treated, as a paving material between tracks. It is only a question of a short time until sufficient oil has exuded from the blocks to enable them to absorb water, when they swell and seriously interfere with the alignment of the track.

"Sheet asphalt, in fact any sheet pavement is, as a rule, very unsatisfactory for paving between tracks, and has only given partial satisfaction with heavy grooved rail construction. It is now the generally accepted opinion that the paving between the track should be some form of block pavement, either brick or stone or asphalt block, a pavement which can be laid by the railroad company, and which can be taken up and replaced by them when joints, ties, bonds, etc., are to be renewed. Such a pavement can be repaired more promptly when so directed by the city, because the company need not wait the pleasure or convenience of paving companies to make repairs. In this city brick is now almost universally used for paving the space between the rails. I am of the opinion that a heavy T rail construction with a large nose block forming a groove, as before described, and modified to remove some minor objections which have developed, together with a brick pavement laid on well built Portland cement concrete base, will be entirely satisfactory to the authorities on all streets which are to be permanently improved."

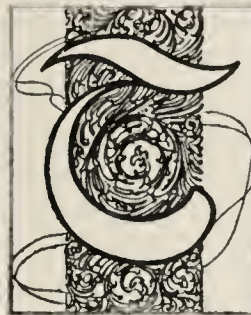
Written for THE CLAY-WORKER.

THE EFFECT OF HEAT UPON CLAYS.

THIRD PAPER.

By A. V. Bleininger.

Carbon.



HIS EVER-PRESENT constituent of clays plays an important role in the burning process. It can easily be shown that carbon is to be found in practically every clay, though of course the amount varies from large percentages down to slight quantities. Some shales, for instance, on being brought in contact with a flame, seem to burn almost like coal, and when distilled give off large volumes of combustible gases. It also is quite apparent that the kind of carbon found in clays must differ quite considerably. In the soft clays close to the soil we should expect to find carbon in the shape of vegetable matter, roots, etc.; in the black shales we meet carbon in the form of bituminous matter, which resembles tar or asphalt, and again, in some shales, once subjected to great rock pressure, we observe the carbon in a form resembling anthracite, or even graphite. It is quite evident that each kind of carbon, when caused to be consumed in the kiln, will burn differently, just as petroleum burns differently from bituminous or anthracite coal. The main difference lies between the volatile and the non-volatile carbon compounds. The former evidently as soon as the heat is raised will distill out of the clay and burn on the surface on contact with the air. The fixed carbon will remain within the clay body and will be burnt when the opportunity is offered for the entrance of air. It also becomes obvious that the density of the clay in which carbon is incorporated has a great deal to do with the rapidity of burning. The carbon can not burn any faster than air is supplied to it, and air can filter through a fine-grained clay but very slowly. This means that in order to burn all of the carbon completely we must allow air at a low temperature to surround the ware for some time. It is necessary to maintain a low temperature, since raising the heat would tend to make the clay still more dense, so that but very little carbon could burn, and the result would be that a good deal of the latter would remain in the clay.

Just how difficult it is to burn carbon contained in clay may be illustrated by a simple experiment. Take some coal, either pulverized or in lumps, and incorporate it in clay. Dry and burn the latter. It will be observed that it is not an easy matter to accomplish this without some injurious effect on the clay, and this is still more true when the clay is molded under pressure, as is the case with dry-pressed or stiff-clay brick.

Some one might now ask why it is necessary to burn out the carbon at all, why not leave it in the clay and go on with the burning. That this will not do has been frequently demonstrated, and most thoroughly so by the exhaustive work of Professor Orton. A variety of troubles are liable to arise in this connection, to some of which attention is called briefly. As the reader will remember, the iron of the clay is present in two states, the ferric and the ferrous oxides. Since the ferric oxide contains some oxygen which it can spare, the latter is appropriated by the carbon in the clay, owing to the fact that carbon has a powerful tendency to oxidize, that is, to burn. Consequently all of the iron of the clay, in the presence of carbon, will remain as the ferrous oxide. This, as we know, combines greedily with the silica of the clay, and results in the formation of a readily fusible ferrous silicate. The brick, hence, vitrifies around the core still containing the carbon, and tends to enclose it in a

dense matrix. But some of the carbon, be it ever so little, continues to burn and to form either of the gases, carbon monoxide or carbon dioxide. Since these find their way outward blocked either entirely or in part, they will exert a pressure which will distend or bloat the brick. Of course this practically destroys the structure of the ware for any useful purpose. It is quite evident, therefore, that the clay must be thoroughly oxidized by being kept bathed in an atmosphere of air at a moderate temperature until all of the carbon has been burnt out. This feature will be discussed more fully when we come to speak of the burning process.

Gases.

As we have already seen, there is no lack of gases formed in clay. The principal ones are steam from the pore and chemical water, carbonic acid gas from the carbonate of lime, the ferrous carbonate and the burning of the carbon; sulphurous acid from the burning of the pyrite, and sulphuric acid gas from the pyrites and the decomposition of sulphates. That ample opportunity must be given these to escape is obvious, and our burning operations must be conducted accordingly. In addition we must deal with the chemical action of the sulphurous and sulphuric acid gases which, as we know, are powerful chemical agents. Also, at times we have considerable volumes of oxygen given off from the clay.

We are now ready to discuss the burning process itself, and its effects upon the reactions taking place within the clay. For this purpose we can divide the burning into four periods:

1. Watersmoking.
2. Dehydration.
3. Oxidation.
4. Vitrification.

Watersmoking.

When we first begin to fire a kiln of clayware the heat, as all clayworkers know, is raised very slowly and gradually, and the temperature is quite low, not more than 200 degrees Centigrade. The main object of this procedure is, of course, to expel the water remaining in the ware. Though the bricks may come from the dryer in the bone-dry condition, they still contain water which we call hygroscopic water. This water differs from the water which leaves the clay in drying in being difficult to drive off. It seems to cling tenaciously to the particles of clay and requires much more heat for its expulsion. Clay seems to have a great absorbing power for moisture, and in fact many other gases. In taking clay which has been watersmoked, that is, clay really dry, and exposing it to the air, it will be found to gain in weight rapidly. This is due to the fact that water vapor from the air has been absorbed. Similarly, other gases like ammonia are taken up in large volumes. Clay thus behaves similarly to charcoal as to this peculiar absorbing power, a fact already recognized by the ancients.

Although this hygroscopic water requires a higher temperature for its expulsion, care must yet be taken that the temperature is not carried up too high. If the thermometer registers too high a temperature the heat penetrates into the brick too rapidly and too much of the hygroscopic water flashes into steam. This is disastrous for there is only limited room within the pore space of the bricks. A brick of, say, 100 cubic inches volume and 20 per cent. pore space can not hold safely more than twenty cubic inches of steam. If we raise the heat not only is more water evaporated from the inside of the brick, but the steam also expands, and consequently pressure is exerted upon the pore walls of the clay, and this may easily be great enough to burst the brick, as all of us have observed. Even though this steam pressure is not great enough to destroy the brick, it may be sufficient to loosen the bond of clay or produce fissures along the laminations. Such brick, though they may look sound, will invariably be weak in structure and have lost the ring of the well-burnt brick. When struck with a hammer they sound "dead."

This must be kept in mind, especially with dense, plastic

clays which have such fine pores that the steam can not escape rapidly, and also dry pressed brick whose particles cohere so loosely that it does not take much pressure to break the bond. Two factors must hence be kept in mind. First, the temperature must not be kept higher than 200 degrees Centigrade, and, second, ample time must be allowed for the gradual heating up of the clay, so that no more steam is formed at any one time than can safely pass off through the pores.

It must be remembered that the expulsion of the hygroscopic water from a large kiln of ware is not such a simple process as it appears. While the upper courses of bricks in a down draft kiln lose their water, the lower courses which are still cold not only do not lose any water, but actually gain some. This is due to the fact that the steam evolved from the upper courses on striking the cold bricks in the bottom of the kiln is condensed to water which is absorbed eagerly by the clay. The lower brick thus are compelled, later on, not only to give off their own hygroscopic water, but the additional, absorbed water as well, and hence more time must be given them. This is why we can not rush the process. The kiln draft also plays an important part in this connection. If there were a strong draft in the kiln the lower course would not absorb much water, as the circulation there is too rapid. Unfortunately, at this stage the draft is very sluggish, in fact often to such an extent that the bricks of the lower courses are softened by the condensed steam, so that they can not support the load and are squashed. It behooves us, then, to look after the draft, if we expect to do the watersmoking in the shortest possible time. This is realized by clayworkers, and we sometimes heat up the stack by means of a fire in a temporary furnace built close to the stack. Again, we can provide better draft in the case where the same stack is used for several kilns and one of them is in high fire while the other is watersmoking. The hot stack will induce the necessary draft. Another way is to use fan draft or to do the watersmoking by means of warm air blown in from a cooling kiln. In this way we can solve all watersmoking troubles and save much valuable time.

In regard to controlling the kiln temperature, the use of watersmoking thermometers is strongly to be advised. There are many cases, especially in making paving brick, where much harm is done in watersmoking, though this is not realized as fully as could be desired. Many paving brick have their structure weakened by too rapid expulsion of their hygroscopic water, and if more attention were paid to this point the bricks would show up better in the rattler test. The point when all of the hygroscopic water is driven off is usually determined by the time honored method of sticking a cold rod into the kiln flue. When moist on withdrawal, steam is still coming off; when dry, the watersmoking is finished. The clayworker with scientific aspirations could easily arrange a simple apparatus consisting of several so-called absorption tubes filled with phosphorus pentachloride and connected by means of rubber tubes to a large, closed, tin can holding, say, three gallons of water. By attaching the other end of the absorption apparatus to a pipe which enters into the kiln flue and allowing the water to run slowly out of the can a volume of air coming from the kiln equal to the volume of three gallons of water is drawn through the absorption tube. The phosphorus pentachloride eagerly takes up all of the water vapor in the air. The absorption tubes are weighed before and after the experiment, and if any water vapor from the ware is still in the flue gas, this is indicated by the difference in weight observed. A small balance reading to 0.01 gram can be purchased for a few dollars and would be suitable for this purpose. Such a procedure is, of course, unnecessary in practical work, but it has been suggested as showing that there is an accurate way of getting at the matter.

(To be continued.)

Written for THE CLAY-WORKER.

THE CLEVELAND PLANT OF THE METROPOLITAN BRICK COMPANY.



PROBABLY IN NO section of the United States are there more brick plants within a given area than those congregated in the immediate vicinity of Cleveland, Ohio. This is particularly true of paving brick plants, for in that locality is to be found a valuable clay and shale deposit which makes high grade paving bricks.

One of the largest, if not the largest, paving brick concerns in the immediate vicinity of Cleveland is the plant of the Metropolitan Brick Company. Although the main offices are at Canton, Ohio, near where four of its brick yards are located, the Cleveland plant is about the largest of them all, representing a value as it stands today of nearly a quarter of a million dollars, and it is constantly being added to

summer. Two more are being built and will be ready for use about December 1. Another new kiln will be built next summer. The company makes a practice of building its own kilns, and has made a great success of it. Competent foremen are engaged and told to go ahead.

In the new kilns about 750,000 brick have been used. They are set on a foundation of solid brick about five feet thick. These are old chipped brick which could not be sold but which make an excellent foundation. Each kiln is twenty-seven by ninety-one feet and has a capacity of 140,000. The plant turns out on an average of 60,000 paving brick a day.

Coal is used in the plant, natural gas not being available as yet. About two cars, or 80 tons, of coal, is consumed each day. It is expected that there will be a gas connection within another year. The kilns are all square, as it has been found that they hold a great deal more than the round variety. The down draft system is employed in their construc-



A Train of Atlas Cars in Shale Pit of the Metropolitan Brick Company.

and improved and is now one of the most modern of its kind in the country.

Situated in an extremely picturesque portion of the Cuyahoga valley, eight miles from the public square of Cleveland, it would be hard to find a wilder spot than among some of the glens and ravines with which the property is liberally supplied. There is 150 acres in the track, over half of which is a magnificent shale which cuts smooth and clean without any appearance of grit.

The plant was first started about fifteen years ago with the idea of being a press brick plant. It did not prove a success at that, however, and was converted into a building brick yard. Four years ago the Metropolitan Company acquired it and converted it into a paving brick concern, at which it has proved a great money maker for its owners. It is in charge of A. H. Stamm, formerly of Canton, Ohio, a man who works right with his men and who is well liked by all who know him.

* The plant has had eight kilns in operation during the past

tion. The fire brick is furnished by the National Fire Brick Company.

In the lower tiers of the kilns sewer brick are burned, with paving brick above. Almost all of the product of this plant is marketed in northern Ohio, mostly in the city of Cleveland, where large quantities of paving and sewer brick are used annually.

A complete L. E. Rodgers drying system has been installed this year in the plant, and operates very successfully. One immense fan drives the hot air from the kilns through the drying room, while another sucks it from the top of the dryer. In this way all moisture is sucked out, making the green bricks dry more rapidly. This method of utilizing the waste heat has been found to be one of the most economical features which has yet been installed.

The kilns are all located so that after being opened the brick can be wheeled immediately into gondola cars. The brick are burned on an average of ten days. Italian labor is employed extensively for the commoner kind of work,

owing to the inability of the concern to get any other kind.

In the machine house of the plant three immense dry pan grinders receive the shale from small cars as it comes from the shale bed. It is here ground into small particles, passing to two big pug mills and thence into Ohio Ceramic presses, which leave it in shape for the dryer and subsequently the kilns. The Bonnot Company's machines are used in cutting the brick into proper size before going to the presses. In the machine house is also a building brick machine, which is little used, and one sewer brick machine, which is utilized to fill the lower sections of the kilns with sewer brick.

The plant throughout has been fitted, during the past summer, with the cars of the Atlas Car Company, of Cleveland. They are of the yard capacity, costing \$125 apiece. There are fifteen of them. This train of cars is hauled to and from the shale bed by a fourteen-ton Porter engine.

Until a year or so ago shale was dug out of the high bank right near the machine house. A steam shovel was then sent to the plant and a new shale pit developed. There is seven-eighths of a mile of thirty-six inch gauge track connecting the plant with its present source of shale supply. Trains of six or seven of the Atlas cars are being filled by men at the shale bank while the engine is hauling the others down to the plant. This has been found to operate very successfully. The shale bank which has been tapped is almost inexhaustible and will last for fifty or sixty years, for it is fifty feet high and from fifty to seventy-five acres in extent. On the top of the shale, is a yellow clay which is allowed to mix freely with the shale, as it supplies a plastic quality which is said to be much desired in the making of paving brick.

A new railroad operating between Cleveland and points in southern Ohio is being built right through the middle of the company's property. It is unfortunate, however, that the new road is seventy-five feet above the level of the present mill, making it impracticable to secure freight or ship over the new line.

Eighty men are employed at this plant of the Metropolitan Company, shipping out on an average of between 16,000,000 and 18,000,000 paving and sewer brick every year. When it is remembered that the average price for paving block in Cleveland is about \$20 per 1,000, this represents a big income for the owners.

Written for THE CLAY-WORKER.

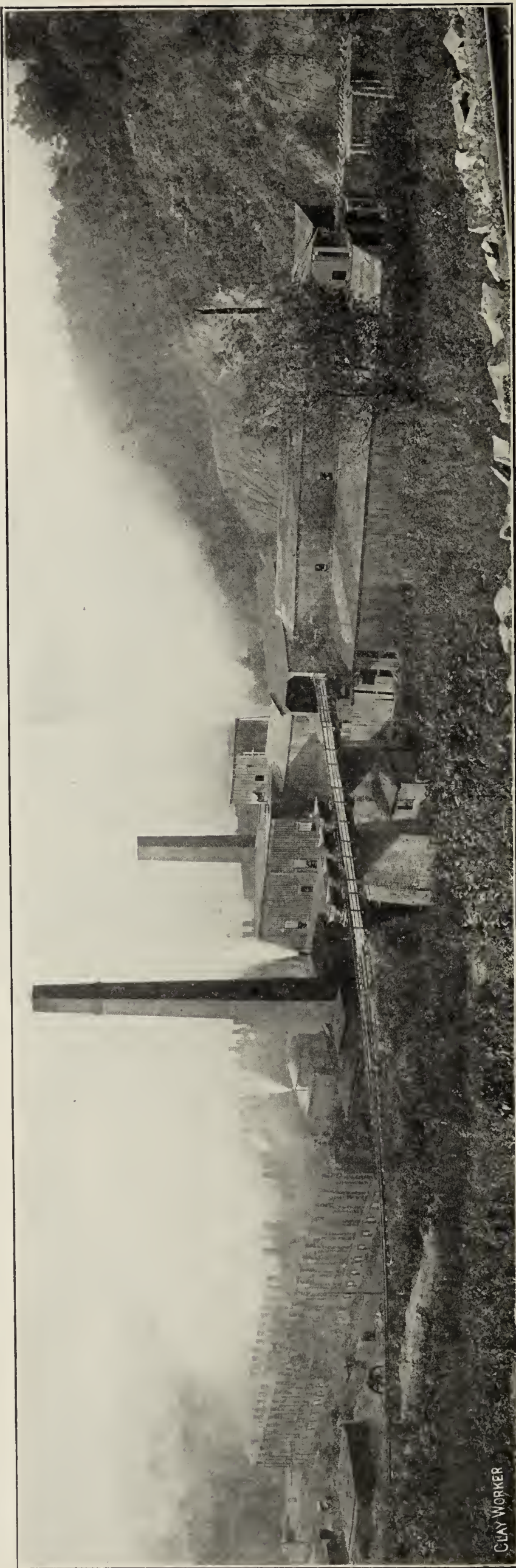
INCREASING THE OUTPUT.

A Hint to Manufacturers Who Can Not Make Enough Brick to Meet the Present Demand.

THE SALES MANAGER of a Western brick plant was feeling very blue the other day because orders were coming in from all directions for brick faster than they could possibly make delivery, and he had been compelled to turn down several which ran into the millions, because he knew it would be out of the question to produce the brick.

Their plant had a capacity of 120,000 brick per day, and was only producing about 80,000, and the general manager had made repeated trips to find out what was the matter that it could not be made to produce up to capacity. First one thing was given as an excuse, and then another, but there was little increase in the output. He had given up in disgust, and decided that there was no chance to get any more out of the plant, and it would have to be rebuilt before anything could be done, and that would necessitate a long shut-down and that was out of the question with orders piled up as high as they were at present. He was merely keeping cool and worrying as little as possible.

The sales manager, however, was wearing himself out explaining why brick was not shipped, and as he much preferred telling a flowery story about the quality of his brick and taking a big order for them, this new duty of making excuses grated on his nerves. He sat in his office one even-



GENERAL VIEW OF METROPOLITAN BRICK COMPANY'S CLEVELAND PLANT.

ing after every one else had left, and figured out what he could do in the way of accepting orders, at his own price, if he could but operate the plant at capacity and get another 40,000 brick per day. Then he began to figure what he would do to increase the capacity if he was but the superintendent of the plant for a while. This train of thought led him to wonder why in the world the superintendent did not try on some of the plans to increase capacity, and, being a sales manager, and coming in contact at frequent intervals with people who were able to do great things if they were first helped out with a little present, or something, he began to wonder how to get extra effort out of the superintendent.

The next morning he paid a visit to the office of the general manager, and surprised the "old man" by not having a sorrowful look on his face. He at once unfolded a scheme, which was something like this. "We want to run at full capacity, and are now producing but two-thirds of that amount. We can produce the other third for very little more than it is costing us to produce the present amount, and I can sell them faster than they cool. Why not fix up a possible way for the superintendent and several of his main men to increase their salaries, if they increase the production. The extra amount we would pay them per thousand for the increase would be offset by the fact that we were producing more, and as a result they would cost us no more per thousand than the present output costs."

They at once put their heads together, and concocted the



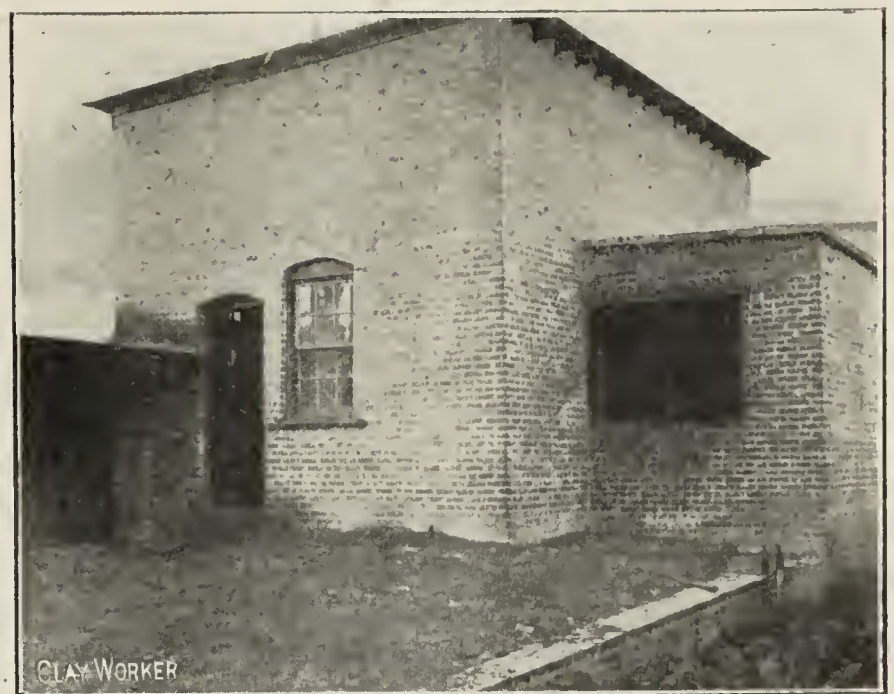
A. H. Stamm, of the Metropolitan Paving Brick Co., Who "Works With His Men."

following plan. There had been some complaint at the plant about low salaries, from the assistant superintendent and also the foreman. They decided that they would put it within the power of those in charge to increase their own salary. It was figured out that they could well afford to spend 75 cents per thousand more for the last 20,000, if they could increase the capacity of the plant to 100,000 per day at practically the same rate as at present, so they formulated an offer to their superintendent and seven of his assistants, which was about as follows: "We have been considering the possibility of increasing the salaries of some of our oldest and best men, but find with the small output we are now having it will be impossible to do so. If the plant was run at full capacity, however, we would be well able to pay considerable increases of a very satisfactory kind, both to you and ourselves. That being the case, we make the following offer: 'For every thousand brick the plant produces each day over 100,000 we will add 25 cents to the salary of the superintendent for that day, and we will at the same time add 10 cents to the salary of each assistant and 5 cents to the salary of each of four foremen, making a total of 75 cents

per thousand brick we will add to your salaries for each thousand brick produced each day above 100,000. In other words, if the plant is run at full capacity, the foreman will increase his own salary \$1.00 per day, the assistant superintendents will increase theirs \$2.00 per day, and the superintendent will get \$5.00 per day more.' We think this is well worth working for, and hope to hear good reports from the plant from this time forward."

To cut a long story short, it was not a week before that plant was producing 100,000 brick per day, and within three weeks it was running at full capacity. It was a case of every one pulling for himself up to that time, but the offer of an increase in salary which depended upon the working together of the entire force of "bosses" brought them together, and the superintendent called them all into conferences, and they all studied ways to save time here and there and the other place, and acting as a single mind towards increasing their own salaries made them that much more valuable to the company.

This is an exceptionally good year for the sale of brick. Few plants are having any trouble in selling their product,



Fan House, Cleveland Plant of the Metropolitan Brick Company.

but a good many are having a good deal of trouble in making the plant produce up to capacity. The above plan may bring success where it has seemed impossible to this time, and if tried and found to be a failure it has cost nothing to the management, and should convince them that those in direct charge of the plant are not the men they ought to have, for they are not working for the general interest of all concerned. A change would then probably do the work, and such a change should be made as soon as possible, for most well established brick plants will produce close to capacity if they are operated in the right manner. K. A. W.

PERFECT CERAMIC PICTURE.

Samuel H. Calkins, a Baltimore interior decorator, has accomplished the feat of perfecting the first ceramic mosaic ever attempted in America. It was pronounced perfect by an expert of Tiffany & Co., of New York, which firm paid \$16,000 for the work. The picture is a reproduction of the famous old German painting known as "Cupid Bearing the Crest," and contains 23,000 pieces of mosaic and 2,000 tints.

The mosaic shows nine Cupids, each wearing a garland of flowers, bearing a crest, while a sky of pale blue, dotted here and there with tiny fleecy clouds, forms a background for the whole. Burnt clay was the material exclusively used by Mr. Calkins, and by doing so he was able to attain a higher degree of excellence in perfecting his color scheme than if he had resorted to the use of marble.

Written for THE CLAY-WORKER.

IMPORTANT DETAILS IN THE PRODUCTION OF VARIOUS CLAY WARES.

Plaster Paris.



PLASTER PARIS is one of the most valuable adjuncts to the clay-working industries, in that it facilitates the molding or shaping of the clay, by its peculiar properties, possessed by no other material as far as described in the clayworkers' literature. For the clayworker three very essential properties are present in plaster paris:

First, its remaining soft and limpid for quite a while after being mixed with water;

Second, its quick hardening after being mixed with water;

Third, its porous condition, which enables it to rapidly to take up water both in the hardened and dry condition.

It is possible, owing to the first and second above mentioned properties, to make molds giving the minutest outlines in perfect detail. Owing to its porosity, it is a very valuable factor in molding clayware, as the plaster paris very readily and eagerly absorbs moisture from adjacent clay surfaces and thereby dries the same superficially and the piece of clayware so molded lets loose from the mold.

As there are a very large number and varieties of crude and natural plaster paris, it stands to reason that the manufactured product is not always uniform unless care and caution is taken in the selection of the crude stock and in the future steps of manufacture. Manufacturers of plaster paris are fully aware of this fact, and therefore grade their products and establish a selling price and guarantee accordingly.

Crude plaster paris contains quite a large percentage of moisture (so-called water of crystallization; as, for instance, is found in wash soda, rock candy, etc.), and by depriving this crude plaster paris of its combination water by heat, it is then capable again of hardening in presence of water. Upon this peculiar property rests its value for making molds. But if the crude plaster paris is burned at too low a temperature then it loses its property partially to harden perfectly. It is best to retain a small percentage of water of combination during the burning process, as if all the water is driven off, the resultant product has undergone a kind of a fusion, which is detrimental to forming a new strong bond.

A great deal depends upon the fineness of grain as well as the uniformity of same, as grains of unusual size do not make a uniform "face" in the mold. In the better grades of plaster paris the crude material is ground before burning the same. A plaster paris to be serviceable for making good molds should be well burnt and ground fine, with the particles of a uniform size. Pure and good plaster paris should feel soft and fatty like when squeezed or rubbed in the hand and none keep hanging on the fingers. If it feels coarse and dry and remnants keep attached to the fingers, then it is not of the best quality and should only be used for coarse work. Plaster paris is generally packed in barrels and should be stored in a dry place. It is good practice to keep samples of tested and reliable plaster paris on hand for comparison to determine qualifications of new lots. The percentage of water, whether hot or cold, and the setting character of plaster paris has a great deal of influence upon the wearing quality. Experience has shown that the following proportions are about right; that is, about one quart of water to about four and one-half pounds plaster paris (lukewarm water preferred in winter time). It is good policy to use an enameled or varnished vessel to make up the batch of plaster. Have the water in the vessel first, then sprinkle into it the proper proportions of plaster paris, so that practically all parts of the plaster come into contact with the water; then mix or

agitate thoroughly, care being taken that no air bubbles will be or remain in the plaster. When at the proper condition it is poured around the mold and allowed to harden. All these proceedings should be done rapidly, for if done too slow the plaster paris may set in the mixing vessel and thereby prove a total loss. If the plaster should be underburned it will lay dead in the water and not make a good product; should it be burned too hard, it will set or harden too rapidly so that it can be handled only with difficulty. When plaster is burned too high, it gives a peculiar sulphur odor which can easily be recognized. When water and plaster have been used in good or proper proportions the molds should be quite hard and not be marked easily by scratching with finger nails.

As to making models and molds, etc., quotations from a "Eckhart Technique of Face-Brick Manufacture" are used in this paper, as that work is about as concise and practical as can be found in the current literature for brickmakers.

Models.

The making of plaster paris molds naturally depends upon the nature of the so-called models from which the molds proper are to be made, and these models can be made from either plaster or clay. It is customary, however, for the larger clayworking plants to have either designers for original things or modelers who make models subservient to architects' designs.

Plaster paris is to be preferred for models as against clay models, if a number of "castings" have to be made, and possibly also may have to be kept for future use. To turn a clay model into a plaster paris model, the method of the "lost" form is adopted, which consists simply in making a plaster cast of the clay model. After the cast plaster form has been cleaned very thoroughly of all clay particles and purposely left very wet, the inner surface of this plaster cast is painted very thoroughly with soap paint (which will be described later on), and this form filled with plaster paris. This last resultant plaster mold must be loosened from the surrounding casing by destroying the same, say, with a hammer and chisel, as the casting, even with the soap paint used, will still be attached quite fast to the model. This offers the explanation of the term "lost" form.

Modeling is generally divided into three groups:

- I. The drawing out of straight-lined or circular or oval designs;
- II. The turning of rotation designs;
- III. The modeling of ornamented bodies.

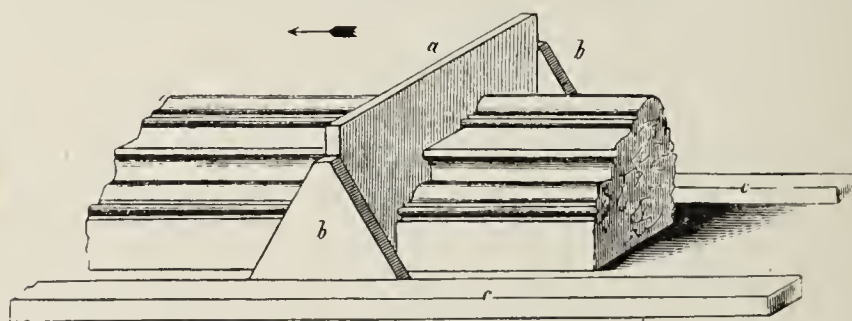


Figure No. 1.

The drawing out of straight-line designs is done by the use of templets, preferably made from red or white beechwood. The manipulation is illustrated by Fig. I: To the templet *a* are attached the two guide boards *bb*, which have true-travel in the guide bars *cc*, which are secured to a table or other support. The forward and backward movement defines a place or position for placing the clay to be operated upon. This clay should be patted down to be quite solid, and the forward and backward movement of the templet will remove all surplus clay ranging above the working face of the templet, and by filling up the low places in the clay the object can easily be finished by the forward and backward movement of the templet. To enable the templet to glide

easily between the guide bars it is advisable to lubricate them with "soap paint." It will be seen that this process is directly opposite to the stiff mud machine type, in which case the mouthpiece (templet) remains stationary and the bar of clay moves, while in this case the bar of clay remains stationary and the mouthpiece (templet) moves. The pattern bar of clay made by the templet can also be used for making various auxiliary designs. First, facings can be cut off for various lengths, they can also be cut for arch brick. Sections

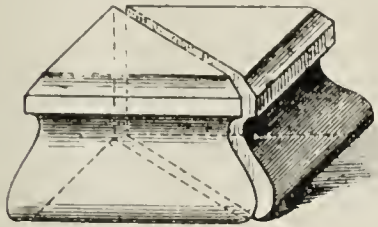


Figure No. 2.

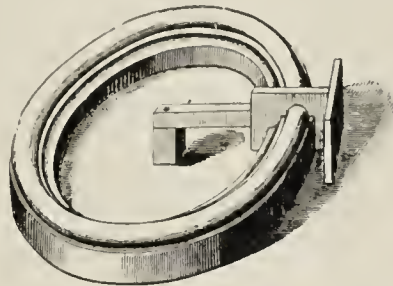


Figure No. 3.

can also be cut at the proper angle for making external and internal returns. It is practical to cut the returns from the original bar of clay and cement the two pieces together with soft clay. The cut shows an external return.

Circular models are made by using a templet attached to an arm which is pivoted to a central pin, thus permitting circular motion. To make oval designs, medallion frames and such like things, the oval machine is used as illustrated in Fig. 4. It consists of a wood plank *a*, in which are cut two dovetail gutters *b* and *b1*, set at right angles to each other. To the two small guide-blocks *c* and *c1*, moving in above gutters, the templet *d* is attached by means of lever *e*.

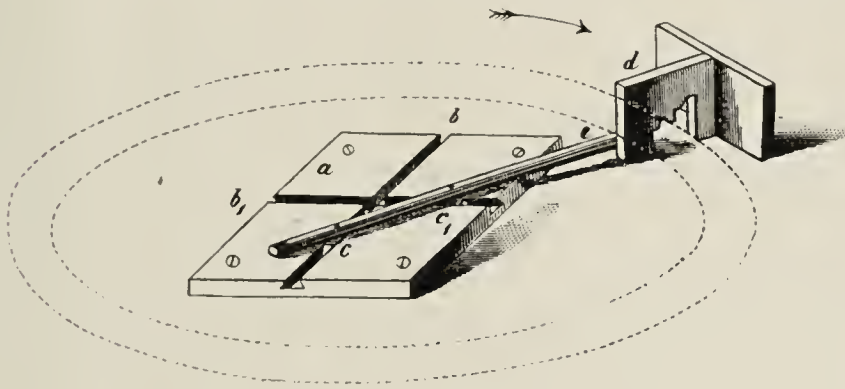


Figure No. 4.

This connection is made to conform in distances to one-half of both the large and small axis of the ellipse. By moving the arm horizontally an ellipse will be described by the templet *d*; however, plank or board *a* must be rigidly secured to a table or any other suitable support.

For turning circular (rotation) designs the crank is used as shown in Fig. 5, which consists essentially of a horizontal shaft *W*, supported in two boxes, and obtains its movement

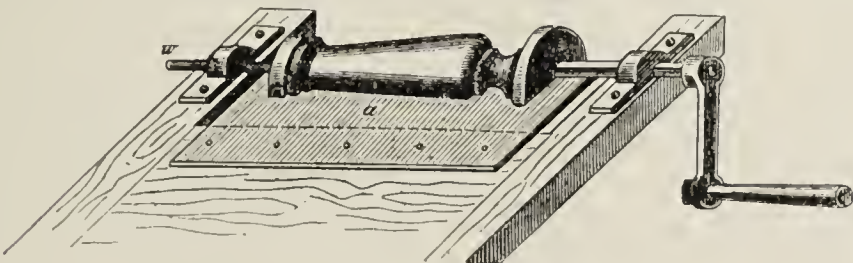


Figure No. 5.

from the handle. At the proper distance from this shaft, the templet *a* (see Fig. 5, illustrating the profile of a baluster) is rigidly secured. When starting to make the model, liquid plaster is placed upon the shaft, in the meantime turning the crank and handle. The closer the pattern comes to a finish, the more liquid must the plaster paris mixture be, however continually turning or revolving the shaft until a perfect face

is obtained and the pattern completed. For this type of pattern it is always advisable to use plaster paris in preference to clay, as clay does not hold easily or remain readily upon the shaft, and is also more difficult to remove therefrom without destroying the outlines, while plaster paris can be easily removed, especially if the shaft is made slightly conical.

The modelling of ornamental design in accordance with drawings submitted by architect necessitates the employment of trained, capable artists, and is hardly within the province of the ordinary clayworker. However, this type of designs is generally made in clay. In modelling in clay, great care should be taken to keep the modeling clay at a uniform degree of moisture, as if it should dry prematurely, warping and cracking may take place, besides creating a difference in the measurements. The drying out of the clay is very simply prevented by keeping the clay covered with wet cloth.

Bear in mind that where sharp outlines are wanted and detail looked for it is always best to use plaster paris.

Casting of Forms.

Each mold consists of sections and a mantle surrounding said sections, which are all made in the following simple manner: On both sides of the model (Fig. 6, part of a string

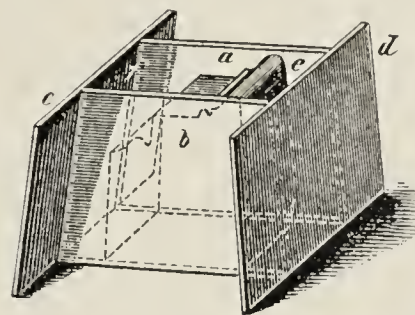


Figure No. 6.

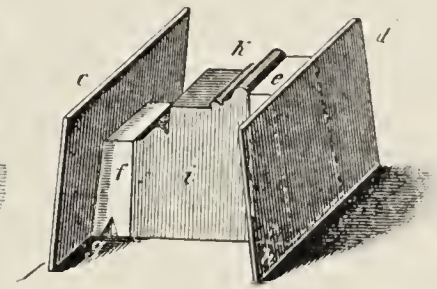


Figure No. 7.

course), the small boards *a* and *b* are tightly attached, projecting about from one to two inches. These two boards taper or tilt slightly toward the top so that the boards *c* and *d* are placed at an angle leaning toward the model.

The co-relative positions of these boards to each other is obtained by clay wads as a bond to the table or support, and also by means of pins or pegs and twine; the edges where two boards join are also luted tight with clay. The plaster

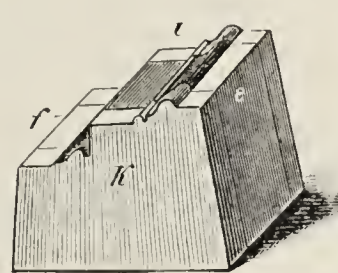


Figure No. 8.

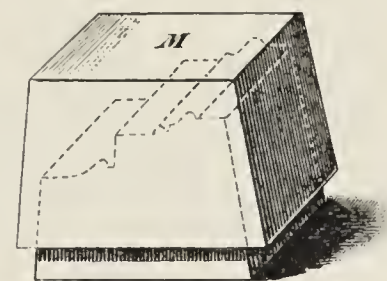


Figure No. 9.

paris mass prepared for pouring is now run into shapes *f* and *e*, situated between the model and boards *c* and *d*, up to the beginning of the face line of the profile, as is shown in Fig. 7 after boards *a* and *b* have been removed.

After the plaster has hardened sufficiently, the upper surfaces of castings *f* and *e* are leveled or trued up with a knife, and the sides of the same are equipped with cut notches *g* and *h*. The small boards *a* and *b* are now placed about one to two inches away from the model and tightly against boards *c* and *d*, and the resultant space is filled with plaster paris mixture to make sections *i* and *k*. The notches *g* and *h* make the assembling of the mold a very easy matter.

Fig. 8 shows the finished sections *e*, *f*, *i* and *k*, necessitating only the mantle or case. It should be remembered that the boards, the table and all plaster surfaces which come in contact with each other and should remain readily separable to accomplish which must be well covered with "soap-paint."

The space for casting the mantle or casing is effected in the following manner: Small boards are set up above—one to two inches away from the sectional mold, all set up at a proper angle to allow easy removal, care being taken to block out a space of about two to three inches with clay so that the mantle does not incase the whole mold and allows a ready removal. After the face surface of the model, in our case the profile surface, has been thoroughly cleaned and smoothed up, and the plaster as well as the board surfaces been coated with soap paint, the mold maker can then cast the mantle or case all in one piece. After the mantle has hardened it is removed, and the sections of the mold are also taken away from the model; to enable all plaster parts to dry out, as the mold should be completely dried out—before use. Care must be taken when assembling mold in mantle that opportunity is offered for the proper meshing of the sections, having the notches with those having corresponding projections. The number of sections of a mold depend largely upon the complication of the design of the model to be used, but the foregoing description and illustration give a good outline of procedure. A very ready and easy method to divide the surfaces is to use thin wet clay plates, as they readily fit themselves into place.

For some purposes the so-called "press forms" are very well adapted; as, for instance, balusters, small pillars, etc. They are made in two halves, and fitted in such a manner so that there is a seam left between the two parts. The clay to be used is placed a little in excess in each of the two part molds, and when squeezed or pressed together the surplus clay can come out between the seams.

Molding.

The molding proper is done by hand in that the mold is filled out with clay under slight pressure. The molder prepares small balls or rolls of clay between the hands, and presses the same into the recesses of the mold by means of his three center fingers of the right hand, as illustrated in Fig. 10 (representing a cross section of a rosette pattern)

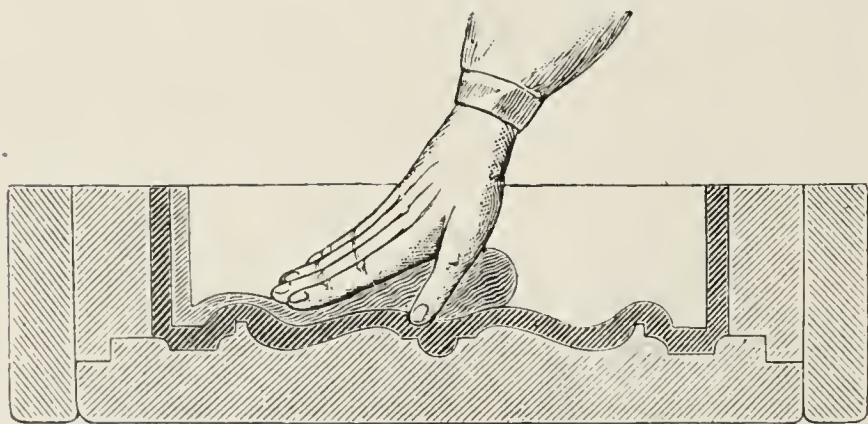


Figure No. 10.

Very often a preliminary filling of the mold is done with a different kind of clay, and the backing done with ordinary kind of clay. Care must be taken that both clays shrink alike, otherwise creases may occur in drying or burning. In Fig. 10 is shown a lighter colored clay in the interior, while the outside shows a darker colored clay. The thickness of the pieces generally run from two to four inches, depending a great deal upon the outlines of the design, its shape and size. The part of the work where new portions of clay are to be added should be a kind of rough, so as to permit the newly added clay to bond, as otherwise if left smooth the clay will not bond and laminations occur that have a tendency to draw or crack away during drying. To strengthen and stiffen larger surfaces and connections the pieces are supplied with so-called ribs or cross bars, which generally have the same thickness as the remainder of the work.

Care should be taken to have all molding clays in the proper condition, and it should be especially looked after that

the percentage of the grog, sand or quartz used, to make the clay lean is not excessive, otherwise the porosity may be too great and the surface of the molded pieces be rough and checked. Very lean clays wear out the molds quite rapidly, and when compelled to use such clays the pressure applied should be more in perpendicular line than a gliding one. In rational use the life of a mold is about one hundred, or a few more pieces; of course, looking after it that the molds are kept in a properly dry condition. As soon as the plaster paris mold is kept too damp it will wear away rapidly and cause a bad effect upon the then molded pieces, in that the dissolved and partially dissolved particles of plaster paris will adhere to the molded clay pieces and later on show up as a white scum.

All pieces molded in plaster paris forms should be trimmed up in semi-dry condition to remove all seams and at the same time all the little defects may be either removed or patched

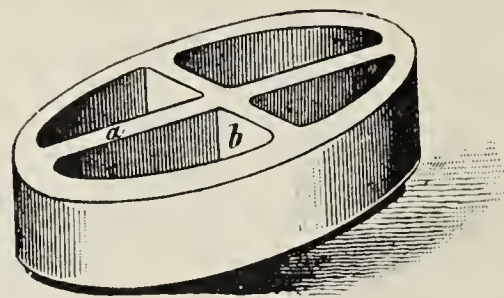


Figure No. 11.

up. After the pieces have been so treated they are removed to the drying rooms and placed upon proper supports, to allow drying shrinkage to take place rightly.

Duplicates.

To make molds of such is not a very complicated proposition. Along the lines of a vase, so as to divide the mold for same in two halves, place a strong string, silk cord or such the like, and attach the same by means of paste, albumen, mucilage, wax or other similar substance, which is adapted to hold said string or cord in position at all desired points in the model, in such a manner that when necessary it can be released or pulled away. After surrounding the model with mixed plaster paris and allowing the plaster to be partly set, that is, it must be of such consistency that it is stiff enough that it will not sag but yet be soft enough to allow it to part when the string or cord cuts through it. When in such condition the string, when pulled carefully and steadily from the model, the plaster mold will be cut into two halves. In the recess made by this string, it is advisable to put some sweet oil, miners, cotton seed, or olive oil to prevent said sections from cementing together again. For making duplicates of busts and such the like it is advisable to have more strings; say, one string running from the head over the face and breast in front, and the back of the head and neck, and so forth, in the back. The other strings may run over the neck and shoulders, and so on over both sides. In using these molds, they can be tied together or held by springs, and the clay run into the mold in a liquid or semi-liquid condition. The plaster paris will absorb the water of the clay, and thereby stiffen the same; that is, it will stand up. The longer the clay is left in the mold the thicker will the clay body be. After the ware so formed is suitably hard it can be trimmed up to eliminate all seams and can be polished up all over, either in the whole or in part only, depending upon the effect that the operator desires. But never forget the soap painting to prevent the plaster cast from sticking to the mold.

The mold may also be made in more sections; in fact, must be if the pattern is a very intricate affair and the outlines are in such a position that all the parts are not in line with each other to permit the mold from being removed without destroying the pattern. A section of the mold is

partitioned off by means of thin slabs of clay, which will have to fit into all recesses of the part of the model so circumscribed, and the resultant space filled out with plaster paris, which is allowed to harden and the clay boundary line removed. Then add a new section in a similar way and continue until you have the completed mold. It may be necessary to move the partly completed mold into new positions to allow new sections to be added to it. It is necessary to look after these essential points when adopting this method.

1. That such part of the surface of the figure, laid off for casting, has no parts (that is, running underneath), which will prevent the removal of such casting, in such a direction so as to prevent the total assembling of the parts dependent upon the angle of release.

2. That the sides of the sectional molds are made as smooth as possible, and run in an angle or wedge shape, the smaller end toward the pattern.

3. That some of the sectional parts be supplied with notches and corresponding elevations so that the mold may be easily and uniformly locked or secured together. If it is desired, the outside of the mold may be trimmed down to the proper angles, so that the operator may surround the mold with a mantle or casing.

Models of hands and feet can also be readily made by following the above directions. Say, for hands: Lay a string around the hands to divide the mold into two pieces; then lay auxiliary strings between the crevices between the thumb and fingers. Then proceed as before stated. When the cast is sufficiently hard, cut into sections by means of the strings, but be sure to have the hand well covered with oil to prevent the plaster from adhering. Casts of molds may be made of almost any part of the body by placing the strings right for cutting or dividing the molds into proper sections. Molds of a great many miscellaneous things may be made by the string method, and the press or squeezer molds used, dependent upon the condition of the clay; as, for instance, small fishes, fruits, shells, snail houses, and so forth.

Patterns may be enlarged or decreased by the gelatine or glue method, which has been practiced quite extensively on the Continent, and is of value to the brickmaker in that it enables him to make the design larger or smaller very readily. For instance, a piece of burned ware is given him for a sample. Now this naturally would be of a smaller size than when in the green state, so that his pattern would naturally have to be larger.

For either purpose the procedure is to make a gelatine mold, taking the usual precaution to prevent adherence to the model. To make the resultant gelatine cast smaller it is only necessary to let it dry out uniformly and gradually until of the desired size. Should it be desired to have the gelatine pattern larger, it is to be submerged in water and by absorption the pattern will increase in a uniform ratio.

Miscellany.

The soap paint spoken of is made out of good white soap (must not contain rosin); say, for instance, Ivory or Fairy soap, water, and any non-drying vegetable oil, like olive, sweet, cotton seed, miners, or peanut oil, and when completed should have the consistency of a soft salve. A good formula to start on is to use the same weight of the soap and oil and of the water, the combined weight of both or equal parts of the ingredients may be used. Have the soap cut into shavings or grated, add thereto the water and heat until thoroughly dissolved, always replacing the water that has been evaporated; add the oil and stir until a uniform mass.

In the larger factories, the cost of plaster paris used is a very costly and expensive factor, and processes are continually being tried to extend the life of a plaster mold. For hardening the plaster paris a number of things have been tried such as, for instance: Portland cement, borax, alum, soluble glass, borax and tartaric acid, corinne, and other various things.

Plaster paris molds may be easily repaired if defective, provided the faces where broken are not soiled, in that,

freshly prepared plaster paris will bond again with the broken parts. Air bubbles or holes in molds may also be filled with freshly prepared plaster. But this plugging of holes is not good policy for making fine ware, as the patched-in places have a different porosity generally than the original mold. But experience so far has shown that anything added to the plaster paris to harden and strengthen the same detracts so much from the porosity that the loss of time in having the clay let loose from the mold does not compensate for the gain in extending the life of the mold.

By following the outlines as above the clayworker is afforded an opportunity to make little souvenirs to donate to his friends and visitors, and a little ingenuity applied will give him quite a great deal of pleasure in making nice, pretty things out of his clay besides bricks.

THE COLONEL ON CLAY CONDUITS.

THE COLONEL was standing, meditatively watching some men putting in clay conduits for laying telephone, telegraph and other electric lines so as to rid the downtown district of the disfiguring and obstructing telephone poles. When he became aware of the approach of the writer his greeting was, "Here, suh, is one thing that you haven't been giving much attention. Here is one place where clay products are replacing a certain amount of wood and at the same time amounting to a much larger item in the clay world than in the lumber world. It does not take much wood to make a line of telephone poles, so far as one city is concerned, but of course the aggregate grows quite large until it amounts to so much that even if the cities had not started abolishing the use of poles it would only have been a matter of time before they would have had to be replaced by something else because of the scarcity of the supply."

"Yes," I admitted. "In the replacing of telephone poles with underground clay conduits there is no question but what the amount of clay conduits used is several times more than that of poles used to carry telephone and telegraph wires, and taken altogether it is quite an item in the clayworking industry, and here is at least one place where the clay people have been given a good turn by the city fathers."

"But, colonel," I continued, "you have evidently been seriously studying about something from your appearance when I came up to you. Were you trying to figure out the present magnitude or the future possibilities in the clay conduit business?"

"No, suh; no, suh; not in the way you are thinking about, at least. Strange as it may seem, what I had in mind when looking at this work was a different thing altogether. I was wondering about the possibilities of making clay conduits, or clay pipes, or something of that kind, for use in the place of tin or sheet metal for warming houses with hot-air furnaces."

"You know," he continued, "that during the past few years there has been a remarkable tendency to turn to furnaces for heating dwellings. It is not so long back that only the wealthy who were building fine houses, called by some mansions, thought of having hot-air furnaces to heat their dwellings, but now we have reached a point where nearly everybody building a new house figures on putting in hot-air furnaces, no matter whether the new dwelling is to be a cottage or a mansion, and there is such a boom in furnaces now as never was dreamed of a few years ago."

"Now, the idea that occurred to me in connection with this business is this: The clay conduits, or clay pipes, might be used to carry the heat from the furnace to the different rooms in the house instead of the tin and sheet metal ducts used for this purpose to-day, which are likely to rust out in the course of a few years and thus impair the system. I do not mean just the pipe down in the basement, but also the air ducts which are generally run between the walls of a new house so that there is no getting at them when finished. These should be of some material that will last practically as long as the house, and naturally the best material for this would be burnt clay. I am not familiar enough with the subject to know whether this has ever been tried or not, or just what the possibilities are in that way. I was simply thinking about it and wondering if it could be used, and speculating

on the volume of business in clay conduits that might be done if it should be found practical to use them. What do you know about it, or can you give me any light on the subject in any way."

I admitted that it was a new one on me, and that I did not know anything about either the efforts which may have been made in this line or what the possibilities might be, but I thanked him for the idea, and told him that I would pass it on to the other boys and see if they could make anything out of it.

Written for THE CLAY-WORKER.

AN EARLY BRICKMAKER.



BRICK HAS been made in New Jersey since a very early date. The first settlement in the northern part of the state was at or near what is now Hackensack, as early as 1640. Adventurous Dutchmen from New Amsterdam pushed across the North River and settled Paulus Hook, now Jersey City, thence up the Hackensack river to the region round about what is now Hackensack, planting their first cabins on the site of what is now Ridgefield Park.

The construction of the early houses was almost entirely of logs, but later came stone, and buildings erected two hundred and more years ago are still standing as monuments to the thoroughness of the Dutchmen.

For a time, it is claimed, the brick used were imported from England or Holland. The John Schuyler house in the southern part of Bergen county, and the Kingsland Manor near, were all supplied with brick from abroad. The chimneys and fireplaces were all built of foreign brick and still stand as evidence of the good qualities of the imported material.

But the Dutchman was much too thrifty to import brick long, more particularly as the clay for making it was close at hand. It was a national characteristic of the Dutch to utilize every possible natural advantage and the art of brickmaking was well known abroad. In fact, they went farther, and the art of tile-making had then been carried to so high a plane that some of the tiles brought from Holland and set in old New Jersey houses have never been surpassed in beauty of design or excellence of finish.

At what is now North Hackensack, Abram Zabriskie built a house in 1735, which is still a model for architects to follow. It is of stone, with walls at least two feet thick and laid in cement so hard that it cuts like original stone. In some instances the cement is harder than the stone itself. Originally the building was all of stone, but later it was changed somewhat and the gables rebuilt with brick, made on the place. In fact, this same Abram Zabriskie was the first brickmaker in this portion of New Jersey.

He was an important man in the community. He owned a tide mill, where he ground the grain into flour and meal and sawed the timber, cut from the neighboring hills, into lumber. Undoubtedly, he finally used the power thus generated, in turning his pug mill. It is certain, however, that it was done for a time with horse power.

Mr. Zabriskie was a Tory and his whole establishment

was confiscated and in 1781 the State Legislature of New Jersey gave the place to Baron Steuben for his services in drilling the New Jersey troops in the Revolutionary army. The Baron did not care for it, preferring his larger estate near Utica, N. Y., which had been presented him by New York. He retained the ownership of this property for a time, but subsequently sold it back to Mr. Zabriskie for \$15,000.

While the date of the beginning of brickmaking here is lost, it is supposed to have been before 1750. After that date there is no record of importing any brick in this vicinity. Nor is it known when the next yard was started, but there are stray bits of information which seem to locate the next yard at Hackensack, sometime around 1800, and two were in operation in 1824.

The whole region along the Hackensack river is underlaid with clay. Around North Hackensack, where this early yard was located, the clay is many feet deep, varying, however, with the locality. Some borings have been made which show only a few feet. Others show often as much as fifty to seventy-five. It is of the best, and sand of proper quality is near. Sometimes the clay beds are overlaid with such sand as is wanted in making brick.

The Dutchman who couldn't see the possibilities in a combination like that deserved to be expatriated. He was no Dutchman, and Mr. Zabriskie, who, by the way, left a large number of descendants, most of whom are somewhat imbued



Baron Steuben House, North Hackensack, N. J., Built in 1735.

with his characteristics, was made opulent by his originality in constructing and operating the first brick yard along the Hackensack. His imitators have been and are many. The river is lined with yards and sheds for miles now, but this yard, the site of which was miles from any of the others, remains as the historic reminder of the time when pug mills were not turned with electricity and when there were only the crudest means of burning.

It was not long before Mr. Zabriskie's neighbors discovered that they could obtain quite as satisfactory brick in their immediate vicinity as they could import from Holland, while the expense was naturally much less. Accordingly they began to patronize him and his business grew to liberal proportions. For years he had the trade to himself and supplied the surrounding country with what brick was wanted. It is said that he was the first to build any portion of his house of brick. But he could afford to do that, since he made them himself. It would have been too expensive for others to have undertaken it.

The country along the Hackensack river is flat and water power, excepting by means of the tide mills, was and is impossible. But the Dutchman came from a flat country and

that did not deter him from undertaking the utilization of such power as he found. The tide at North Hackensack rises about five feet. At the mouth of a little creek which comes down from the low hills back of the hamlet, Mr. Zabriskie built his mill. The stones for grinding the grain came from France and cost about \$400 each. One is used as a step stone to the house now and the other lies in the bottom of the river with the shaft which turned it projecting from the mud.

The rise of the tide filled his storage reservoir and when it ebbed he had sufficient water to do considerable work. The grain was ground here for the farmers from miles around. Then came the pug mill. The site is pointed out still and up to a few years ago traces of the yard were still visible. Now all have vanished.

Stranded close by the site of the mill is an old schooner, which a few years ago showed the high poop of the old time vessels, and it is said that this was used by Mr. Zabriskie in his trade with the settlements up and down the river and with New York. The remains of it are picturesque and they carry plenty of traditions of the olden time.

The accompanying illustrations show the house, built in 1735, with the brick gable. Set in the wall, as shown, is a diamond made of baked clay, closely resembling terra cotta. This is imprinted with the owners' initials and a cog wheel, which indicates that he built mills, or was a millwright.

It has been said that this yard was the earliest in New

Written for THE CLAY-WORKER.

WHITE CLAYS OF SOUTH MOUNTAIN, PA.

SOUTH MOUNTAIN forms a rude arc of a circle, curving from Potomac River at Weverton northward and eastward to the Susquehanna south of Harrisburg. It is not a unit, but it is composed of several parallel ridges and intervening steep sided, longitudinal valleys, and the larger part of the drainage passes westward through rugged water gaps. The mountain ridges are composed largely of hard sdsantone or quartzite and the longitudinal valleys of shale.

Along the west foot of the outer ridge of the mountain from the Maryland State line to Susquehanna River are deposits of very siliceous white clay associated with beds of sand and colored clays, and with the wash from the mountain slopes above. Nearly everywhere it is accompanied by deposits of iron and manganese ores. The clay was first exposed to view in mining the great iron deposits of the region; twenty or more years ago, but its commercial value has only within recent years become known. The deposits have been actively mined in the vicinity of Mount Holly Springs, Pa., six miles south of Carlisle, where they are of unusual thickness and purity.

The deposits were described by T. C. Hopkins in an exhaustive report on the clays and clay industries of Pennsylvania, published in the annual report of the Pennsylvania State College for 1899-1900. Since that report was prepared several new mines have been opened, and when George W. Stose, of the United States Geological Survey, visited the district during the field season of 1906, he was allowed to examine thoroughly the mine and plant of the Philadelphia Clay Company, which had previously been closed to visitors. It is for this reason that Mr. Stose's report, which appears in the Survey's annual economic bulletin for 1906 (No. 315) possesses peculiar interest and value. The report is necessarily brief, but it discusses the topography and geology of the clays and describes the mines in operation.

Pure white clay, such as is obtained from the South Mountain deposits, is used chiefly in the manufacture of papers. Wall paper, the cheaper writing papers, and all paper requiring a smooth, absorbent surface for fine printing are made in part of clay or some other mineral, such as pulverized calcium sulphate or barium sulphate. The South Mountain clay possesses distinct advantages over the other substances because of its whiteness, fine grain, absorptiveness, light weight, and its freedom from iron.

Excellent brick of light color are made from the unrefined clay, a more plastic clay being combined with it to give it body. This clay also has many of the requirements of the potter's mixture for china ware, for although it is more siliceous, less plastic, and higher in potash than the ball clay used in the manufacture of pottery, a proper mixture for this ware can readily be formed by adding to it less silica and feldspar than is generally used. Its plasticity and cohesiveness may also need to be increased by the addition of a small amount of ball clay, as for brick manufacture.

For desirable situations, read THE CLAY-WORKER "Want" ads.



Wreck of Adam Zabriskie's Brick Schooner, Hackensack, N. J.

Jersey and one of the earliest in the eastern part of the country. It was certainly in use before much of the country had been settled and could not have been much earlier and have been built by a white man. While the Indians of New Jersey were expert pottery makers, and some bits of the only painted pottery found east of the Allegheny mountains has been picked up around Hackensack, there is no record that they ever erected any structure of clay, either raw or baked.

THE HARDEST WOOD.

Recent tests of the hardwoods of Western Australia have revealed the extraordinary properties of yate, believed to be the strongest of all known woods. Its average tensile strength is 24,000 pounds to the square inch, equalling that of cast iron. Many specimens are much stronger, and one tested up to 17½ tons to the square inch, which is equal to the tensile strength of wrought iron. The sawn timber of yate is probably the strongest in the world. The tree grows to a maximum height of 100 feet and a diameter of 2½ or even three feet.—Exchange.

NOTES ON BRICK PIER TESTS.

By James E. Howard.

Read at the Atlantic City meeting of the American Society for Testing Materials, June 20-22, 1907.

AN ULTIMATE crushing strength of 5,608 pounds per square inch represents the maximum resistance which has been displayed by a brick pier in the Watertown Arsenal tests. There are a number of instances in which the crushing strength has exceeded 4,000 pounds per square inch, and it is a comparatively easy matter to build piers which shall display at least 3,000 pounds per square inch ultimate strength.

It is believed that the maximum limit for piers has not been reached, and that even higher results may be obtained by the use of some of the stronger brick, examples of which are found among the tests of individual samples, but which have not yet been tested in pier construction.

The strength of individual brick not infrequently ranges from 15,000 to 25,000 pounds per square inch, while one of phenomenal resistance displayed a crushing strength of 38,446 pounds per square inch. The possibilities of strength in clay products are shown in the test last mentioned, that of a

per square inch. As the loads advance the value of the modulus commonly drops somewhat, an effect attributed to the action of the mortar. Permanent sets are of small magnitude in piers of this class. If lime mortar is used, large sets are developed and lower moduli of elasticity prevail, the yielding of the mortar also exerting an unfavorable influence on the ultimate strength of the pier.

Regularity in shape of the individual brick promotes strength in the pier. The modulus of elasticity of strong mortar or neat cement is less than that of hard-burnt brick, hence it follows that the best-cushioning effect at the joint is reached when the mortar is of even thickness.

Piers commonly rupture by the development of longitudinal lines of fracture, the brick being broken into halves across the middle of their lengths. In some cases the ultimate strength is reached by reason of the direct crushing of individual brick, but the usual manner of rupture is the development of transverse lines of fracture tending to convert the pier into a clustered column of half brick.

Means which defer the development of longitudinal cracks might be expected to promote strength, and it is thought that some assistance may be afforded by modifying the manner of laying the brick. The transverse strength of a brick on edge should be greater than on the flat, and apparently some gain in strength in the pier has resulted from laying the brick on edge instead of on the flat. Also breaking joints

TABULATION OF COMPRESSIVE STRENGTH OF BRICK PIERS.

No. of test.	Description of bricks	Pier laid in	Age	Wt. per cu. ft.	Net sectional area.	Compressive strength.		Moduli of elasticity between loads per square inch of—			Permanent set on gauged length of 50" after loads in lbs. per square inch of—		
						Total	Per Sq. in.	100 and 600	600 and 1,000	1,000 and 2,000	600	1000	2000
			Mos. Days	Lbs.	Sq. in.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Inch	Inch	Inch
1694	Wire cut bricks, Dover, N. H.	1 cement, 5 sand..	8 20	136.0	121.15	363,450	3,000	2,809,000	2,469,000	2,262,000	.0005	.0011	.0035
1695	Dry pressed bricks, Charlestown, Mass.	1 cement, 5 sand..	8 21	136.9	120.79	415,100	3,437	2,717,000	2,439,000	2,358,000	.0007	.0014	.0040
1699	Dry pressed bricks, Charlestown, Mass.	1 cement, 5 sand..	8 18	137.3	119.68	384,000	3,299	2,632,000	2,381,000	2,165,000	.0026	.0038	.0079
1760	Pavers, Johnsonburg, Pa.	Neat cement.....	0 5	143.7	118.77	501,000	4,218	4,032,000	3,704,000	2,381,000	.0020	.0030	.0086
1761	Pavers, Johnsonburg, Pa.	Neat cement.....	0 7	144.8	119.65	671,000	5,608	4,237,000	4,444,000	3,817,000	.0013	.0025	.0045
1763	Pavers, Shawmut, Pa.	Neat cement.....	0 2	141.5	112.78	421,000	3,733	3,425,000	3,030,000	2,890,000	.0030	.0074	.0254
1764	Pavers, Shawmut, Pa.	Neat cement.....	0 7	145.6	112.98	510,000	4,514	4,386,000	3,704,000	3,356,000	.0011	.0020	.0048
1767	Pavers, Johnsonburg, Pa.	Neat cement.....	1 8	145.2	118.21	506,000	4,281	3,906,000	3,774,000	3,571,000	.0011	.0018	.0033
1768	Pavers, Johnsonburg, Pa.	Neat cement.....	1 8	143.6	119.52	598,000	5,003	5,208,000	5,128,000	4,202,000	.0008	.0015	.0024
1780	Pavers, Shawmut, Pa.	Neat cement.....	4 7	143.1	110.79	453,000	4,089	4,717,000	4,082,000	3,846,000	.0011	.0016	.0035
1596	Hard, West Cambridge, Mass.	Neat cement.....	1 0	135.5	132.60	623,610	4,700	2,403,000	2,326,000	2,336,000	.0014	.0027	.0058
1636	Face, wire cut, mud bricks } Dover, N. H. }	Neat cement.....	5 23	133.6	141.49	569,000	4,021	2,381,000	2,273,000	2,165,000	.0015	.0025	.0056
1671		1 cement, 2 sand..	2 12	134.4	143.64	542,000	3,773	2,809,000	2,778,000	2,577,000	.0012	.0018	.0039
1644	Hard, Rochester, N. H.	Neat cement.....	5 24	133.2	142.80	650,000	4,552	1,799,000	1,818,000	1,908,000	.0022	.0031	.0058
1645	Hard, Rochester, N. H.	1 cement, 3 sand..	5 22	130.3	142.32	487,000	3,422	2,119,000	1,923,000	1,845,000	.0023	.0038	.0100

vitrified shale brick, the honor of making which belongs to the St. Louis Vitrified and Firebrick Company.

The results of tests of fifteen piers are presented herewith, compiled for convenience of reference from several of the annual reports of "Tests of Metals." These are selected results on piers which have shown an ultimate strength of 3,000 pounds per square inch or more. These strong piers were made of hard-burnt brick, laid in neat cement or cement mortar. Their dimensions were about 8 feet high by 12 inches square.

The Arsenal results also include tests on other grades of brick laid in different kinds of mortar. It has been intended to show not only the degree of strength and rigidity attainable in brick work, but also to illustrate the strength and behavior of the more ordinary examples where considerations of strength do not control. There are, therefore, results on piers made of light-hard brick laid in lime mortar, representing the less strong and less rigid kinds of work.

Strength and rigidity are controllable features and may be regulated, within limits, by selection of the brick and choice of mortar.

During the early stages of loading, piers which are made of hard-burnt brick laid in cement mortar show moduli of elasticity in the vicinity of three million to four million pounds

at less frequent intervals, laying six or seven courses and then breaking end joints, has seemed to promote strength, over the usual manner of laying. The use of strong bond stones, in their cross section dimensions as large as the pier, should likewise aid in giving strength.

It is an element of weakness, however, to carry up a smaller pier on the top of a larger one without the interposition of a strong stone or plate, to relieve the larger pier of transverse strains at its junction with the smaller one. A remark of this kind would apply to foundation courses in regard to corbels, which should have steps of limited extent.

The strength and rigidity of a pier increases with age, due to the hardening of the mortar. By the use of strong brick, however, a high ultimate strength may be acquired within a comparatively short interval of time. It so happened that the pier first mentioned, which displayed the highest strength yet observed, was only seven days old when tested.

Another pier was built in the forenoon and tested in the afternoon of the same day. This pier, when four hours old, displayed a crushing strength of 2,106 pounds per square inch, or over 144 tons per square foot. During construction it would not be practical to load the pier so heavily by chance at this age, and, therefore, if properly designed for carrying its load under final conditions would be regarded as safe beyond doubt.

Written for THE CLAY-WORKER.

THE NEW PLANT OF THE JUNCTION CITY CLAY PRODUCTS COMPANY.

THE STARTING of the new plant of the Junction City Clay Products Company, Junction City, Ohio, which occurred October 23d, was the occasion of a grand jollification in which the entire community took part. Excursions were run into the city from neighboring communities and from all appearances a visitor would have thought that a county fair was in full swing. Two years or more ago the Junction Sewer Pipe Company built a one-press plant in the vicinity and the people have learned something of the importance of such a manufacturing plant as an industrial institution.

Both establishments are the result of the enterprise of Mr. J. D. Fowler, who though a young man, has already established himself and earned the reputation of a "captain of



Factory Building and Kilns of the Junction City Clay Products Company.

industry," and it is now conceded that under his direction the new plant will be a success from the very start.

That Mr. Fowler is a hustler, the readers may judge from the fact that this new plant has been constructed, equipped and put in operation in less than four months. Brick and sewer pipe manufacturers who have constructed similar plants will concede that this is quick work. Mr. Fowler is a bundle of energy, he is on the job all the time. An instance of the manner in which he hustles recently came to the writer's attention. A car load of material arrived at the plant at the close of the day's work. Instead of waiting until the next morning to unload the car, he gathered a gang of men by offering extra pay for overtime and had the car unloaded and the material on the ground ready for the workmen when they reported for duty the following day.

The accompanying illustrations show the appearance of the new plant. The buildings are a combination of brick and frame construction, ranging in height from one to three stories. There are eight 32-foot round down draft kilns, and fifteen hot air tunnels used for drying ware. Power is obtained from two 150 horse-power tubular boilers which drives a mammoth Corliss engine. A feature of the plant is a four and one-half inch line shaft sixty feet in length, which is erected on bearing stands independent or free from any part of the building. The machinery equipment, including dry pans, pug mills, pipe press elevators, etc., were furnished by Stevenson & Co., of Wellsville, Ohio. The plant is considered a model outfit for economical and efficient work. It will employ fifty or more people the year through. The officers of the company are J. H. Kohlman, president; H. A. Griggs, secretary; E. A. Young, treasurer, and J. D. Fowler, general manager.

The chief product of the plant will be flash brick, common stiff mud and wire cut brick, both rock face and plain. They will also make hollow block, fireproofing and flue lining, and a mixed line of clay products, either fire clay or shale.

SOME INTERESTING BUILDING FEATURES.

In the report of building operations for 1906 which is issued by the United States Geological Survey, in which the statistics for last year are taken up in connection with the statistics of the clayworking industries, with which they are closely linked, there are some interesting features aside from the dry data of figures and deductions. The figures given are for forty-nine of the leading cities of the United States and show a falling off for 1906 in the number of permits issued as compared to 1905, but a gain of something over 5¼ per cent in total value.

One of the strikingly interesting features about these figures is that notwithstanding its big loss, New York is still the foremost city in the United States when it comes to building operations, and that even when due consideration is given to its size. It furnishes evidence of the tearing down of old structures and the erecting of new ones, and more expensive ones, at a startling rate, and also that New York leads in fireproof construction.

There is more of this there than in other cities and the average cost of building is considerably higher. The average cost of buildings in New York for the year was \$18,075; Brooklyn, \$3,951; Chicago, \$6,081; Philadelphia, \$2,278; San Francisco, \$6,143; St. Louis, \$3,331; Boston, \$6,931; Los Angeles, \$1,977; Pittsburg, \$4,112; Detroit, \$3,234.

On the basis of one building to a permit the average cost of each building was \$3,758 in 1906 against \$3,469 in 1905. The statistics for 1906 include for the first time separate figures for wooden and for other buildings. On this subject an advance press bulletin of the Report says:

Of the total number of building, 37,066, or 41.24 per cent., were of brick or stone, and 52,814, or 58.76 per cent., were of wood. The number of wooden buildings, even in the large cities, was considerably greater than the number of fireproof buildings, but the value of the wooden buildings was only a little more than one-fourth that of the fireproof buildings.



Boiler Room of the Junction City Clay Products Company's Plant.

The average value of each fireproof building was \$11,208, while the wooden buildings averaged in value only \$2,035. New York leads in the value of fireproof buildings, though the number erected in 1906 was not large, the average value per building being \$50,204. No wooden buildings were erected in the borough of Manhattan, but in the Bronx 1,279 wooden buildings, with an average value of \$4,436, were erected in 1906. Chicago was second in value of fireproof buildings and Brooklyn third.

POE REVISED.

I asked the bird
What it would say
In case it heard
An oyster bay.
And from above my chamber door
Quoth the raven, "Sagamore!"

Written for THE CLAY-WORKER.

A GREAT MANUFACTORY.

The New Koppel Plant, Where Portable Railways, Cars, etc.,
Are Produced in Great Quantity.

THERE HAS JUST been completed and placed in operation at Koppel, Beaver County, Pa., the first unit of one of the largest and finest plants for the manufacture of industrial and portable railways and steel cars for use in connection with the same.

The plant is the first that has been built in the United States by the Arthur Koppel Company, which for a number of years past has owned and operated large plants for the manufacture of these industrial labor saving devices in Germany, where the company was first organized, France, Hungary, Bohemia and Russia. In addition to the above large foreign plants, the Arthur Koppel Company maintains large sales offices with their own force of expert engineers in every large city in the world. In this way, the branch office system of the company is expanded just as the field of operations grow.

The increasing demand for portable railways that can easily and quickly be transported from one location to another, as is

the result that 650 acres on the outskirts of the town of Homewood, thirty miles west of Pittsburgh, were secured, 250 of which will ultimately be used for the plant, while the remainder will be used as sites for the homes of this and other plants that will be built in the immediate vicinity.

This site, which is now known as Koppel, Pa., is located on both the Pittsburgh & Lake Erie Railroad and the Pennsylvania Lines West of Pittsburgh, while the proposed Lake Erie & Ohio River Ship Canal also touches the property. These three shipping outlets give facilities that can not be excelled anywhere in the entire Pittsburgh District.

It was then decided to build the plant on the unit system, or in sections, and that one section would first be built complete and placed in operation before another unit would be started. In this way, it was easy to build a section and have the plant producing in every department while the remainder was being built. Then a uniform enlargement of every department is intended just as the demand justifies.

The present plant was designed by Dodge & Day, the well-known engineers and contractors of Philadelphia, Pa., and was started in the latter part of May, 1906. It was finished in June of this year, and is now in full operation in every department.

The plant consists of an erection shop 50 by 200 feet, a



A Partial View of New Factory of Arthur Koppel Company,

demanding in the hundreds of large contracting jobs, coal and clay mines, brick and industrial plants, quarries, etc., in this country, has created a steadily increasing demand for this class of track, as well as for the heavy and light mining and dump cars that are used in this part of the country by the thousands in coal, fire and silica clay mines, limestone and other rock quarries and, in fact, anywhere that a rapid loading and unloading of material is essential to the economical handling of the materials encountered.

This demand was responsible for the management considering the construction of a plant in this country, and it was only natural that the site selected should be in the heart of the greatest industrial and consuming district in the United States, as well as in a district where the raw materials, fuel and skilled help could be secured, and the two former with the greatest saving in freight, haulage and handling expenses. Therefore, it was determined to locate the plant at Pittsburgh. Difficulty was experienced, however, in obtaining a site in this immediate vicinity that would permit the company to make the future expansions that would undoubtedly be necessary in the course of a few years. Then the surrounding district was searched for a site, with

machine shop 75 by 100 feet, a light car shop 100 by 175 feet, a smith shop 75 by 175 feet, a power house 50 by 100 feet, office building 50 by 75 feet, a 40-foot traveling crane, complete interworks railroad and a water tank with a capacity of 15,000 gallons.

All of the buildings that have been erected have been constructed with skeleton frames of structural steel, while the floors, walls and roofs are all of concrete, making the structures practically fireproof. The concrete walls of all the buildings extend but six feet above the level of the floor, the windows being mounted above the concrete and running up to the revolving windows which are located at the top of the buildings. This gives the maximum amount of light and ventilation to the interior of the buildings, and at the same time keeps the dust and dirt from blowing over the benches of the workmen, these benches running along the sides of the buildings, ample space having been afforded for operating devices, machinists' tables, etc., and when it is necessary to lean heavy plate work against the walls, this may be done without fear of injury.

Throughout the entire plant, all steam heating lines are carried up from the side walls and carried overhead the en-

tire length of the building. The ventilators are all controlled by means of a gearing from below.

The method of construction of the floors is one of the features of this plant. It is constructed of six-inch tar concrete, on top of which are laid four-inch rough hemlock boards, and on top of these rough boards is an inch layer of dressed maple flooring. The flooring is perfectly even, and on account of the construction, permits perfect alignment for the work in the various buildings, a very essential feature for this particular class of manufacture.

In the center of the floor of each of the shop buildings is a line for compressed air, and the connections are so arranged that by means of the hose used above the floor, the

has a capacity of 6 by 4 feet by $\frac{3}{4}$ inches, and over a Doty Guillotine Shear, which has a cutting capacity of 6 by 1 inches. Both of these shears are power driven, and are capable of great speed and capacity.

In this yard, and convenient to the plant, is a 5-ton Niles electric traveling crane which connects the plant with the railroad, thus simplifying the handling of material consigned to the plant or being shipped to destination after manufacture. This crane has a 75-foot span and a 400-foot runway, although the latter will be about doubled shortly. By means of this traveling crane and a Dodge Coal Storage Company 5-ton locomotive crane, which is equipped with a 35-foot boom, it is a simple matter to lift or convey heavy materials readily to any portion of the plant by simply loading them on cars on the portable system which runs to every part of the entire plant.

Description and Equipment of the Buildings.

Power Plant.—The power plant, the engine room of which is shown in Figure No. 4, is built on heavy concrete foundations, and the building itself is constructed entirely of concrete and steel. The engine room is 50x50 feet, and is equipped with a 200 H.-P. Buckeye high speed automatic engine which is direct connected with the 150 K. W. Northern



Fig. 2. One End of Machine Shop.



Fig. 3. Erecting Shop, Showing Cars at All Stages.

pneumatic tools may be taken any place in any of the buildings that work requiring their use may be in progress.

The grounds and yards adjoining the plant proper are very systematically laid out, and designed to occupy the minimum amount of space for the maximum quantity of material. In this yard, located about the same distance from all of the buildings, are a series of bins in which a large stock of all kinds of supplies used in the various buildings is kept, and this reserve is not disturbed unless the stock in the storeroom has been unavoidably allowed to run low. In this yard is also kept the large stock of bars, plates, structural steel, etc., the cutting being done right in the yard under sheds erected over the Hilles & Jones angle shear, which



Fig. 4. Engine Room in Power Plant.

generator, which is shown just to the right of the center of the photograph. On the extreme right is the large Northern switchboard, while on the left is the Buckeye engine and an Ingersoll-Rand air compressor, which has a capacity of 450 feet of free air per minute, and furnishes the air for the pneumatic tools in both the machine and erecting shops. As will be noted from a glance at the photograph, all piping with the exception of the steam inlet and the exhaust have been placed under the floor of the engine room in order that they may be easily accessible. The level of the engine room floor has been built six feet higher than the floor level of the boiler plant. The boiler plant occupies the other half of the building, and is separated from the engine room by a heavy wall. The equipment consists of two 200 H.-P. Erie City water tube boilers of the Heine type and a large vacuum pump, which takes up the exhaust steam, forcing it through a system of radiation, thereby furnishing heat for the office building and the different manufacturing buildings. Ample space is provided in both the boiler and engine rooms for additional equipment.

The Light Car Shop.—This building, shown just to the left of the water tank in Figure No. 2, is used for the manufacture of the lighter grades of steel cars, and is 100 feet

wide by 175 feet in length. The mechanical equipment consists of the following:

- Two 2-ton Niles electric traveling cranes.
- Six auxiliary jib cranes from the same makers.
- One Higley cold saw, capacity being 20-inch I beams.
- One grinder for the above Higley cold saw.
- Two 1x1-inch Williams, White & Co. combination punches.
- One $\frac{3}{4}$ -inch Lennox rotary splitting shear.
- bending roll.
- One Cleveland Punch & Shear Co. $\frac{5}{8}$ -inch by 10 feet plate
- One $\frac{5}{8}$ -inch by 10 feet plate straightening roll of the same make.
- One Williams, White & Co. combination punch with a capacity of 30 holes in $\frac{1}{2}$ -inch stock at once.
- One Barnes 28-inch radial drill.

One Hoefner 28-inch radial drill.

One Williams, White & Co. riveting hammer, capacity $\frac{3}{8}$ -inch.

One Chester B. Albree hydro-pneumatic toggle riveter. This was the first riveter of this type ever installed.

Erecting Shop.—This building is shown in the foreground of Figure No. 1, and is 50x200 feet. An excellent interior of this building is shown in Figure No. 3, where cars for all purposes and in all stages of manufacture may be seen in process of construction. This shop is well equipped with the following machinery:

One 5-ton Niles electric traveling crane and smaller jib cranes.

Battery of Tate, Jones & Co.'s heating furnaces.

Store room, shown to the right of the center.

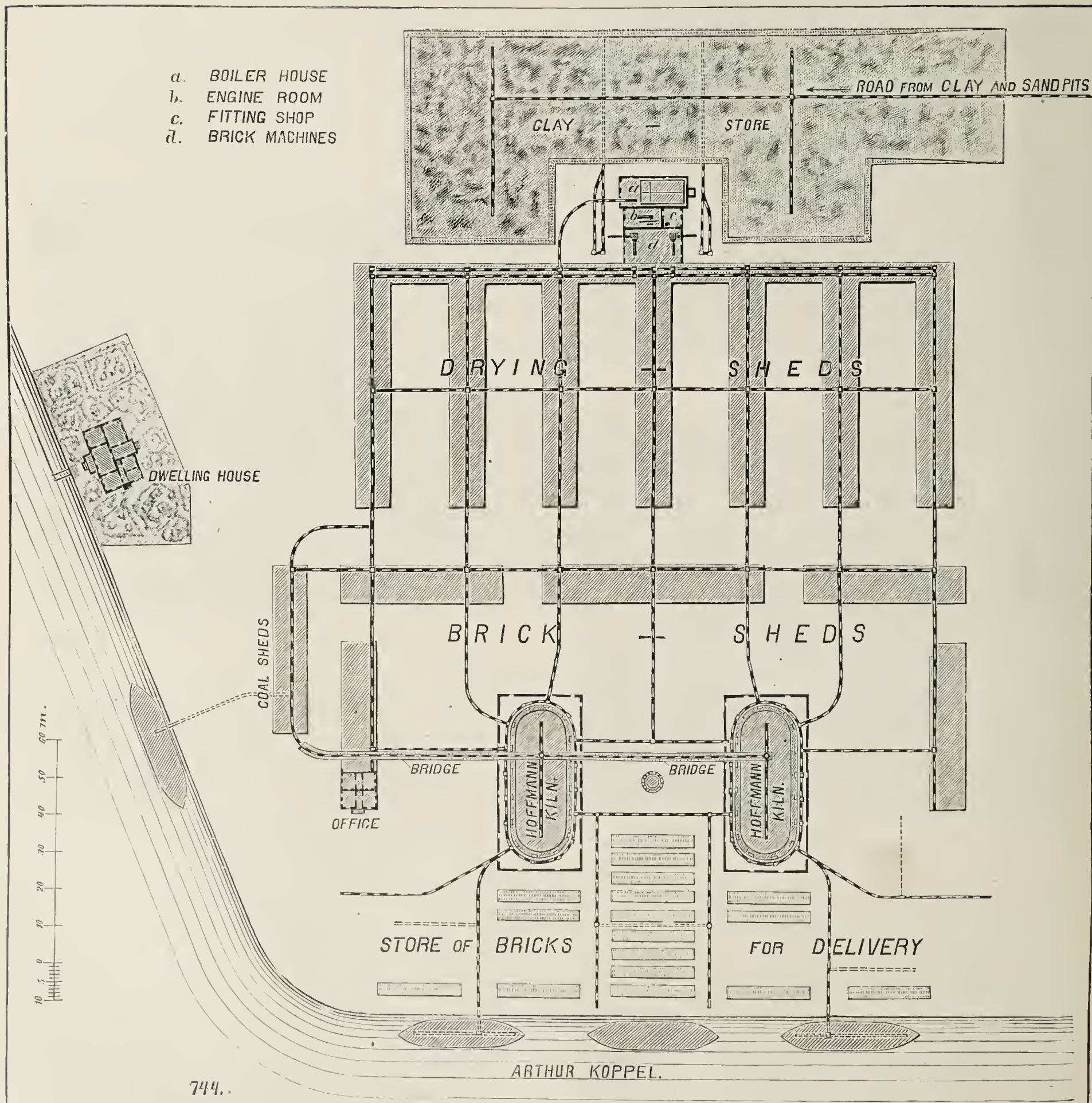


Fig. 5. Portable Track Equipment as Installed in a Brick Plant, Showing Plan for Entire Plant.

Carpenter shop, equipped with the following:
Two 12-inch combination cross and rip saws.
One three-spindle drill
One 40-inch band saw.

All carpenter shop equipment from American Wood Working Machinery Company.

Machine Shop.—The machine shop is at one end of the

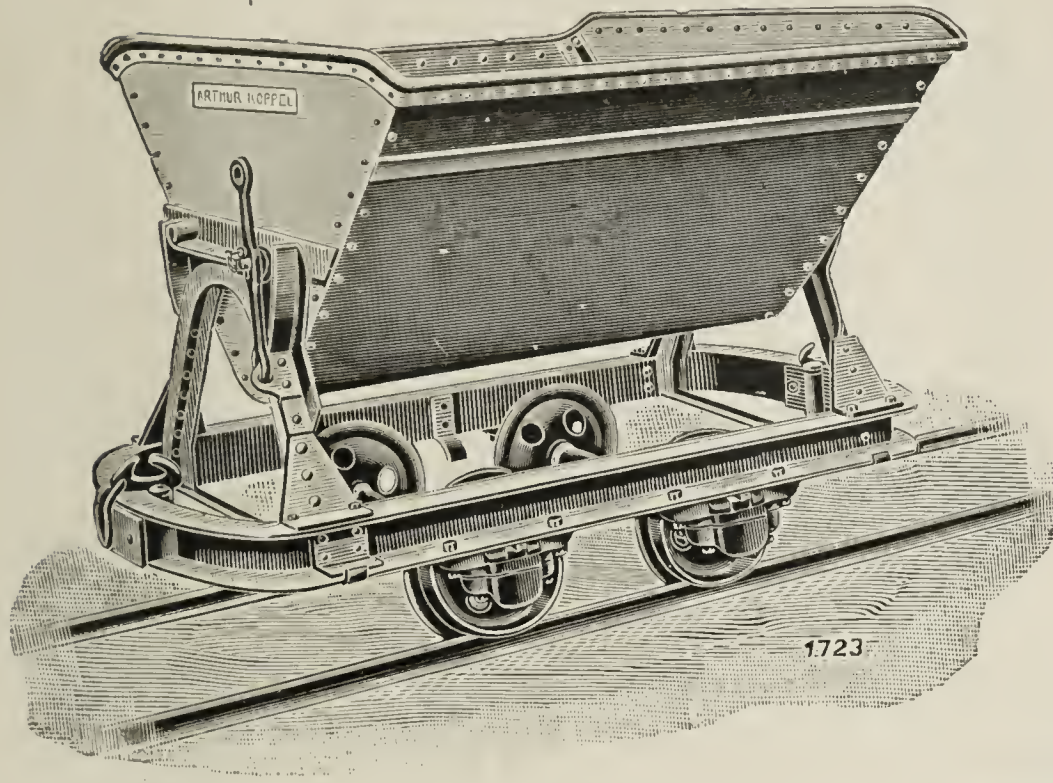


Fig. 6.

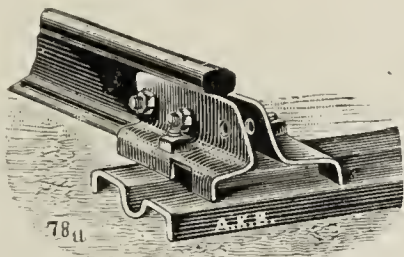


Fig. 7.



Fig. 8.

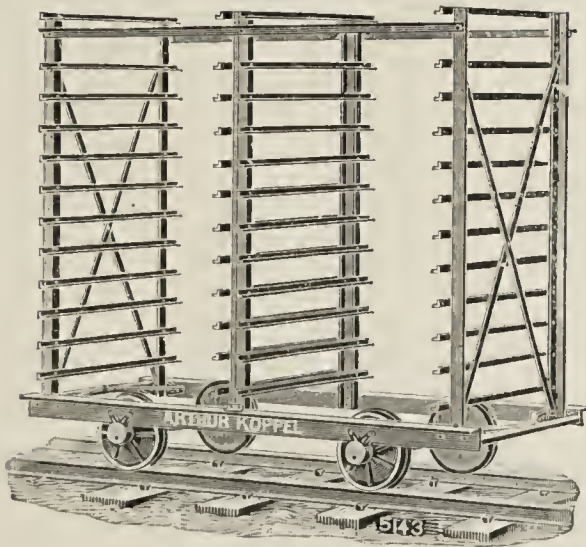


Fig. 9.

erecting shop, and is 100 feet long by 75 feet wide. Here all of the wheels, axles and other machine parts are turned out, necessitating the following equipment:

Two 30-inch wheel boring machines. One is a Baker Mfg. Co. and the other a Warner & Swasey.

One Mark Flather planer, 30 inch by 10 feet.
One American Tool Works Co.'s planer.
One 18-inch Lodge & Shipley lathe.
One Bridgeport double end axel lathe.
One 12-inch LeBlond lathe.
One 20-inch Bardons & Oliver turret lathe.
One 8-inch turret lathe of the same make.
Two Henry & Wright 2-spindle sensitive drills.
One 28-inch Hoeffner upright drill.
One 48-inch American Tool Works radial drill.
Two American Tool Works 24-inch shapers.
One Hydro-Press Co. 40-ton wheel press.
One No. 15 Lea simplex cold saw.

One 10-ton Niles Electric Crane for lifting heavy machine work.

The above equipment is all installed wherever it is the most convenient for rapid progress and minimum handling as the materials pass through the shop, and no attention has been paid to regular isles and passages. Everything in this department, as well as in all other departments, is planned to successfully move from one operation to the next in succession, and the entire arrangement has been made with this end in view.

Blacksmith Shop.—This building is located almost directly back of the machine shop, and is convenient both to this department and to the light car building. It is 175 feet long and 75 feet wide, and is well equipped with the following:

Two 2-ton Niles electric cranes, each with 35-foot span.

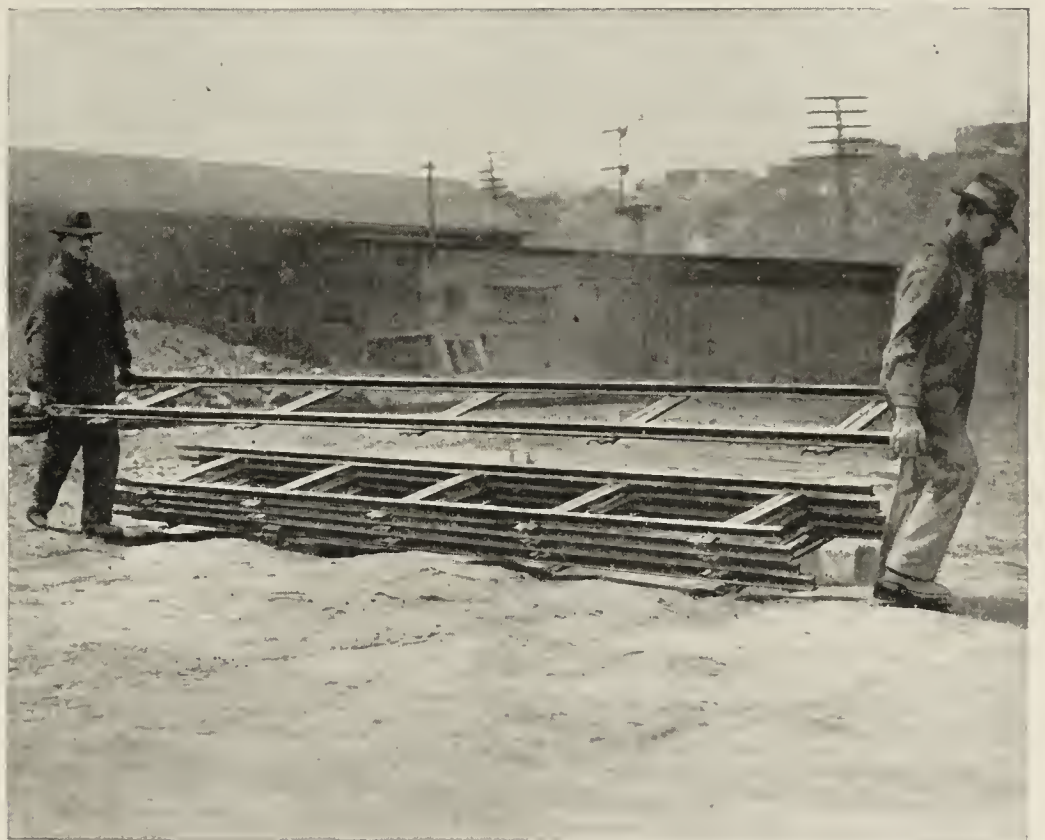


Fig. 10. Portable Track Made in Fifteen-Foot Sections.

One 8-foot down draft Sturtevant blower.
Ten Sturtevant down draft forges.
Two coke heating furnaces.
One 18-inch No. 6 Ajax bulldozer.
One 600-pound Bement-Niles single frame steam hammer.
One Sturtevant flanging forge.
One 7-foot by 18-inch grindstone.
Two spindle drills, Henry & Wright.
One $\frac{3}{4}$ x $\frac{3}{4}$ -inch Cincinnati punch.
One 8-inch Cincinnati punch.
Two 30-inch by 12-foot planers.
One 16-inch American shaper.
Bending clamps, small punches, drills, etc.

All smoke and waste gases from the forges are drawn into a Sturtevant 90-inch steel plate exhauster which is driven

by a 15 H.-P. Westinghouse motor, and in this way the shop is kept free from objectionable gases and odors. The grindstone is also direct connected to a 15 H.-P. Westinghouse motor. All cranes are operated from the level of the floor.

The office is a two-story building, the first floor of which is occupied by the superintendent, clerical force and cost department, while the second is used for an engineering department and drafting room. The water closets and lavatories are all located in a separate building, and especial attention is given to perfect sanitary conditions in and around the entire plant.

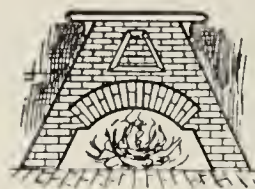
The large cut shown herewith illustrates the equipment as furnished for a large brick plant, all of the track through the entire plant having been manufactured and furnished by the Arthur Koppel Company. Figure No. 6 shows the standard double side dump cars that are particularly adaptable for use in hauling clay from the mines to the plant, while Figure No. 9 illustrates the car manufactured for handling green brick to and from the drying rooms and kilns. The turntable shown in Figure No. 8 is used throughout the plant illustrated in Figure No. 5, as is the standard method of effecting a joint, as shown in Figure No. 7.

Since the plant was placed in operation about five months ago, over 2,500 cars of all kinds have been manufactured,

consin and Minnesota followed in the order named. Of the total production, 2,647,742 tons were sold for structural use. In other words, over two-thirds of the lime made went into the building supply trade.

Written for THE CLAY-WORKER.

THE DALLAS PRESSED BRICK COMPANY, MESQUITE, TEXAS.

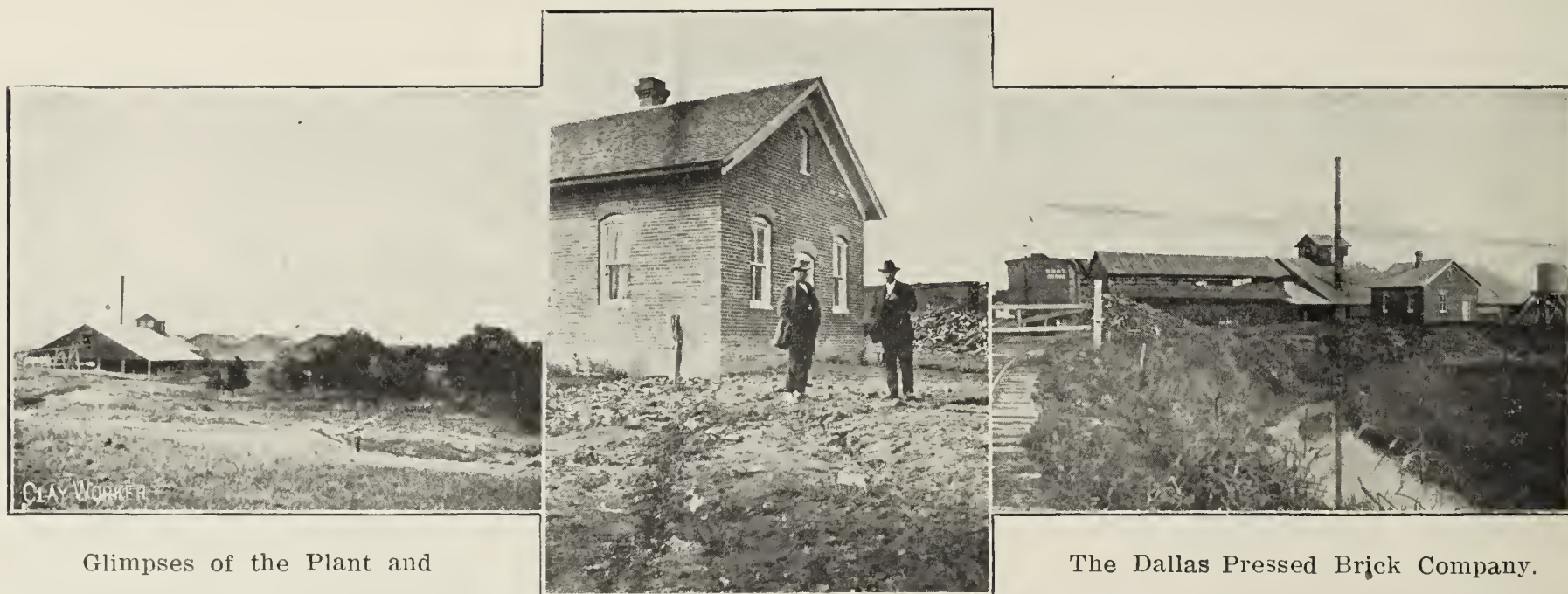


now evident in North Texas.

Its president is W. O. Connor; the vice-president and manager, S. B. Marshall; M. B. Shannon is secretary, and M. J. Craig, superintendent.

Mesquite is a small town on the T. & P., and the plant is about two miles nearer Dallas. It is a pleasant drive out on the Orphans' Home road, which leads through picturesque dells and past prosperous looking farms. Dallas county, according to the late Prof. C. Remond, who made a careful study of this region, is rich in valuable clays. Just beneath the surface of the limestone ridge on which the city is built

ABOUT EIGHT miles east of Dallas, on the Texas and Pacific Railroad, a new and flourishing brick plant has been installed, which, though only about two years old, is doing a rushing business, with the phenomenal demand for building material



Glimpses of the Plant and

The Dallas Pressed Brick Company.

Yard Office of

as well as a large amount of portable track, which is made in 15-foot sections and readily carried by two men, as shown in Figure No. 10. There are, at the present time, about 250 men employed, and the plant is running full time. The company furnished the equipment used by the National Fireproofing Co., Pittsburg, as well as the industrial railroad equipment and cars that are being used in the construction of the immense Pennsylvania Railroad tunnels and station at New York City. Another large contract is for the entire equipment that will be used in the construction of the tunnels under the Detroit River for the Michigan Central Railroad.

H. A. Ellis is the superintendent in charge of the entire plant.

A SMOKER.

THE PRODUCTION OF LIME IN 1906.

The production of lime during the year 1906 in the United States amounted to 3,197,754 short tons, valued at \$12,480,653, which was an increase of something over a million dollars in value over 1905. The average price per ton in 1906 was \$3.90 against \$3.67 in the year 1905. Pennsylvania led in production with nearly two million dollars, while Ohio came second with over a million dollars' worth, and Maine, Wis-

are shales which have been used for many years in West Dallas, where for many years the Henry Brick Company has been established; while four hundred feet down, there is said to be a stratum of perfectly pure aluminum clay.

It is the upper layer of shale, however, which the Mesquite plant is utilizing. The beds are close by, within the twenty-five acres which comprise the company's land. Six hundred and twelve feet of a blue lignite shale, with a nine-foot layer of yellow clay, gives them the requisite clays to make a very good plain building brick of a clear light cherry color. There is no sand, and the clay, like all the clays I have seen in this region, is very "fat" and waxy.

Royal wheel scrapers, bridge and trap and double cars, are used to gather the clay, which is here close to the surface, and slip scrapers convey it to the shed, 128 feet by 80 feet, where it is stored.

Two Frost dry-pans, with a capacity of 45,000 and 22,500 respectively, and a common standing gravity screen set at a 25 per cent angle, with a No. 12 mesh, and a capacity of 47 yards a day, prepare the clay, which is then transferred by a "belt-and-boot" elevator to the Fernholtz four-mold machines, where it is molded semi-dry. There are two of these, with a capacity of 45,000 and 20,000 respectively, and five men are kept busy attending them.

They had four updraft sixteen arch kilns when I visited the

plant in May, and were building another. The brick are set five over two, in forty courses.

Wood is used for water smoking, oil for burning; 15,000 gallons per kiln, or a barrel and a quarter per thousand, is required. An Atlas engine (simple slide-valve) of 125 horse-power, and an Atlas boiler, 150 horse-power, at 100 pounds' pressure, are used with oil. The burners are home-made, inside mixers, and steam is used to atomize the oil.

The plant was built in 1905, and already the company plans to put in another machine. In Texas, with sufficient stored space to protect against long wet spells, a brick plant can, and usually does, operate twelve months in the year, and for years there has been an "annual brick famine" in Dallas, so there is every inducement to keep things going winter and summer. Last year was an uncommonly mild and rainless season, and a very busy one in the building line all over Texas, so when I asked Mr. Marshall the usual perfunctory question, "Twelve months busy season, of course?" he replied: "Better say thirteen, and you'll give some idea of how we work. I thought I knew what work meant before I left Iowa, but I find a Texas brick plant makes me learn what hustling means, all over again. Why, they have an easy time up North. If they don't think so, let them come down here for awhile and try to keep up with the orders. I haven't had a day's rest since I took charge." ETHEL HUTSON.

HEARD IN NEW ENGLAND.

VARIOUS REPORTS concerning business in New England have been circulated during the month just passed, but according to the best information available there is comparatively little difference, compared with previous years at this time. The market remains steady



The Fuel Supply, Dallas Pressed Brick Company.

and makers have had some shipping orders up to this moment. And among the larger firms there is no dearth of business now, according to their own reports. It isn't easy to see where all the business comes from, neither is easy to understand whether the market will be good continuously or not. Speaking in a general way the market has been firmer throughout the season than it generally is through a year, but there is some evidence that it will not be as active through the winter as it ordinarily is during the winter. Building operations throughout New England are likely to be seriously curtailed by the financial stringency, and there is little likelihood that there will be any serious important demand developed during the winter. It is confidently expected that operations requiring considerable quantities of brick will open liberally in the spring and with that makers and large dealers have to be content.

In Boston reports are conflicting and the man who can extract anything accurate out of the varying reports is, in-

deed, a fortunate individual. Some large operators declare that business is quite up to the average for November, while others, who ought to be in position to know exactly as much, say quite as positively that business is disappointing and that trade is not what they expected for this month. Moreover, they assert that there isn't the slightest indication of early improvement, and this last is more depressing than present dullness. But, on the other hand, no maker or dealer is willing to admit that prices are in the least depressed, though there are reports from buyers that there have been changes. One wouldn't like to say that a good buyer with a nice order couldn't obtain what he wanted at a material reduction. Perhaps he couldn't, but there are indications that he could. As a whole, the market is quiet and prices are probably made for each trade. Perhaps no standard actually prevails. Quotations have been made as follows: Up and down s. s., f. o. b. yards Massachusetts and New Hampshire, \$7.50 to \$8.00; up and down w. s., \$9.00 to \$9.50; New Hampshire selected w. s., f. o. b. cars New Hampshire, \$12.00; Massa-



Machine Building, Dallas Pressed Brick Company.

chusetts face bricks, \$20.00 to \$21.00; fire bricks, \$28.00 to \$35.00.

Important news from the manufacturers is not plentiful this month, though there are some who are quite as enthusiastic as they have been and are talking more or less about improvements and changes which will be made in the spring. If the financial stringency does not extend beyond the limits of New York, thereby making it difficult for those who engage in large building operations elsewhere to obtain money for their enterprises, the outlook is certainly quite as encouraging as it ever has been; but the danger which lurks in the increasing shortage of money is perhaps sufficient to cause operators to be a shade cautious in their operations, or even in their plans. The market is now limited to actual requirements in nearly all New England centers and nothing has occurred during the month to make it different. Perhaps manufacturers and large dealers ought to be satisfied if they hold their own at this unfavorable season with the financial difficulties piling up in the great money centers. The feeling is quite encouraging, however, and there is plenty of possibilities that improvement will follow the present temporary flurry. Nevertheless, it is useless to deny that it has had its influence and perhaps will exert a depressing influence far into the time when preparations for next season are made.

A gentleman conversant with the situation in nearly all the New England States expresses the opinion that business has not been permanently injured and that next spring will see quite as much activity developed as has been the case

the past two or three years. He says that the cement interests have not injured the brick trade in the least and that the coming season will see quite as much activity as ever in that direction.

HIRAM.



THE COST OF DRAINAGE.

THE COST of tile drainage prevents many farmers and land-owners from doing anything in the way of draining. They do not look at it as an investment of so much capital and labor to be drawn upon in after years. Often it will prove to be the best investment that could have been made.

Doubtless there are many firms and large areas of farm land where the productive capacity might be increased fifty per cent. by one-fourth of the outlay that the purchase of one-half more land would cost, and no extra fences or taxes would be required or extra teams to work as in the case of buying more to broaden operations.

Professor Townsend, in a lecture on drainage at the State University of Ohio, made the following statement: "I once underdrained a part of a field at a cost of \$22.50 per acre, and seeded it to wheat, and at harvest it yielded twenty bushels to the acre more than the part of the field not drained. I sold the wheat for \$1.25 per bushel, and the extra yield paid all the expenses of drainage and left me a little in pocket." A Mr. T. B. Barkley, living on the flat lands in Franklin county, Indiana, wrote about underdraining as follows: "When I took possession of my farm I found a twelve-acre field which my neighbors pronounced barren land. They told me that ten bushels of wheat was the most that the field had ever been known to produce, and it required a most favorable season to do that, and they advised me to use it for pasture. I determined to tile drain it, and laid two main drains with five and six inch tile and the laterals with four-inch."

"My first wheat crop, after draining, gave me an average yield of thirty-five bushels to the acre, and the wheat was sold for a dollar per bushel. The extra yield of wheat much more than paid for the entire cost of drainage.

A great many instances could be given where like results have been realized, and yet it is difficult to get some people to see the whole or why of such success, and so on, as the poet says:

"Sowing seed in the slop every season,
And blaming the good Lord without reason."

A Striking Example.

Every intelligent operator in the soil concedes the importance of drainage, yet it is really astonishing to observe how men will work wet lands year after year, wasting annually by loss of crops twice the amount that would be required to thoroughly underdrain. A most industrious German, in this vicinity, cultivated about eight acres for three years, barely making a living. His soil was an excellent loam, but two-thirds of it was so "spongy" that he could not get it plowed until all his neighbors were done planting. Driving past one day I hailed him, asking him why he was so late getting in his crops, when he explained that if he had begun sooner his horses would have "bogged" so that he might have never got them out. I suggested draining, but he replied that

would never pay on a leased place. He had started on a ten-year lease, which had only seven years more to run, and that he would only be improving it for his landlord, who would allow him nothing for the improvement.

After some further conversation I asked him to jump into my wagon, and in ten minutes we alighted at a market garden that had six years before been just a swamp hole as his own, but now (the middle of May) was luxuriant with vegetation. I explained to him what its former condition had been and that the investing of \$500 in tile drains would in twelve months put him in the same condition. He being a shrewd man acted on the advice, and at the termination of his lease purchased and paid for his eight acres \$12,000, the savings of six years on his drained garden. I honestly believe that had he gone on without draining he would not have made \$1,200 in twelve years, much less than \$12,000 in six years. My friend estimates his whole success in life to our accidental meeting and conversation that May morning, and consequently I have no stancher friend on earth than he.

PETER HENDERSON.

HANDLING TILE FROM THE MACHINE.

Those handling tile from the machine to drying racks or drying room should be careful not to mar or flatten them in any way. A drain tile may be well burned and smooth on the surface inside and out, but badly damaged by being pressed out of shape when green. Painstaking care at this point will do much to better the value of the product.

SETTING TILE.

No special rule can be given applicable to all kinds of kilns. The burner in every case needs to study his kiln, the tendency of the heat to draw to certain parts of the kiln, and set the tile so as to counteract this tendency—at one point close, at another open—to secure an open burn.

NESTING TILE.

Some clays will not bear nesting to any extent, only small sizes set in large sizes, and they must be set in the center of the large tile—if not the large tile are liable to crack. Some clays will bear close nesting without cracking.

BURNING TILE.

This is the most important part of the business of drain tile manufacture—a tile lost at the kiln entails the loss of digging the clay and all the subsequent labor of pressing, drying, setting and burning. At any other stage of the process of manufacture the clay may go back into the pit to be worked over. But the tile that is once brought to a red heat and then spoiled is fit for nothing but bats to be cast out and trodden under foot. Hence the best skill and judgment should be at command in burning.

At first water smoke slowly, shortening the time until the time and heat required to make the best burn is determined. There is much to be learned in this part of the work that can not be outlined with a pen. A careful study of the clay, heat and kiln is necessary to success.

The best advice that we can give to new beginners is, "go slow," until you have learned about your clay, kiln and neat drafts, and how to fire for best results. We have known many expert burners in clays and kilns that have learned, to get sorely disappointed in attempting to burn tile made from clay with which they had no experience.

The trouble with expert burners is, to get them out of grooves made in burning a particular clay—they persist in trying the old methods over and over again, when they do not and can not get satisfactory results with the clay in hand.

In many instances inexperienced men have succeeded with new clays where experts failed. The green men knew that they had to learn from the start and set themselves to work. Good common sense and persistent effort will do much in finding a way to success in any business, as well as tile making.

QUERY.

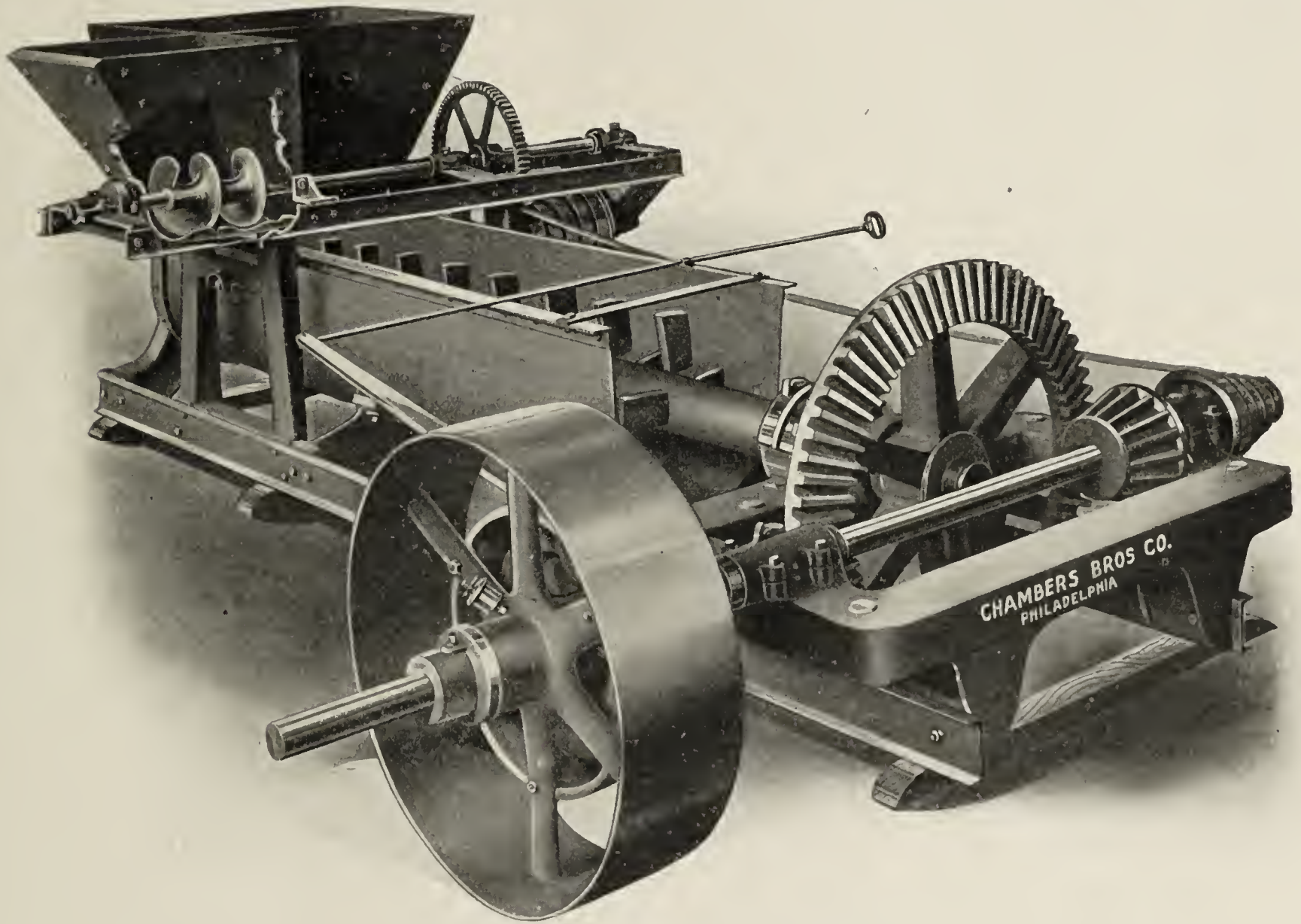
A has tiled his land and the water from the drain runs upon B's land. A's tile at all times runs through the lowest and natural runway. Tile discharges two feet from B's line. Can A prevent B from so discharging his drainage water or recover any damage from him? Can B build a dam on his own land and thus obstruct A's outlet? In case B tiles can he compel A to pay for any part of the tile?

The courts have generally decided, with a few exceptions, that owners of land may drain the same in the natural course

goes. We always thought there was music in the jingle of the coins, and this proves it, but it raises another question—are pianos made for music or for money?

A NEW SAND AND CLAY MIXING MACHINE.

The Chambers Brothers Company, of Philadelphia, Pa., have just placed on the market a new sand and clay mixing machine deserving of attention and which we illustrate. In this machine there are two feed hoppers, the larger one for clay opening directly into the main cylinder or tub of the pug mill. The sand hopper adjoining has a semi-circular steel bottom, in which is placed an iron conveyor arranged to discharge from its end at a point well within the side of pug mill tub. The hopper may be filled with sand, and so long as there is sufficient quantity to cover the conveyor there will be an exact amount fed into the pug mill, where it falls directly upon the clay. The mixture of sand with clay thus



New Chambers Clay and Sand Mixing Machine.

of drainage by constructing open or covered drains, discharging the same into any natural water course, or into any natural depression, whereby the water will be carried into some natural water course, and when such drainage is wholly upon the owner's land he is not liable in damages therefor. So if A discharges the water into a depression whereby it will ultimately find its way into a water course, he is not liable in damages and B can not interfere with the discharge of the water, and if B tiles his land he can not compel A to bear any part of the expense. A has taken care of the water that flows on his land, and B must do the same for his own land. It is better to secure the passage of a law by the Legislature to this end and thus avoid any litigation.

The Musical Age says that the Association of Piano Manufacturers is planning to establish a piano bank. There it

commences immediately at the entrance end of the pug mill tub. The sand conveyor is driven through the medium of a spur gear and pinion. Upon the pinion shaft is secured a five-step cone pulley, so that by shifting its belt from one step to another a wide range in the proportion of sand to clay is easily obtained. In addition to this the knives in the pug shaft of the mill are adjustable as to pitch. The whole machine is very substantially built, the main gear frame being one solid casting and mounted upon a frame work of steel channels. Driving shaft is 2 15-16 inches in diameter, with friction clutch pulley 40 inches diameter by 12 1/2 inches face. Unboxed weight about 9,200 pounds.

The machine may be used not only for sand but to feed exact proportions of coal dust, ground calcined clay, coke, or any finely divided dry material which it is desired to mix with some plastic mass.

CRAZING OF GLAZED CERAMIC PRODUCTS.

By Karl Langenback, Ceramist.

From "Architecture," October, 1907.



THE PHENOMENON of the cracking of the glaze on pottery products is one which occasionally comes under the eye of the architect.

In the case of various toilet appliances, the phenomenon is urged as directly objectionable because through these cracks in the glass covering the surface liquids might enter the body of the ware, which is never absolutely impervious to absorption. The penetration of liquids through the cracks or crazing of the glass is, however, far less common than is supposed in those larger appliances which the architect specifies, and with which alone he has to deal. It is comparatively seldom therefore that discoloration to any noticeable degree takes place in the body of such wares, because these cracks are so extremely close that capillary attraction of the liquid is only possible if in some way the piece becomes quite warm while the liquid stands over the crazing.

In pottery dishes of domestic use, the conditions are quite different, because these are frequently plunged entirely into hot water for the purpose of washing, which does open these cracks to a minute degree, so that the dirty water enters by capillarity, and in the course of time stains the body with dark markings.

It may further be stated as a matter of moment to architects in reference to the possible absorption of organic liquids through such crazings, that this is never attended with the production of a disagreeable odor by the ware. Any color which such vessels give in the course of use is entirely superficial, and can absolutely be removed by perfect cleansing and application of antiseptics. The reason why ware purposely strongly impregnated with organic liquids through crazing of the glaze does not smell is because odor is solely the accompaniment of fermentative decomposition, and the separation of the glaze surfaces in these cracks is so minute that not even the smallest micro-organisms can pass through them in the capillary suction of the entering liquid, but the cracks act as filters, leaving the germs on the surface, while the liquid passing through is absolutely germ free.

As architects are subjected to a good deal of argument in the interests of trade about this subject, and as the quantity of counsel given has darkened judgment, it seems desirable to state the unbiased facts. Of course, a crazed glazed product lacks technical perfection and may as such occasionally offend the eye. But the writer only knows of one use in which any offense of this kind is at all marked, and that is where such glazed products are strongly bespattered with dark colored lubricating oils, as for instance in a white tiled wainscoting immediately behind the crankshaft of an engine. Such oils are absorbed much more strongly by clay products than watery solutions, and crazed lines in the glaze become conspicuously noticeable owing to darkening of the body beneath.

Concerning the origin of the phenomenon "crazing" there is this to be said: It is due to a difference in the expansion of glass and of clay ware, and as the glass or glaze is fused to the surface of the clay body and cannot get away by pushing off or lifting, it parts or cracks. It is possible to correct the greater expansibility of the glass by making it more infusible through the addition of clay and sand, by which means its expansibility can so far be reduced that the contrary phenomenon of "crazing," namely, the pushing off of the glass

from elevated or rounded parts of the ware, takes place, a phenomenon which is called "shivering."

This defect is never seen in the trade because it takes place immediately upon drawing the ware from the kiln, and such ware never enters the market.

Because there is a correction for crazing due to the difference in the expansion and contraction of the glaze and the body, this defect is now not a common one where pieces are entirely covered with glaze. Only where this is not possible on account of some other demand which is made on the piece, can such a correction not be applied to the extent of making it completely and continuously perfect. This is the case in glazed tiling.

The unglazed baked tile has affinity for Portland cement and enters into chemical combination with it. On this account it is necessary in the case of glazed tiling to leave the surfaces which come in contact with the cement in setting uncovered by glaze to effect the most perfect bond. The latter can be as perfectly corrected to correspond with the coefficient of expansion of the body as in the most perfect piece of glazed pottery or porcelain of any other type. But this expansion of the clay body is altered from its natural conditions by the entrance of moisture, and particularly through the entrance of crystallizable salts, through capillary pressure. Now every Portland cement contains more or less of these water soluble salts, which are absorbed in setting the tile. In spite of the careful adjustment of the glaze to the body, they cause it to craze. In this case the action is not subjected to any regular laws, but depends upon the fortuitous way in which the salts have been lodged, and therefore there is no possibility of providing against its taking place, absolutely, and it is for this reason that no honest manufacturer of a partly glazed ware, in which the unglazed parts come in contact with Portland cement, can give a truthful guarantee against this technical defect.

There is only one condition under which it may not occur, and that is in the case of wares which have been burned at an extremely high heat with glazes that are very difficult to fuse. The general objection to the adoption of such ware is the fact that for tiles, which as flat wall coverings are required to be of reasonable uniformity in tint and accuracy in shape, the variation of the individual pieces is so great that the uniformity in shade and size which is commonly required by architects is not commercially attainable, particularly as the result of absolute freedom from crazing is not completely certain.

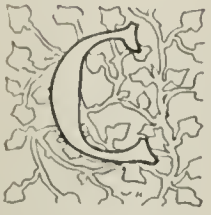
Colored glazes cannot be obtained under these conditions at all, because the tints are destroyed by the high temperature. There is an impression among architects that when there is a cracking or crazing of the glass there is danger that in the course of time the glaze may come off the surface. For this fear there is absolutely no foundation. There are innumerable examples of crazed glazes on pieces contained in museums and set in cement in their original position as much as 2,000 years old, and never in one single instance has the glaze come off of the piece to which it is fused. Such a phenomenon is only possible in the over corrected glaze shivering, as explained above, and such a glaze cannot from its very nature craze. For this reason, an absolute guarantee of such danger is assured and attested by every historic instance.

DO YOU WANT SOMETHING?

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

Written for THE CLAY-WORKER.

WESTERN PENNSYLVANIA BRICK AND BUILDING NEWS.



CONDITIONS in the brick industry have not been so favorable in the Pittsburgh district during the past month or so as they have been for many months past, but the conditions existing at present are thought to be but temporary, and within a few months, at the outside, the former prosperous state of business will be enjoyed. The financial situation in this section for a month has been serious, even critical, according to some authorities, no better evidence of this being necessary than the statement that the Pittsburgh Stock Exchange has been closed since the middle of October, and that there is nothing to indicate that it will even be opened before the first of January.

The large steel companies in this city and vicinity have been closing down mill after mill and furnace after furnace, owing to the cancellation of orders and the inability to make collections on business already turned out by the various departments. These companies, the largest users of refractory material, have likewise cancelled large orders for brick intended for improvements and repairs in the steel mills, and as a result, many of the large plants manufacturing refractory brick are forced to run on short time, although none of the brick plants have been forced to close down entirely.

One of the largest fire brick manufacturers in Pittsburgh summed up the situation in a few words to a representative of the CLAY-WORKER when he said: "We do not have the orders we had a year ago. Some of our largest customers have cancelled large orders temporarily. Our stocks are well up and in good shape. We cannot sell all the brick that we can make now. It is an additional expense of production to run it to the sheds. We are having great difficulty in making collections on the shipments we have made during the past two months, although we know that these accounts are absolutely good. So what is the use of manufacturing large stocks of brick under such circumstances. You need not be surprised if you should hear in a short time that we are going to close down some of our largest plants that are devoted almost exclusively to the manufacture of high grade blast furnace and silica brick."

Money is hard to get, and great difficulty has been experienced by the large local manufacturers in making out their payrolls. This condition was relieved, however, when the Pittsburgh Clearing House issued pay checks, which were issued to the manufacturers instead of currency, and the pays were distributed as usual. These certificates, which were in the sums of \$5, \$10 and \$20, are being received by merchants and dealers the same as cash, and are accepted by banks for deposit, but are not to be exchanged for cash by the banks.

The building brick manufacturers have not suffered to the extent that the fire and refractory manufacturers have, and conditions are considerably better accordingly. Building is still brisk, and the demand for common and red building brick has not fallen off to any great extent. Stocks of this kind of brick are running very low, and even after the active demand falls off for the winter, there will be several months of steady work for the employes of these plants in getting stocks ready for the spring demand, which is always heavy. It is thought by many that these plants will be able to run uninterrupted all winter, and will be in as good shape next spring as they were last spring, when they started running at capacity, and have continued so to date.

The paving brick business has been good all through the month of October, but is beginning to drop off somewhat now. This is only natural, however, as there is seldom much demand during the winter months, when street paving is practically abandoned. These stocks are also badly depleted, and will require several months of steady running to replenish.

The fireproofing business continues about the same that it has during the entire summer. The plants are busy, and there is no noticeable falling off in the demand. Building in

almost every section of the country is good, and there are few large structures that are not using material manufactured in Pittsburgh and the Pittsburgh district. The Pittsburgh business alone is large, and is showing no sign of a falling off.

Sewer pipe is still in demand in about the same quantities as last month, although there is expected to be a falling off within the next month, as it will be impossible to do much ditch work after the middle of December, unless weather conditions continue very mild. There have been an immense number of sewer contracts awarded in the many towns and cities surrounding Pittsburgh, and a large number of them are for delivery this year, while the remainder are to be delivered early in March and April of next year, so that there is little change expected in the volume of production at the different plants.

Building operations in both Pittsburgh and Allegheny are about holding their own, the records being about the same as at the same time last year. During October, there was a slight increase in the number and value of the permits issued by the Bureau of Building Inspection in both cities.

The Entress Brick Co., one of the oldest and best known manufacturers of building brick in the Pittsburgh district, has closed down the plant on Webster avenue, and is dismantling it as rapidly as possible. On the site of the plant, the members of the firm propose erecting twenty modern residences, work on which will be started as soon as the machinery can be moved from the buildings and the buildings razed. Prior to closing down the plant this month, the company had made up and burned a large number of brick, and these will be used in the construction of the new buildings. All of the equipment will be disposed of at once.

The Calder Brick Co., Cameron, Pa., has been awarded the contract for furnishing the brick that will be used in paving several of the principal streets at Lock Haven, Pa. The brick will all be laid on a concrete foundation, a practice that is coming into general use hereabouts.

While boarding a train at Bellefonte, Pa., last month, W. A. Dugan, superintendent of the clay mines of the Pennsylvania Fire Brick Co., at Beech Creek, Pa., was robbed of over \$600 in cash. He was in a crowd that was returning from a fair, and was unable to detect the theft.

An involuntary petition in bankruptcy has been filed against the Boyd's Hill Brick Co., of Pittsburgh, Maude Herpesberger, proprietor. There are a large number of claims, and the liabilities of the concern are large and principally unsecured, the chief assets being the business properties. Booth & Flinn, Ltd., Pittsburgh, are one of the largest creditors, the claims of this firm amounting to about \$9,000. The claim is for brick furnished and delivered to customers of the bankrupt concern.

The Elwood Brick and Limestone Company, Elwood City, Pa., has been formed and incorporated by John M. Montgomery, Thomas J. Fulmer and Frank H. Douthitt. The incorporators of the concern own large clay and limestone properties in Lawrence county, and as soon as possible will start the erection of a plant for their development and the manufacture of brick. The principal office will be at Pittsburgh.

The Gleasanton Fire Brick Company, Gleasanton, Clinton county, Pa., will make a number of substantial improvements to the large plant which is located at that place. The capacity will be doubled during the winter, when the improvements will be made, and many men will be given employment next year. A large new dry press and two new down draft kilns have already been started, and the other improvements will be made as soon as the help and materials can be secured. The present portion of the plant will continue running, as the firm has a large amount of business on the books that regular deliveries must be made on, and no part of the plant can be shut down while the additions are being made. When completed, the plant will be one of the largest and most modern in Clinton county, a district that is one of the leading fire brick manufacturing districts of the State.

The Harbison-Walker Refractories Co., Farmers' Bank Building, Pittsburgh, Pa., has been awarded the contract for furnishing the new blast furnace lining that will be put in Furnace No. 3 at the Carrie Group of the Carnegie Steel Company. This same company furnished the lining that was put in this furnace before, the lining having been in constant use

since the furnace was blown in on February 25, 1901, over six years.

Last month the plant of the Beaver Falls Art Tile Company, located at Beaver Falls, Pa., narrowly escaped destruction by fire when the plant of the Imperial Glass Company, adjoining, was destroyed. The plant was badly scorched, but the operation was not interfered with.

Charles Wenzel, superintendent of the Mount Union Silica Brick Works, Mt. Union, Pa., is in Germany inspecting a special process of brick manufacture which his company is anticipating inaugurating at the Mt. Union plant. He will not return to this country before the first of the new year. Mr. Wenzel learned the brickmaking business in Germany, which is his native land, and has been identified with various companies in this country for many years.

Fire last month did about \$1,000 damage at the Hiram Swank's Sons brick works at Johnstown, Pa. The fire was discovered in the pattern building, and many valuable molds were lost. The origin is unknown.

The S. Barns & Co. Brick Works at Bolesville, Pa., which were destroyed by fire last July, are to be rebuilt and again placed in operation, a new company having been formed to take over the plant and holdings. The new plant is headed by C. C. Hazen and Frank Bennett, of New Brighton, Pa., Lee Jackson, Rochester, Pa., and L. Wilkofsky, Beaver Falls, Pa. The new company will start at once the erection of a modern brick and iron fireproof building, which they expect to have in operation in thirty days.

At the annual meeting of the Karthaus Fire Brick Co., held at the general offices of the company on October 10, last, B. E. Staples, Robert McCullough and C. B. McCullough, of Jersey Shore, Pa., W. C. Weaver, Hyner, Pa., and P. L. Knecht, Parvin, Pa., were elected directors to serve for the coming year. After the election of the directors, the following officers were elected: President, B. E. Staples; vice-president, W. C. Weaver; secretary, P. L. Knecht; treasurer, C. B. McCullough, and general superintendent, Ira B. McCullough.

The report of the officers for the year was very favorable, the year having been the largest that the concern has ever had. There is a large amount of business on the books, and the contracts the plant is at present working on will keep it running to the full capacity for six months.

The Savage Fire Brick Company was reorganized at a meeting held at Johnstown, Pa., last month, and a board of directors, consisting of John H. Waters, Samuel B. Waters, Scott Dibert and George W. Wagoner, all of Johnstown; William H. Hill, Pittsburg, and Francis J. Torrance, Allegheny, chosen. John H. Waters was then elected president; William H. Hill, vice-president; Scott Dibert, treasurer; George W. Wagoner, secretary, and William H. Hill, general manager of the plants, which are located at Keystone Junction, Hyndman and Williams, all in Pennsylvania.

A. SMOKER.

AMERICAN SEWER PIPE COMPANY TO REDUCE CAPITAL STOCK.

A call has been issued to the stockholders of the American Sewer Pipe Company, of Pittsburg, to attend a special meeting on November 20th, at Jersey City, N. J. The object of the meeting will be to vote on a proposition to reduce the capital stock from \$8,000,000 to \$7,000,000. This reduction has been unanimously approved and recommended by the board of directors of the company, and the company has acquired by purchase, sufficient stock to retire the above amount. For some time, the concern has been buying in its stock at about \$20 per share, and the dividend was reduced from \$0.75 to \$0.50 per share quarterly. The announcement is now made that this was for the purpose of acquiring this stock.

The following announcement is made by President Frank N. Kondolf: At the last annual meeting of the stockholders of the American Sewer Pipe Company, held in Jersey City on February 4, 1907, the matter of reduction was thoroughly canvassed, and it was the unanimous opinion and vote of all the stockholders present, representing 67,292 shares of

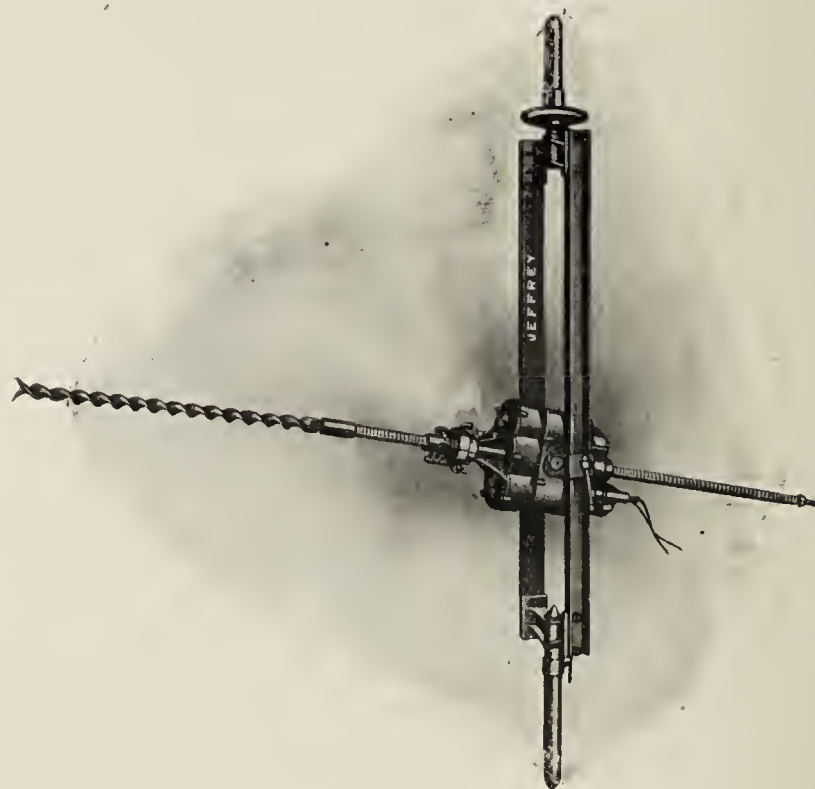
stock out of the total issue of 78,067 shares, that the directors proceed to purchase the stock for the purpose of making the proposed reduction in the capital. Acting under this recommendation, or in fact, instructions from the stockholders, the directors proceeded accordingly and acquired the necessary amount of stock by purchase.

With reference to the call for the present meeting in New Jersey, it is unnecessary to state that the company, being a New Jersey corporation, its meetings of stockholders must be held within that State in order to comply with the laws. From the present response to request for proxies, it is apparent that the action of the directors will have practically the unanimous approval of the stockholders.

JEFFREY ELECTRIC AUGER DRILLS.

For a long time the Jeffrey Manufacturing Company, of Columbus, Ohio, has been building electric driven auger drills for use in coal mines, and have recently brought out a heavier type, as shown in the accompanying illustration and known as the A-5 drill. This drill is to be used for drilling gypsum, fire clay, rock salt and other material of about the same hardness.

The motor is of ample capacity to take care of the most severe service that the drill point will stand, and has a nominal rated capacity of 3 H. P. with a momentary overload ca-



Jeffrey Electric Drill.

capacity of from 6 to 8 H. P. The gearing may be arranged for auger speeds from 100 to 300 R. P. M. and the thread bar provided with square threads from 6 to 12 per inch.

THE HAIGH CONTINUOUS KILN MAKING A GOOD RECORD ON THE PLANT OF THE PRESIDENT OF THE N. B. M. A.

Mr. H. Haigh, Catskill, N. Y.:

Dear Sir—Replying to yours of October 14th inquiring how we are getting along with our new semi-continuous kiln, the plans for which we obtained from you, can say at this time that we are very well pleased with it so far. We have now built and are using twenty-one chambers, holding about 28,000 bricks each. We have burned it through several times and each time are able to burn it quicker, owing to the ground on which it stands and the walls also becoming dryer. The product is all that could be desired, our bricks being of a good color and well burned.

It will give us pleasure to show the kiln to any prospective customers you may send here. Very truly yours,

(Signed) WILLIAM CONWAY.

Philadelphia, October 15, 1907.

Written for THE CLAY-WORKER.

BRICKYARDS IN PHILADELPHIA AND SUBURBAN DISTRICTS.



BRISK WALK on a November morning over a country road through the private garden of Mr. Ronig's house, brought into view down the hillside the fine plant recently erected and now in full swing.

The finest brick plant, with all the latest improved machinery that can be found, is the plant of ex-Magistrate Ronig.

Money has not been spared—in fact, an extra \$25,000 was spent upon it—with fine results. Mr. Ronig superintended the whole thing himself, and under his supervision the men worked by day's labor for seven months.

The plant covers an area of thirty-two acres, with clay enough to last a generation. They have a clay bank dug now of twelve feet, and in the meanest part there are twenty-four feet six inches of clay. The ground at one time was tested for iron ore, but they found nothing but clay 100 feet in depth.

Mr. Ronig desired to have a well dug, but failed, as the men were obliged to dig 125 feet before they struck gravel.

The clay is carried from the bank by hoisting drum, on cars, of which there are three, then dropped into a compound granulator, thence into a four-rolled compound crusher; it is conveyed on belts to the pug mill, thence to the Martin machine. This is the latest improved Martin soft mud machine, and turns out 40,000 bricks per day. The bricks are carried by cable conveyor into the steam dryer, 42,000 capacity, and by the same cable conveyed by the ball-bearing gravity conveyor and deposited along the breast of the kilns. The dryer is the latest improved patent double dryer with much or little ventilation as the case requires. If the first dryer is filled in the morning the exhaust steam is used for the second in the afternoon. Everything about the plant is built to last—the beams for the dryer are iron, and iron is used wherever it can improve on wood.

The latest improved cable system, delivering bricks from kiln, is an automatic ball-bearing up grade system, with a 60 per cent up grade, and it is interesting to watch that cable passing the bricks, five abreast, up that grade, which would otherwise require car and horse.

The kiln is the improved King patent kiln with outside dryer. There are but three kilns of this description in the country. The railroad siding is twelve hundred and fifty feet long, the six coal bins concrete, with steel eye beams for girders. The kilns are 50x30 feet, and the bricks are stacked forty high.

The engine is a 100 horse-power engine, common side valve, with an automatic cut-off. There are two 100 horse-power boilers, from Indianapolis.

In vulgar parlance, the plant is a cracker-jack, and when completed will be worthy of much attention. Later we hope to send a photograph of the entire plant. It has been in operation but one month as yet, and with the whole under cover they will work all winter in comfort and warmth.

Ex-Magistrate Ronig, having enjoyed a big taste of political food, was anxious, as he expressed it, "to do something"—"to keep busy." Undoubtedly he has found that something, a big one, and will have not the slightest trouble to keep busy.

Inviting us to come and inspect the plant after its completion, and after the exchange of cheery words, we parted, he to look after his plant, and I back toward another brick plant. I wended my way toward the

Abbington Brick Yard.

This company is composed of two men—Thomas Howard Noble and James D. O'Neil—and has been in existence since 1902.

Their machine is a Martin soft mud, and turns out nearly 2,000,000 bricks per year. They have two kilns, with a ca-

capacity of 150,000 bricks, stacking the bricks three feet high. This company supplies bricks for the surrounding locality, and their bricks are doing duty in some of the fine local residences.

McAvoy Vitrified Brick Company.

The vitrified brick business in this section of the country is in fine shape. Philadelphia has awarded the contract for paving 235 streets with vitrified brick. This will require 11,000,000 blocks. This is the largest single contract ever awarded in this country. The McAvoy Vitrified Brick Company supply the largest number; the Mack Manufacturing Company and the Auburn Paving Brick Company supply the remainder. Several of the streets are started this fall, but the majority will be done next year.

There have been more sewers built this year than ever before. The McAvoy Company will serve 5,000,000 bricks for the new sewers of the Reading grade crossing.

The vitrified brick people in the East have no bricks to sell, and it will be the same next year. Even the Western vitrified brick companies are getting well sold out.

Mr. T. B. McAvoy looks hale and hearty. After suffering for ten years, he is, at present, enjoying the utmost good health, and as he expresses it, "is growing younger."

The Trade School of Philadelphia, Twelfth and Locust Streets,

has gone under new management. Professor Wm. C. Ash has entire charge of the day school, and is an enthusiastic worker. Young heads bring in an entirely new element, it is said, and this one seems to have done so.

At the close of the last session, there were forty-six names, and the success of the undertaking seemed doubtful. Now, there are 144, meaning 112 new members. There are 700 on the waiting list of the two schools—250 at the Howard and Girard avenue school, and 450 at the 12th and Locust street school. At the latter, the Moyer school, there are 205 names on the roll.

At the 12th street school there are 500 names on the half-time roll; at the Howard and Girard school they have no half-time scholars, this being a particular objection of Mr. Moyer, who rather thinks it may reflect upon the school, as scholars working three nights out of five can not naturally be as thoroughly equipped with knowledge as those working the full five days.

It is the present anticipation to ask for an appropriation of \$500,000, to build and equip two mechanical grade schools. There is also a resolution by the board referred to the Property Committee, that in all school buildings built hereafter, one part of the basement shall be set aside for Mechanical trades school purposes; that is to say, one or two branches in night classes.

It is a fact that the trades school in connection with the public school education, first started in Philadelphia, has been the means of enthusing other cities. An agent from Oregon has been visiting Philadelphia for a week, making a special study of trade schools and manual training schools, with the ultimate purpose of starting the same good work in Oregon.

There is naturally more interest shown in the night school at 12th and Locust streets. Mr. Ash is doing some good work, and is bending every possible bit of energy in behalf of the school. Ere long, there may be a closer competition between the day and night schools.

The Moyer School ran but two months last year, and the pupils there are all practically new. The day school runs until July 1st, and the committee is endeavoring to keep the night school running until May 1st.

D. C. Murtha's Brick Yard, Sixteenth and Butler Streets.

They are busy at this yard—always busy. Mr. Murtha, in his vast good nature, wishes the year had not been such a hard one—that the men had had a few more days off—rainy days' rests.

Well, I've heard some brick manufacturers complain that

there was too much bad weather—that the men had too many days off, but then—there are men and men. All work and no play, etc. Mr. Murtha believes in that philosophy, bless him.

There is much business ahead for some time to come. Prices about the same, and seemingly the prospect of a good coming year.

There are many large operations in course of erection. Mr. Murtha is serving bricks for one at Fifth and Master, for a hat factory at Tenth and Oxford, and another for Wampole, the medicine people, at Fifth and Fairmount avenue. An operation at Nineteenth and Erie avenue comprising two and three-story houses, calls for one million bricks. Another for E. H. Radley of sixty houses in the same neighborhood is just about finished, and Bowser, the builder, is erecting 100 houses at Sixteenth and Wingohocking street. These, with other operations, are keeping the yard busy, and also keeping Mr. Murtha's chronic healthy good nature in strong evidence.

Esseg and Myers,

Second street, above Butler, report having had a fair season, devoting their time and attention to small operations—three, four, five, seven and eight two-story houses in the surrounding vicinity. They have ceased making bricks for this season, closing down until some time in March.

Yard of Christopher Kelly,

Located at Sixth and Sedgely avenue. The proof of doing things quietly, calmly and regularly lies in the success of this yard. It has been a good year in spite of the increase in price of coal and freight, also in the increase of wages. They have increased the latter 25 per cent, and even at \$2.50 per day men are hard to get.

They ceased making brick on the 7th of November, and



Charles Henry Frost, President Los Angeles Pressed Brick Company, who is directing a campaign for municipal improvement and the promotion of brick streets in that city. He was formerly a resident of Chicago.

this will wind up their season, and after two remaining kilns of brick are burned they will close their year about Christmas. They have served 200,000 stretcher bricks for twenty twin houses at Logan, 300,000 hard bricks for a church at Tioga and Sixth streets, and twelve two-story houses at Oluey.

M. E. LOCKINGTON.

CONVENTION DATES.

THE CONVENTION SEASON is now fairly well under way. As we go to press, the Canadian Clay Products Manufacturers Association is holding its sixth annual convention at Ottawa, Ont., Can.

One convention is to be held in December, two in January, two in February and one in March. This is the time of year every brick manufacturer should begin to arrange his business affairs so that he may take in his own state convention and the large National Brick Manufacturers Association convention at Columbus, Ohio. These conventions give not only the manufacturers an opportunity to improve his business, but enables him to take a few days of much needed rest. These conventions are very beneficial, they broaden our views and give us ideas which will strengthen the weak points in our clay plants. You should take advantage of these conventions. Remember the dates.

* * *

The National Manufacturers of Sand-lime Products will meet in annual convention in the German Room of the Chitenden Hotel, Columbus, Ohio, Wednesday, Thursday and Friday, December 4th, 5th and 6th.

A Partial List of the Subjects Arranged For on the Program.

"The Power Plant," T. M. Jackson, Saginaw, Mich.

"Advanced Methods of Cost Keeping," John L. Jackson, Saginaw, Mich.

"Steam, Gas and Electricity Compared for Power Purposes on Sand-Lime Plants," W. J. Carmichael, Willoughby, Ohio.

"Mixing vs. Pressure in Securing Density," P. L. Simpson, Chicago, Ill.

"The Essential Conditions of Manufacture for the Production of a Uniform Sand-Lime Product," J. Harry Allen, Winchester, Ky.

"Sand-Lime Bi-Products," Clark Mellen, Denver, Col.

"The Manufacture of Lime and its Preparation for Sand-Lime Brick Manufacture," S. V. Peppel, Columbus, Ohio.

A number of other interesting questions will be dealt with, which will be announced on the regular program.

* * *

The thirtieth annual convention of the Illinois Clay Workers' Association will be held at Peoria, Ill., January 14th, 15th and 16th. The headquarters will be at the National Hotel, where the assembly room will be used for meetings and exhibitions. Peoria is quite a railroad center and is easily reached from any point in the State. A splendid program is being arranged and those intending to go to the convention this year are assured a good time.

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The Iowa Brick and Tile Association will hold its twenty-seventh annual convention at Des Moines, Wednesday and Thursday, January 22d and 23rd.

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The American Ceramic Society convention will enjoy a successful meeting at Columbus, Ohio, February 3rd and 4th. Their headquarters will be at the Hartman Hotel.

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The National Paving Brick Manufacturers' Association convention will be held February 3rd and 4th at the Southern Hotel, Columbus, Ohio.

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The National Brick Manufacturers Association's twenty-second annual convention, as announced, will be held at Columbus, Ohio, February 5th, 6th and 7th. Headquarters will be at the Southern Hotel.



Austrian Association of Clayworkers.—The manufacturers of clay products of Austria have gotten together and formed the association of ceramic manufacturers. Nearly all the large manufacturers have become members, and the first annual convention was just held in Vienna. V. Wlcek was elected president, and Dr. Munzer, secretary.—*Baukermik*, No. 37, 1907.

Brickmaking in Roumania.—In order to obtain a good brick which will improve the appearance of the new buildings, the government operates a large brickyard at Ciurea, near Jassy, which employs about 100 people. The factory sells also to regular contractors. The price of the brick runs from \$5.50 to \$7.50, according to quality. There are also other yards around Jassy, but their products are very inferior, and brick sells for \$3.00 per 1,000 at those yards.—*Baukermik*, No. 37, 1907.

Antique Roofing Tiles.—The roof of one of the oldest houses in the village of Niderbipp was changed recently. The roof was covered with roofing tiles, and among the removed ones there were several tiles which were marked with 1658, designating the year when they were made. The tiles did show some signs of wear, but in every other respect they looked like new tile. It certainly goes to show that clay roofing tiles stood the tests all right after 250 years of service.—*Tonwarenfabrikant*, No. 19, 1907.

Decomposition and Kaolinization of Quartz Porphyry of Halle.—The occurrence of the kaolin deposits of Halle are treated in a very interesting article by Victor Selle. Going into detail first in regard to the definition of kaolin and kaolinite, that writer gives a description of the large kaolin deposit. In shafts which were sunken in the deposit we find kaolin to the depth of 114 feet. The zone in which the decomposition takes place is about 20 feet, and the bottom of the shaft gives the pure undecomposed quartz porphyry. From the bottom of the pit to the undecomposed quartz is about 40 feet.—*Sprechsaal*, No. 35, 1907.

Porcelain Linings for Ball Mills.—A good quality of porcelain bricks for ball mill linings must of necessity show great hardness and vitrification. The following mixture has given good results:

Kaolin, rich in clay substance..... 40 parts.
Plastic clay 15 parts.
Feldspar 35 parts.
Flint 10 parts.

The best methods to make these bricks is by the dry press process, and the use of washed mixtures. These bricks will burn to a good vitrified body at cone 15.—*Sprechsaal*, No. 2, 1907.

Melting Points of Seger Cones.—In a paper read before the annual convention of the German Association of Refractory Clay Ware Manufacturers, Dr. Rothe, of the Government Physical-Technical Testing Station, gave the results of the experiments conducted by him to test the melting point of Seger Cones. The experiments were limited to the cones between number 4 and 20. The lower cones had not been tested at all, while the higher cones to 38 have only been subjected to temporary tests, which will be supplemented later on. The tested cones were all manufactured

by the Royal Prussian Porcelain Manufactory. There was no attention paid to the chemical composition of the cones, and only their melting points were investigated. As test kiln was used as an iridium electric furnace. The observations in regard to temperatures were taken with the Le Chatelier thermo elements, further with iridium and iridium-ruthenium elements and with an optical pyrometer. It was found that it was necessary to heat the kiln uniformly and gradually in order to arrive at proper results. It was also found that the temperature should not be raised more than 5 degrees per minute for at least 20 minutes before the cones would melt down in order to obtain proper results. The results show that there is very little difference between cones 4 and 5, 19 and 20, and that the greatest difference exists between cones 8 and 9, 17 and 18. Of the higher cones it was found that 21 and 22; 23, 24 and 25, further 32 and 33 were very close together, while 20 and 21, 31, 32, 34 and 35 were greater apart than first estimated. The following table will give the obtained results:

Number Cone	Estimated Temp.	Observed Temp.	Difference
4	1210	1225	15
5	1230	1225	15
6	1250	1260	10
7	1270	1285	15
8	1290	1305	15
9	1310	1335	25
10	1330	1345	15
11	1350	1360	10
12	1370	1375	5
13	1390	1395	5
14	1410	1410	0
15	1430	1435	5
16	1450	1460	10
17	1470	1480	10
18	1490	1510	20
19	1510	1525	15
20	1530	1530	0

Cone 14 was found to be as correct as it possibly could be, and in the many observations it was found that the difference in temperature was only 2 and 3 degrees. The tests were all made in furnaces in which the temperature was quickly raised. Dr. Rothe reported further that tests were now being conducted to test the melting point of the cones in actual work, at the firebrick works of Kraft, Dienstach & Joly, in Wittenberg, and of Henneger, in Freienwalde.—*Tonind. Z.* No. 101, 1907.

German Porcelain Body.—A kaolin which possesses about the same qualities as Zettlitz kaolin, is the material brought on the market by the Schonburg Kaolin Works, of Hohburg, by Wurzen. This kaolin is, however, more plastic than the Zettlitz kaolin and by using it for body mix we can substitute a more flinty kaolin. The following mixture has given good porcelain:

Quartz or sand.....25 parts
Feldspar20 parts
Hohburg kaolin30 parts
Mugelern kaolin15 parts

The temperature at which this body will mature is about cone 13.—*Sprechsaal*, No. 31, 1907.

Cracking of Thick Porcelain.—The cracking of heavy-made porcelain products, especially such as are used for technical purposes, is often only the cause of too close a body. The addition to the body of much burnt material will overcome to a great extent this trouble. A body which will mature between cone 13 and 14 has the following composition:

Halle kaolin, washed very fine...380 parts
Halle clay, washed.....224 parts
Norwegian feldspar120 parts
Ground broken porcelain.....276 parts

—*Sprechsaal*, No. 33, 1907.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Will Sand-Lime Brick Take a Glaze?

Editor THE CLAY-WORKER.

Enclosed find check for \$5.00, for which send me copy of "Clay Glazes and Enamels," by Griffen.

What is your opinion in regard to the glazing of sand-lime brick? Will the lime be detrimental to the glaze?

E. J. HERRICK.

New West Virginia Plant.

Editor THE CLAY-WORKER:

Enclosed you will find check covering subscription for THE CLAY-WORKER for one year. Please begin with the November issue, mailing to the above address. Have just organized the above company, and will erect common brick plant this winter with a capacity of about 10,000 bricks per day. Will use soft mud machines, but have not made any contracts yet. This plant is only to utilize the clay that is covering the stone. The plant will be within one-half mile of Roanoke, Va.

Yours very truly,

L. E. ARMENTROUT.

Borderland, W. Va., Nov. 2d, 1907.

Our National Fire Tax.

Editor THE CLAY-WORKER:

The tax in life and property values levied by fire in this country is truly appalling. It is at least 700 per cent. more than that of any other country. The cost of fire, including smoke, so-called curative agencies, fire departments, insurance premiums and other incidentals, is something over \$500,000,000 a year, and in most prosperous years we build not to exceed \$575,000,000 worth of new buildings! The value of all the buildings in the country is not over \$15,000,000,000, and we have gotten to the point where it is possible to destroy, and we have destroyed, over \$300,000,000 in one conflagration. The tax is more than the total annual production of gold, silver and coal. It is more than four times the dividends paid by all our great railway systems. Surely is the subject worthy of your editorial attention.

People are beginning to awaken to the realization that there is something wrong. The insurance companies, that have until recently aided and abetted in poor building, are commencing to call a halt and they are even finding fault with the so-called "fireproof" skyscrapers and fear their destruction.

People know pretty well what are the results of fire, but few know anything about fire-prevention. It is in the province of the daily newspaper to educate its constituency. I bespeak your earnest co-operation, a frequent editorial hammering on the subject of fire-prevention; the necessity of better construction on new buildings; the revamping of the old ones; the protection of windows from external attack (unprotected windows mean 44 per cent. of all our fire); the closing of vertical openings in all buildings; the cutting down of space units; additional local water supply; fire drills of employees, etc., etc.

The society has endless data anent fire, proper construction of buildings and all that sort of thing, that is at your disposal. A postal will get it, and I am more than willing

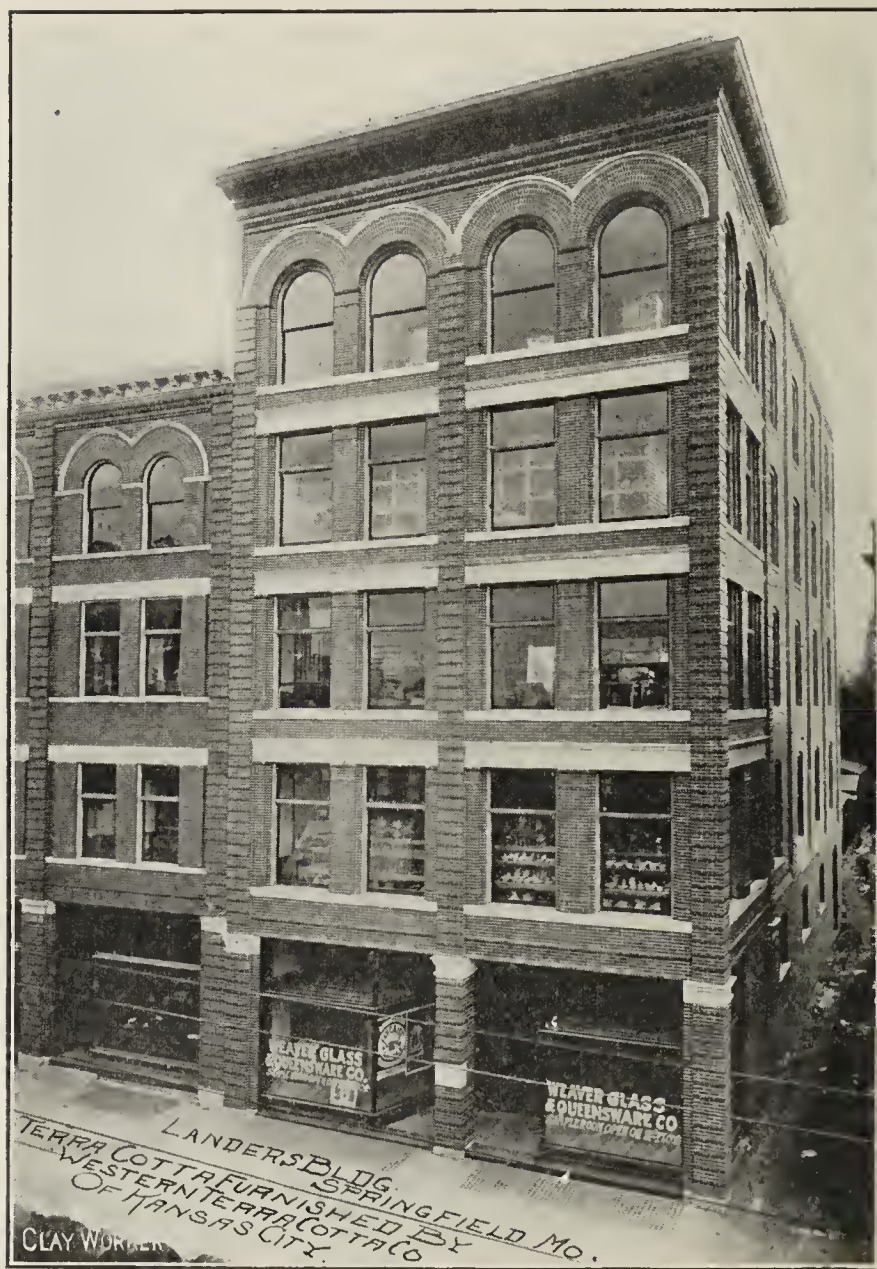
even to take time to write special editorials or regular matter on the subject for you, anything? What is needed is printers' ink, and lots of it, to stop one of the worst evils of the age.

Very truly yours, F. W. FITZPATRICK.

Washington, Sept. 18, 1907.

The First Job Turned Out by the Western Terra Cotta Co.
Editor THE CLAY-WORKER:

Enclosed please find check for \$2.00 for yearly subscription. We are sending you under separate cover photo of the Lander's Building, at Springfield, Mo., Wm. Foley, architect, the first order turned out by this company. Although our factory has been in operation a little over six months, we have turned out about twenty-five similar orders, having found it necessary to add another large kiln and additional floor space to take care of the business. Among some of



the orders in work at the present time are the Russell State Bank, Russell, Kan.; Elks Club and National Hotel, Topeka, Kan.; No. 4 Engine House, Root & Siemens, architects, Kansas City, Kan., and others.

PAUL C. BALTZ,
Western Terra Cotta Co.

Kansas City, Kan., October 30, 1907.

The New York School for Clayworkers.

Editor THE CLAY-WORKER:

A short time ago I called on Professor Binns at Alfred and had the pleasure of looking through his school. I am pleased to state that he has in the laboratories and workshops an equipment for practical work which is calculated to give a student every opportunity for a good training. With such an education where clayworking in every department is taught, a young man would be able to follow intelligently any branch he may prefer.

Professor Binns is a very capable man and takes

great pains to help his students to gain a practical knowledge of their work. Such knowledge will enable them to face the battle of life and will prepare them to endure the trials of a clayworker.

Young men can begin at the bottom and advance as they gain experience in factory management, but if they are without scientific knowledge they are at the mercy of their foremen and burners. With a training such can be obtained at Alfred, a man can control his own operations, provided, of course, that he uses common sense along with his college education.

ALFRED YATES.

Oil and Gas Well on Excelsior Clay Company's Property at Brazil.

Editor THE CLAY-WORKER:

The oil and gas well, which was put down on the property of the Excelsior Clay Co., Brazil, Ind., by the Business Men's Oil and Gas Co., was shot with 250 quarts of nitro-glycerine October 8th. It was proved to be a "duster," but the results of the drilling are of interest to clayworkers. It established beyond a doubt that this company has the goods—when it comes to clay and coal. Rich veins of both were found, which alone are worth a fortune to the company. The company has bought the well, which will be plugged to a proper depth to make a well for the use of the factory. Then they can drain their deep pond and be able to strip coal and clay at a small expense.

The following strata were found: Soil 1 foot, yellow clay 4 feet, shale 35 feet, slate 5 feet, rock 5 feet, coal 4 feet, fireclay 9 feet, shale 5 feet, fireclay 4 feet, shale 14 feet, white sandstone 5 feet, black slate 10 feet, coal 3 feet, fireclay 8 feet, black slate 12 feet, fireclay 6 feet, black slate 64 feet, sandstone 88 feet, black shale 48 feet, limestone 220 feet, fireclay 5 feet, lime shells and shale 40 feet, blue shale 425 feet, salt sand 48 feet, blue shale 20 feet, sand slate 15 feet, soft gray shale 117 feet, gray stone 5 feet, black shale 111 feet, corniferous sand rock 104 feet, blue shale 185 feet, Niagara limestone 275 feet, blue shale 254 feet, rock 65 feet, Trenton rock 308 feet; total depth 2,502 feet.

The well cost about \$5,700 and is the deepest well which has been put down in that part of the State, and one of the deepest in the State. There were strong indications of oil and gas in the corniferous rock, but it proved to be "dry," so in order to make a complete test of the locality the company decided to go to the Trenton rock. Here also the sand smelled strongly of gas, but none was found.

The Excelsior has just finished shipping a large order of hollow blocks to a Milwaukee firm. They pronounce the blocks the finest they have seen. The company also make beautiful face brick in a variety of shades, and are equipped for making anything in the way of brick and blocks, with an unlimited supply of material for many years to come.

M. B.

Too Much Study and Not Enough Work.

Editor THE CLAY-WORKER:

This is a queer old world, any way you take it, if you take it long enough and watch closely enough for the queer things, one of which may be found in the natural tendency of humanity to rush to extremes. An example may be found in what is termed the "child labor" agitation that has been quite a factor in church and magazine circles during the past year. Extreme cases are sought out, and extreme remedies suggested. The truth of the matter, and the horse sense logic of it all is, too much school and not enough work is just as bad as too much work and not enough school. Both mind and body should be trained, and trained together as the boy grows up, if one would have the best type of manhood. It is not much wonder that Mr. Bowen, banker of New York, replied to an appeal for contributions from the National Child Labor Committee, who said that two million boys and girls under sixteen are working while other children go to school and play, in part as follows: "I will venture to predict that more useful men and women, who will do things in the interest of the human race, will grow from these two million workers than will grow from four million of the same age who do nothing but go to school and play. . . . There

is more misery and poverty and vice in the world because boys and girls are not taught habits of industry and usefulness at an early age than from all other causes combined." Of course the schooling he had in mind is that which pertains to training the mind exclusively, as too many of our public schools do. What we need, and what we are getting around to surely, but too slowly it would seem, is more manual training along with the mental training. More trade schools, and more attention and attendance given them. These are points the extremists are in a measure overlooking, partly because each side wants to make its case out as strong as possible. What we need is more real interest and less argument, more horse sense and fewer fine-drawn theories, more pulling together for trade schools, for the healthy training of both mind and body and less magazine hysteria for the sake of creating sensation for personal approbation.

A. FOGG.

The Spirit of Unrest.

Editor THE CLAY-WORKER:

Sometimes there comes to what is termed the world of high finance an unsettled state of affairs, or a time which is called a period of unrest, and at times it doesn't stop or confine itself to frenzied finance but extends to business in general and then we have what is termed a period of depression. At other times even, when we are free from this, we have in various industries and localities of the country what might be termed an ebb tide in the volume of demand which causes a certain amount of unrest among the industries. Sometimes this is due to one thing, sometimes to another, and sometimes to a combination of things, and at other times it is difficult to understand, much less to explain, why we have these ups and downs in the business world. We can go back of it all, too, and find that humanity itself has its unsettled periods; that is, periods in which the spirit of unrest is a sort of dominating factor. This applies at times to the public in general and its attitude towards laws and towards various questions of public welfare which are brought up. Still, back of this and responsible for all of it, we find somewhere in certain parts of the human minds at all times this spirit of unrest; that is, it is not in one man's mind all the time but considering all of a community there is never a time but what certain portions of it are affected with discontent and restlessness, which it is a little difficult to understand. It is a queer thing, this spirit of restlessness, and while none of us may be able to explain satisfactorily its origin, we might carefully study it now and then with a view to making it serve us for good instead of harm. Generally speaking, this spirit of unrest is productive of trouble, and it is frequently a question of whether or not this spirit of unrest produces trouble or whether it is trouble that produces the spirit of unrest. It is probably safer, when we get into the basic principles, to assume that the spirit of unrest causes a world of trouble for humanity. Yet, strange as it may seem, it is a fact, nevertheless, that the same spirit of unrest, properly controlled, is the most useful element in the human make-up. There is a trite saying that "A vice may be controlled into a virtue or a virtue overdone into a vice." So it is, in a way, with this spirit of unrest; it may be controlled into a very useful element, whereas, if let to run rife, it is a seriously disturbing factor. To illustrate this and bring home a point in every-day business, we have but to note one of the common results of this spirit of unrest. Take the brick business, for example, and we have before us to-day, and every day, for that matter, examples of where a little depression in the business world leads to some scarcity of orders and this in turn leads to nervousness on the part of the manufacturers, and the first thing we know, after the spirit of unrest has besieged them is that they are cutting and reducing prices below a profit-making basis in the vain hope that by so doing they will increase the volume of their business and thus be able to keep running during what might be termed "hard times."

Instances of this kind, and there are many of them specifically before the trade now, simply show the trouble that may be caused by letting this spirit of unrest run riot. On the other hand, if it were properly controlled, do you know that this same

spirit of restlessness becomes the most useful element of our make-up? Do you know that it is an influence or inspiration, whichever you may choose to call it, to go forward and do more, to help humanity to attain higher planes? If it were not for this, if every man were fully contented with his lot, the world's progress would be very slow, indeed. In short, we would become too lazy to even keep up the regular gait of to-day, and would gradually drop back were it not for the fact that we are dissatisfied with our lot and want to make it better and improve ourselves and our conditions generally. For this reason, we should not deplore, in an unqualified way, this spirit of unrest that besets humanity in one form or another, and in some form all the time, for while it is frequently a destroyer of profit and peace of mind, it is, as we can see, a useful agent, one which we could hardly do without, and would not want to do without if we could, and the thing for us to do instead of deploring its existence, is to be thankful that we have it, and seek for ways to control it into a virtue, so as to make it as useful as possible. C. O. L.



OFFICIAL ANNOUNCEMENT.

THE TWENTY-SECOND NATIONAL CONVENTION
TO BE HELD AT COLUMBUS, OHIO,
FEBRUARY 3-8, 1908.

American Ceramic Society and National Paving Brick Manufacturers' Ass'n Hold Separate Sessions Feb. 3 and 4.

THE STATISTICAL CHART recently issued by the United States Geological Survey shows that Ohio still maintains her position as the leading State in the production of clay wares. Buckeye kilns turn out 19.26 per cent of the entire clay products of the country.

It is peculiarly fitting that we should meet in the capital city of this, the chief clayworking State of the Union. It is so centrally situated, so easily accessible to a great majority of the clayworkers of the land, that it would seem an attendance exceeding even that of the St. Louis convention, which was the best convention in point of numbers yet held, may be anticipated.

Hence we are pleased to announce that arrangements have been completed for a convention at Columbus the week of February 3d, at which time the Ohio School for Clayworkers will keep open house, and Prof. Orton and his assistants will not only bid all visitors a cordial welcome, but will be prepared to demonstrate the advances made along technical lines in the art of clayworking since our previous meeting there in 1899.

The brick manufacturers of Columbus and vicinity will demonstrate that the cordial invitation extended by them through Prof. Orton at our last meeting was not a mere form of words, but will individually and collectively extend a welcome so earnestly heartfelt and warm that, regardless of the temperature, the visitors will have no occasion to make a mid-winter trip to the tropics, and while the entertainment afforded will be so timed and planned as not to interfere with the deliberative work of the convention, the local committee will strive strenuously to make the week one of many pleasures.

It is too early to announce railroad rates, but as Ohio and

adjoining States now operate under a 2-cent law, and those coming from a distance can obtain the same low fare by using mileage books, the same relative rate that has heretofore prevailed is assured. The N. B. M. A. hotel headquarters will be at the Southern Hotel, where special rates have been arranged for.

As in former years, the American Ceramic Society will meet Monday, Tuesday and Wednesday forenoon. They will rendezvous at the Hartman Hotel, which is two blocks from the Southern.

The National Paving Brick Manufacturers will meet in a parlor of the Southern, as will also the Machinery Manufacturers' Association.

The N. B. M. A. sessions will, as heretofore, begin Wednesday afternoon at 2:00 o'clock, and ample provision will be made for an exhibition room affording adequate facilities for all who may wish to display samples of brick, models of clayworking machinery, factory supplies, trade literature, etc.

Those desiring more detailed information on any feature of the convention, or the requisite of membership, etc., are requested to communicate with the secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,
WM. CONWAY, President.

THEO. A. RANDALL, Secretary.

THE NEW YORK STATE SCHOOL AT ALFRED.

The school of the Empire State began the eighth year of its existence this fall. Each year has added to its equipment and its popularity. No student who has passed through the school either for a long or a short term has failed in securing employment, and excellent accounts are received of their progress.

A feature of the school is the Department of Ceramic Art. This is under the charge of a special instructor, a lady well qualified to teach design and modeling. A number of students in this department are young women, some of whom expect to qualify as modelers and producers of artistic wares, while others are studying to teach clayworking in public schools. Two Alfred students have charge of this work in the College of Education of Chicago University.

The technical work is made as practical as possible within the limits of the opportunities of a school. Great numbers of clays are sent in to be tested, and thus the students acquire familiarity with the working of machines with clays of every type. The senior class this year consists of six members, the largest number yet graduated in any one year. Each of these is assigned a special problem to be worked out by individual research.

The students take a prominent part in the activities of Alfred University. The president of the senior class in the University last year was a ceramic student, and this year not only the president but two other of the class officers have been drawn from the ceramic school. Nine ceramic students are on the University football team either as regular players or as substitutes.

A ceramic society meets in regular session and the students much enjoy the opportunity of fully discussing the practical issues of their craft. Some of the men secure summer work in manufactories and tell, on their return to school, of their experiences upon a large scale. Personal contact between faculty and students has always been a prominent feature. The work of each one is carefully directed and individual capacities are developed.

Professor Binns will gladly mail a catalogue to any applicant.

Franklin—"Did Smith have any luck when he sneaked away and went fishing Sunday?"

Penn—"Yes; his wife wasn't at home when he got back."—Ex.

SIXTH ANNUAL MEETING OF CANADIAN CLAY PRODUCTS MANUFACTURERS AT OTTAWA, CANADA, NOVEMBER 19, 20 AND 21, 1907.

A MOST SUCCESSFUL convention of the Canadian clay-workers was held in Ottawa, the capital of Ontario, Canada, Nov. 19, 20 and 21. The delegates were favored with delightful weather, which, together with the warm hospitality of the Ottawa people, made their stay one long to be remembered. The attendance was not so large as last year, but the sessions lacked nothing in enthusiasm, and the discussions which followed the papers were lively and interesting.

Tuesday morning was devoted to the registration of delegates and renewing of old acquaintanceships and the forming of new friendships.

The first deliberative session was held Tuesday afternoon, and was called to order by President Millar, who introduced the Mayor of the city, Mr. J. F. Scott, who extended the freedom of the city and welcomed the visitors in the following well-chosen address:

Mayor Scott's Speech of Welcome.

To the Canadian Clay Products Manufacturers:

Gentlemen—As Mayor of this city it gives me much pleasure to welcome you to our midst and to wish you every success in your convention which opens today. As a part of the artistic beauty of a city depends upon the material with which its buildings are constructed, it is but fitting that you should have selected Ottawa as your place of meeting for this year. I say this because undoubtedly Ottawa is the most beautiful city in Canada. There is no doubt about it. We who live here admit it ourselves. But even if you don't wish to take my word for it I feel satisfied that by looking about the city you will come to the same conclusion. And it is but fitting and proper that Ottawa should be the most beautiful city in the country, because it has the great privilege of being the capital of our glorious Dominion.

I welcome you because you are a thoroughly Canadian organization. We desire to build up a great nation on this British portion of North America, and to establish amongst the people of this nation a thoroughly Canadian national spirit. And while the chief object of your association is doubtless your mutual benefit, nevertheless, the fact that you clay products manufacturers over the whole Dominion are banded together must have the effect of benefiting our country as a whole.

Ottawa must be of a special interest to you, gentlemen, who are concerned in brickmaking, in tile manufacturing and other such commodities that enter into the construction of buildings, because Ottawa has so many important buildings, either under construction or to be constructed in the near future. The Government is building some extensive additions to the Parliament buildings. The Victoria Museum, a Government institution, is also being constructed; the Y. M. C. A. \$200,000 building has the foundation built, the Ottawa city postoffice has just been completed, it having been practically rebuilt, and last, but not least, the Grand Trunk Railway is about to undertake the construction of a magnificent station and hotel. You can therefore readily see that Ottawa is an extremely interesting proposition, at this moment, for those connected with the manufacture of clay products.

I hope you will enjoy your stay in our midst, that your deliberations will be successful, and that you will return to your homes well satisfied with your visit to Ottawa. I hope you will all look upon Ottawa as your own city, not in the sense that you reside in it, although we would be glad to have you all live amongst us, but in the sense that as we are all thorough Canadians, proud of our country, and the great position it holds in the British Empire, we must necessarily be interested in and proud of our national capital, the city of Ottawa. (Applause).

The Minister of Railroads and Canals, Hon. George P. Graham, next addressed the convention, extending a cordial welcome to all the visitors. Appropriate responses were made by President S. J. Fox, Robert Stewart, M. P., Alderman Wilson, and George Crain, of Beamsville. The convention then listened attentively to the President's annual address:

President John B. Millar's Address.

Gentlemen of the Canadian Clay Products Manufacturers' Association:

It affords me great pleasure to welcome you to this, our sixth annual convention of Canadian Clay Products Manufacturers.

It is an honor, and I deem it such, to have the duty devolve upon me of welcoming you on this occasion especially, meeting as we do in the capital city of our Dominion, with its magnificent buildings, beautiful scenery, extensive manufacturers, and best of all, its hospitable people.

It is gratifying indeed to look around and see so many from all directions and remember how far many of them have come specially to be present with us and take part in the discussions.

Experience has taught us it is good to come together at least once a year and compare notes.

The program, arranged very carefully, and papers on which much valuable time has been spent, and the discussions following the reading of which bring out so many valuable points, is only a very small part of the work performed.

The lobby talks, where we meet those who have mastered troubles such as we are up against and are willing to help us overcome them or suggest ways to us at any time must not be overlooked.

Then we have our exhibition room, where you meet the dry press man and the stiff mud advocate, and all other kinds of machine men; the fellow who has all competitors skinned in drying brick, and the one who cuts them faster than they can possibly be handled. There is no doubt we will find the kiln man, too, who requires almost no fuel to burn with, a very desirable acquisition, too, just now. I like to meet the man with a hobby, who at any rate appears to believe in it themselves, and try to make you believe in it too.

We have experienced another year of phenomenal prosperity in Canada from Atlantic to Pacific. From every quarter comes the word, "We could hardly fill our orders." My, we like to have it so.

Many changes in conditions have arisen during these last few years which can not fail to have been noticed.

The time of the year is near at hand when we must reckon on what has been made during the season of what seems to be a very large turnover.

Most of us have been enjoying what we call good prices, but with increased cost of fuel, labor, transportation, etc., many will find the net profit will not be as great as we would wish.

These are some of the problems we must try and seek a



President John B. Millar.

solution for, viz: The production of the best brick possible and the delivery of them to the customer in the best possible condition, at the least cost to ourselves, so as to provide against a day possibly not far off when cost may not be materially reduced, but selling prices may have dropped.

There is another matter being continually rung in on all who are engaged in the brick business, and this, I think, is worthy of notice.

We are being reminded every little while by parties interested in having it so, of course, that in a very short time brick will be a thing of the past as a building material, being supplanted by cement, iron, etc., etc.

While we do not believe there is any material in the world which will ever approach a well-burned clay product for construction purposes, either as regards rapidity of construction or safety, nor yet on sanitary grounds under normal conditions, nevertheless we begin to ask why all this agitation for a change?

Will we not remember brick is a tried, trusted and proven material, its use dating back almost to the beginning of time. There must be some cause.

Is it to be found in scarcity of raw material? No, for we say the everlasting hills are scarcely scratched yet, to say nothing of what is below.

Is it scarcity of fuel for burning our product? No, I would say not, for while there has generally been a considerable advance in prices, yet there seems to be plenty of fuel.

Is the quality of material manufactured in this country of such a character that a change is absolutely necessary for safety of life and property? There may be places where a little more care, both in making and burning would improve the reputation of manufacturers, but the quality of brick required in all our large cities, especially on mercantile and government buildings, is such that it has led manufacturers to improve their plants with a view of turning out the best brick possible, and I am free to say, on the whole, I believe we compare more than favor-

ably with other countries, we being but striplings in years as compared with some of them.

I have heard it stated, and would like very much to know if it is true, that the reason for all this agitation was to be found in the fact that it cost altogether too much to have the brick placed in the wall after being delivered on the work, and that by using these other materials a class of labor (almost entirely foreign) wholly unskilled, and most undesirable as citizens, can be utilized.

Yet we are told they can be controlled by the men who pay them, while on the other hand the claim is made they are at the mercy of the trade union, whose members work when they like, as they like, demanding the highest wages.

If these assertions are true it brings us face to face with a serious problem, and one which our friends who pay for the brick would do well to look carefully into.

Are an honorable class of skilled mechanics who build structures of material that defy the ravages of the elements and time itself, are these good citizens to be supplanted by those who have no aspirations to ever become citizens? And are our public buildings and homes to take the appearance of plastered or rough-cast tenements on the back streets and poorer quarters of our cities, simply because a common ground has not been reached between those who buy our products and those who make them take the form of buildings.

There is food for serious thought here for the manufacturer, the purchaser, the bricklayer and helper, and surely for the glory of our land and beauty of our cities and homes there should be a reasonable and satisfactory solution.

I confess when passing a cement building to a feeling something like one experiences when entering a morgue. There is nothing bright and cheery, as there is to be found in a brick structure.

Our life work is an honorable and noble calling, building up and beautifying this great country. Let us see to it we do our



Secretary-Treasurer C. H. Bechtel.

part well, and let me hope the discussions which arise may help us to do better than ever before.

Our time and session is limited, so I hope every one may be in their places on time and facilitate in every way possible the business before us, and may we have one of the most successful and profitable conventions ever held, not only in Canada, but anywhere else.

I soon shall vacate the presidential chair, and hope you may extend to my successor the same considerate treatment and co-operation in the work of the association which has been accorded me. It has been a pleasure to serve you.

We will now proceed with the business of the convention.
(Applause.)

Secretary-Treasurer Bechtel's Report.

Mr. President and Gentlemen of the C. C. P. M.:

In presenting my report for the year 1906-7, I must congratulate you on the fine showing in attendance you have made. I might state that this association has the name of being the fastest grown association of its kind in the continent. This is what I hear from the conventions of our brother association across the line. I also hear that our papers are read with great interest, not only on this continent, but in Europe as well. I think this is a fine showing for an association of only six years' standing, and I trust we shall always be, if not in the van, at least as they say, in racing parlance, "in the money."

During the year just past the cause of the Ceramic School for the Province of Ontario has been materially advanced. Two of our members, along with Prof. Ellis, of the University of Toronto, were sent by the Ontario Government to Columbus, to look over the school at the University of Ohio. Prof. Orton, whom you will remember, showed them through the school, and gave them every opportunity to examine the most minute details in connection therewith. Their observations were embodied in a

report which was presented to the Ontario Government. Mr. McCredie, however, the chairman of the committee in charge of this matter, will give you more details in regard to this matter.

You no doubt received the printed report of last year's meeting, and it is therefore not necessary for me to go into that matter. If anyone has not received his report, I have a number with me, which I will be glad to present to any one who desires one.

The treasurer's report does not show as good a balance as I was able to present last year. This is partly on account of the fact that last year we had Prof. Orton's expenses to meet, and partly because of the heavy traveling expenses to and from Ottawa. It was necessary for me to come to Ottawa twice, to get the matter in good shape. I might state here, that my efforts here have been nobly seconded by the Ottawa committee. They have given me everything I have asked for, and thrown in a little more, and I think that before you leave the city you will be able to give the boys a hearty vote of thanks and a good rousing cheer for the reception they are giving us.

The report of receipts and disbursements for the year showed a balance of \$5.96 in the treasury.

The regular program was then taken up and included a number of interesting papers, which, with the important discussions, will be given in subsequent issues.

All the sessions were held in Goldsmith Hall, a short distance from hotel headquarters. The banquet, which was thoroughly enjoyed by all, was given at the Russell House. The theater party Tuesday evening was a pleasant feature of the entertainment. The vaudeville performers made a number of "hits" on the visiting brick manufacturers, which added much to their enjoyment.

The drive around the city given by the local committee Wednesday morning was an enjoyable affair, a procession of twenty carriages taking the visitors on this trip, which ended at the Parliament Buildings, where a fine group picture was taken.

Report of Committee on Resolutions.

Resolved, That the hearty thanks of the association be tendered to the Ottawa Manufacturers, both as manufacturers and as members of the Ottawa Supply Company, for the unstinted hospitality which has been displayed during our pleasant visit in Ottawa. These entertaining features having been brought to a perfect consummation under the able management of W. S. Odell.

Resolved, That the association voices its sincere appreciation of the good will and expressions of welcome presented to it by the civic officials and government representatives, who co-operated so willingly with the local manufacturers in making our stay pleasant.

Resolved, That the thanks of the association be expressed for the faithful services of its officers during the past year, especially to the retiring secretary, C. H. Bechtel, who has served the association to such advantage during the past four years or more, and also to those who presented papers to and otherwise contributed to the success of the convention program.

Resolved, That the association convey to W. D. Richardson, of Columbus, Ohio, its deep sense of appreciation of the services rendered to it in his especially able contribution on "The Control of the Burning of Clay Products," and his valuable participation in the discussions that took place during our sessions. The Association extends to him a cordial invitation to be with us at future meetings.

Committee. S. J. Fox, Chairman.
HARRY DEJOANNIS,
J. E. RANDALL.

Officers Elected.

President, J. S. McCannell, Milton, Ont.
First Vice President, Henry Janes, Delaware, Ont.
Second Vice President, James Cornhill, Chatham, Ont.
Third Vice President, S. M. Mulligan, Toronto, Ont.
Secretary-Treasurer, D. O. McKinnon, Toronto, Ont.

Executive Committee.

George Close, Stratford; J. H. Ebbith, Halleyburg; John B. Millar, Toronto; W. McCredie, Lyons; Harry DeJoannis, Chicago; S. J. Fox, Lindsay; C. H. Bechtel, Waterloo; George Crain, Beamsville; D. Martin, Thamesville; O. Baird, Parkhill; J. B. Cain, Ottawa, and M. Mills, Ormstown.

Those Present at the Convention.

S. M. Mulligan, Ottawa, Ont.; J. B. Millar, Toronto, Ont.; B. Davenport, Waterloo, Ont.; Geo. B. Drennan, Plymouth, Ohio; Robt. H. Rose, Hamilton, Ont.; W. H. Craig, Ottawa, Ont.; C. H. Bechtel, Waterloo, Ont.; S. Lello, New York City; Harry C. Krap, New York City; Alex. Mills, Ormstown, Ont.; Albert Osmond, Ormstown, Ont.; John P. Cain, Ottawa, Ont.; John Watson, Bracebridge, Ont.; Wm. H. Elliott, Glennan, Ont.; Wm. Elliott, Glennan, Ont.; Harry DeJoannis, Chicago, Ill.; S. J.

Fox, Lindsey, Ont.; Geo. Whittington, Napanee, Ont.; J. S. McCannell, Milton, Ont.; R. G. Wav, Trenton, Ont.; Frank K. Eb-bith, Haileyburg, Ont.; David Martin, Thamesville, Ont.; John Wardle, Blenheim, Ont.; Harry James, Delaware, Ont.; Jas. E. Randall, Indianapolis, Ind.; O. Baird, Parkhill, Ont.; Jas. Cornhill, Chatham, Ont.; Geo. Frid, Hamilton, Ont.; J. T. Wilson, Parkhill, Ont.; G. W. Close, Stratford, Ont.; J. M. Sippreil, Wilkesport, Ont.; W. J. Barchard, Toronto, Ont.; S. J. Heafield, Bucyrus, Ohio; R. R. McArthur, Brantford, Ont.; C. B. Sharer, Bucyrus, Ohio; B. E. Bechtel, Waterloo, Ont.; A. E. Canlin, Haileyburg, Ont.; W. H. Wood, Beachville, Ont.; Albert Neal, Seeleys Bay, Ont.; A. Berg, Toronto, Ont.; W. S. Odell, Ottawa, Ont.; Geo. Crain, Beamsville, Ont.; W. D. Richardson, Columbus, Ohio; D. O. McKinnon, Toronto, Ont.; G. K. Carnegie, Ottawa, Ont.; Isaac M. Taylor, Kemptville, Ont.; R. H. Taylor, Kemptville, Ont.; Wm. C. O'Reilly, Ottawa, Ont.; M. C. Odell, Ottawa, Ont.; D. C. Markley, Casselman; W. McCredie, Lyons, Ont.; G. F. Davenport, Orwell, Ont.; B. F. Davenport, Orwell, Ont.; R. M. Chisholm, Ottawa, Ont.; R. F. Ollmann, Hamilton, Ont.; Joseph Lee, St. Johns, Ont.; T. Henderson, Renfren, Ont.; J. A. Fielding, Russell, Ont.; A. H. Merkley, Casselman; Geo. E. Baird, Ormstown, Ont.; A. W. E. Hillyer, Ottawa, Ont.; J. A. Ballantyne, Ottawa, Ont.; F. Hillard, Renfren, Ont.; M. Allen, Poston Station, Ottawa; J. C. Wright, Poston Station, Ottawa; P. S. McKergon, Montreal, Quebec, Can.; J. M. Carter, St. Catharines, Ont.; Geo. S. Watson, Ormstown, Ont.; J. W. Ball, Toronto, Ont.; J. J. Bell, Toronto, Ont.; Dr. S. S. MacDongall, Russell, Ont.; J. S. Shane, Galion, Ohio; A. W. McDermind, Ottawa, Ont.; T. Conrad, Embrim, Ont.; O. Duford, Embrim, Ont.; Chas. Poratt, Plattsville, Ont.; Edw. Caldwell, Kingston, Ont.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.



CONDITIONS IN CLEVELAND have not been so seriously affected by the financial flurry which has swept over the country within the last month as might be expected. It is true that the promoters of some projects have dropped planning until next spring, but with scarcely an exception the buildings would not have gone ahead anyway before April or May of next year.

No difficulty to speak of has been felt in connection with the many jobs now under way. The situation in Cleveland is greatly redeemed by the fact that there is a vast volume of public work under way, a large proportion of which is of brick construction. In the new county building, the exterior walls of which are to be of granite, the vast volume of 17,000,000 Kittanning shale brick are to be used. Some 7,000,000 of these will go into the foundations, which have been started, and which will probably be completed for the superstructure to begin early in the spring. At the present time the steel and concrete foundations are being put in.

In the new Cleveland postoffice some 8,000,000 brick are to be used. The interior brick walls are to be put in during the winter. Some of these walls will be several feet thick. Bids were opened early this month for the work, which will be let shortly. Bids for the partition and mason work were presented to the government by John Gill & Sons, of Cleveland, who bid \$63,968; John Pierce Company, of New York, who bid \$59,000, and A. B. Stannard, of New York, who bid \$92,867. It is expected that Pierce will be awarded the contract. Pierce was also lowest bidder on the mechanical equipment, except elevators, his bid being \$129,000.

Another big project which will be under way soon is the new \$300,000 West Side Market House. Foundations are being put in at present by the Fath Construction Company, of Cleveland. By the first of the year it is expected that the lower walls will be ready for the superstructure. The building will be of brick and terra cotta, the structural work being of steel. The great clock tower on one corner will have a height of thirteen ordinary building stories. The great central market room will be surmounted by what is claimed will be the largest vaulted roof in the country. It will be sixty feet wide and 250 feet long. At either end of this big room will be a mammoth window. The general style of architecture will be of the classic order. The fish market will

be separated from the main room in order to keep out the odor. About the building will be covered walks where farmers with wagons may back up and offer their produce for sale. Altogether it is planned to make the market house the most modern and artistic in the country.

D. C. Griesse and Walker, who have been awarded the contract for the new \$300,000 technical high school on E. 55th street, have experienced some trouble during the past month in securing shipments of brick rapidly enough to keep up with their work. A peculiar shade of dark brown shale brick was specified by the school architect which had to be made up and shipped. Several carloads were delayed owing to the general car shortage which is being felt more or less in this city.

During the past season four schools, a public bath house, two fire engine houses and a hospital building at the City Farm have been built by the city, brick being used almost exclusively in all of them. Another high school, the John Hay, will be started early next spring as well as four more public schools.

For the month of October building permits in Cleveland exceeded by far those issued a year ago. For the month they totaled \$4,235,397 for 830 structures, while a year ago permits were issued for 803 buildings costing \$1,088,757. It must be explained, however, that the permit for the new county court house was taken out during the last week in October of this year. This provided for \$2,972,265 of the total of \$4,235,397. During the same week the permit for the new \$300,000 technical high school was taken out, as well as a \$54,000 permit for a new public school on Harvard avenue. Joseph & Feiss also secured a \$50,000 permit for a new factory building on the West Side.

The volume of medium-sized work is quite heavy at this time of year. Building has kept up much better this fall than expected, and if there is a spell of quietness some of the builders will almost welcome it as an opportunity to secure a rest and much needed vacation.

Work on the city sewers is being rushed to the limit just now in an effort to finish contracts before the cold weather sets in. The weather for the past month has been very favorable for building operations of all kinds, and most of the sewer contractors hope to finish up before December 1. The same can be said of the numerous paving jobs which are under way. It is announced at the city hall that the large majority of the streets will be finished according to contract.

That Cleveland is being handed a lemon in regard to its new election booths of concrete was evidenced during the past month when the Vorce Engineering Company, retained by the Board of Elections to supervise the construction of twelve new concrete block voting booths, complained to the board that the contractors were not trying to live up to specifications. The engineers declared that there has been faulty construction throughout and that in many cases the booths would have to be almost entirely rebuilt. In many instances the blocks were found to be in a crumbling condition. It is possible that the election board may change its mind to construct concrete booths throughout the city and use brick instead.

Several of the common brick factories are arranging to close down for a short time this winter. It is not likely, however, that the paving brick or press brick plants will slacken up much for they are all shy of stock and will prepare for a heavy season next year. The present financial flurry is not regarded as serious. It is like a man who has been gorging himself until he has come to the choking point. He will soon recover and start on his way again. Therein it differs from the troublesome times of '92, which may be compared to a man who had been run down by fever and took a choking spell from mere weakness. It took him a much longer time to recuperate from the effects of his choking spell than it will the fat glutton to recover his poise once more.

BUCKEYE.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



NOTWITHSTANDING THE FACT that the financial situation has been more or less unsettled during the past few weeks, and notwithstanding the fact that the volume of building permits issued has now dropped down to about the normal, having been for October in the neighborhood of \$2,500,000, the brick business has been, and still is, quite active. This is due chiefly to the large demand for brick and other clay products in the construction of buildings undertaken

some time ago. Between two and three dozen large steel frame structures are now reaching the stage where brick and terra cotta is needed and others are getting well started. For the completion of these, financial arrangements have already been made, and it is not believed that the present scarcity of money will have much effect on the demand for brick and terra cotta for their completion. Some of the largest buildings yet undertaken since the fire have the foundation work about completed and are ready for the superstructure. These include the Palace Hotel, for which the foundation work is about done, and the Phelan Building, for which a permit to the amount of \$1,500,000 was taken out this month. The former will require 6,000,000 common brick and 1,000,000 hollow partition brick. The contract for the common brick on this building has been let, and the delivery will begin within a few weeks.

The weather continues quite favorable for the brick men. There have been several light showers, but no down-pours of sufficient size to cause the mud brick plants to close.

The financial stringency, which spread here from the East, has been partially relieved by the large amount of money which has been paid into the grain and fruit-growing sections of the state within the last month or two. One bank, the California Saving Deposit and Trust Company, has stopped payment temporarily, but will, it is given out, resume within a day or two. Last week the Governor of the state declared a series of holidays, but none of the banks took advantage of them. It is possible that one or two of the brick companies may be more or less involved with the bank which has suspended, but as none of the large buildings will be tied up, it is not believed that the operation of the brick plants will be interfered with. Prices for common building brick remain at a rather low figure, the price ranging from \$8.50 to \$9.50. Pressed brick is bringing about \$42.00. Several new plants are being erected, as it seems clear that the demand will continue.

N. Clark & Sons report a number of large contracts. This company has just completed a \$4,500 contract for terra cotta for the large building in course of construction at the Northwest corner of Sansome and Halleck streets, of which Jacob Stern is the proprietor.

The California Brick and Pottery Company, of Glen Ellen, Cal., has had an exceedingly prosperous year in the sale of hollow terra cotta partition tile for class A structures, and reports contracts enough on hand for new buildings, contemplated or in course of construction, to run the plant continually for two years. The California Brick and Pottery Company is making a high class porous tile, which is finding great favor among architects and engineers in consequence of its high fire-proof qualities, combined with lightness and porousness.

This company also manufactures a hollow brick from the same material, $8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{1}{2}$ inches in size, and weighing $2\frac{1}{2}$ pounds, which is being used extensively. The new United States Custom House, now in course of construction at the corner of Washington and Battery streets, will use 500,000 of these bricks. The brick is grooved on all sides for plastering

purposes and makes laths unnecessary. This clay product was used in the construction of the Claus Spreckles building and the Fairmont Hotel, and the makers claim that in the great fire of 1906 it distinctly showed its superiority over metal lath.

The Holmes Lime Company is erecting a firebrick plant at its clay banks in Amador county. The company expects to have its new product on the market by May 1, 1908. The capacity of this plant, the first year, will not exceed 25,000 brick daily, but this amount will be increased each year as demand seems to warrant.

The Ione Fire Brick Company, of Ione, Cal., is constructing six thirty-foot round down-draft kilns with a capacity of 70,000 fire bricks. For the making of these kilns the company has been burning two field kilns and has turned out 500,000 brick for this construction. The new product will be ready for the market by June 1, 1908.

The Chehalis Brick and Tile Company, operated by Bickford & Burrows, is replacing its old drying room by a new one 40x100 feet in size. The new plant will use steam drying methods exclusively.

The National Building and Trading Company is installing machinery in a new 3-story plant at Hermosa Beach, near Los Angeles, Cal. The factory has dimensions of 40x60 feet and will have a capacity of 25,000 paving blocks every twenty-two hours.

The management of the Columbia Clay Company, whose plant at Kennewick, Wash., is under course of construction, announces that the company will be turning out brick by December 1.

The Carquinez Brick and Tile Company, with a capital stock of \$300,000, has filed articles of incorporation. The company will conduct a plant for the manufacture of clay products as well as lime and cement. Following are the names of the directors: O. H. Harrison, Joseph C. T. Raas, John Butler, D. J. McKay, George W. Lane, H. W. Smith and Walter Cox.

The Diamond Brick Works has completed erection of its plant at Black Diamond, Cal., and has begun operations. The plant is housed in a large building, which abuts upon a somewhat steep hill, composed of a high grade quality of clay. Electricity is used as motive power. Clay is delivered to a conveyor by a team and scraper. An endless belt carries it to a mixer. The capacity of the plant is 30,000 bricks a day. C. A. Hooper, of Black Diamond, is president of the company and J. H. Hornsby is manager.

C. J. Mathews and J. M. Jensen, comprising the brick manufacturing firm of Mathews & Jensen, Orville, Cal., have dissolved partnership.

The Hilton Brick Company, of San Francisco and Santa Rosa, Cal., has been having trouble with its men. On October 23d President Aigeltinger went to Santa Rosa, and a discharge of twenty-seven employes followed the inspection trip.

Col. Forrester, of Los Angeles, has brought suit against F. O. and F. E. Engstrum and the Engstrum Company, of Los Angeles, to secure \$1,500 worth of stock and profits amounting to \$3,500. Mr. Forrester claims to have been hired by the defendants as superintendent of their new brick yard with right to subscribe for stock when the new corporation should be organized. The company was never organized, and Mr. Forrester has brought suit asserting that the old firm has just divided profits amounting to \$16,000. SUNSET.

FOUND DEAD ON KILN SHED ROOF.

Oscar Muart, a young foreigner employed on the Hammond & Freeman brickyard at Dutchess Junction, N. Y., was found dead Wednesday afternoon on the top of a kiln where he had been sent to daub the roof. The foreman of the yard told him to do this work and thought no more of the matter. A short time afterward the foreman had occasion to go to the top of the kiln, where he found the young man lying dead. The work had all been neatly done as ordered.

It is not known what the cause of death was, although it is presumed Muart was suffocated by coal gas. There are some who say, however, that there is no coal gas arising from a kiln after the first twenty-four hours. Coroner Knapp has as yet rendered no decision. Muart was eighteen years old and had been employed at the yard for some time.

Written for THE CLAY-WORKER.

POTTERY NEWS.



WHILE THIS SEASON of the year is generally looked upon by pottery manufacturers throughout the country as a dull spell, yet all factories are rushed to the limit with orders. The stringency in the money market threatened trouble, for a fortnight, but manufacturers put the question squarely before the workmen, and the latter agreed to work from thirty to sixty days without a pay day. This spirit had much to do with the restoration of confidence in pottery districts.

The annual meeting of the United States Potters Association will be held at the Hotel Raleigh, Washington, D. C., commencing December 3, and this year some vital themes will come up for discussion. The attendance at this meeting is expected to be the largest in the history of the association. Arrangements have been made for many members of the lower and upper houses to appear before the association in the hope of obtaining assistance for the American pottery manufacturers and workmen when the revision of the tariff comes up.

Brick, sewer pipe, tile plants and electric porcelain factories in the Ohio Valley are bringing to a close one of the busiest years in their career. There has been practically no idleness in any of these plants through a lack of orders, although some idleness was caused from time to time by conditions over which no mortal had control. The floods in early March caused a number of factories to close, and then there was a shortage of cars for a spell. While the latter condition delayed shipments, the former caused a suspension of operations in a number of Ohio valley industries.

The plant of the Huntington China Co., at Huntington, W. Va., has been sold at receivers' sale, and was knocked down to business interests acting for Harry R. Wylie, formerly a resident of East Liverpool. About \$10,000 was paid for the property, which was very low. It will be placed in operation immediately, after a month's idleness.

Frederick Seegers, one of the most popular pottery salesmen in the United States, and well known to the trade, died at Baltimore after a brief illness. He represented the Edwin M. Knowles China Company, of East Liverpool, Ohio.

It is announced that coopers supplying pottery manufacturers with packages will meet soon to increase price lists for the new year. The high prices of raw materials is the reason for the proposed advance.

Provisions have been made for a model pottery to form a part of a new technical school which is being planned at Cleveland, Ohio. The school will be identified with the public schools.

Raw materials used by potteries have advanced from 10 to 33 1-3 per cent. during the past year. It was the most extensive and steady advances ever known.

Robert Heape, superintendent of the Onondaga Pottery Company, at Syracuse, N. Y., died recently at the age of sixty-two years. He was for some time located at New Castle, Pa.

Charles H. Skirm, who built the Enterprise pottery at Trenton, N. J., a quarter of a century ago, is dead at the age of seventy-five years.

A boom has been launched at Youngstown, Ohio, in the interest of Col. John N. Taylor, of East Liverpool, Ohio, and president of the Knowles, Taylor & Knowles Pottery Company, for congress. It is not likely that Col. Taylor will give much thought to the proposition.

The Pope-Gosser China Co., of Coshocton, Ohio, secured a gold medal for the china it exhibited at the Jamestown Exposition.

Sparks from a passing engine destroyed the large straw shed and a small warehouse at the plant of the Limoges Pottery Company, at Sebring. The loss was not extensive.

Machinery is being installed in the El Reno China Com-

pany's plant at El Reno, Oklahoma. Operations are expected to start within a month.

The Ceramic Supply Company, has been formed under a West Virginia charter with a capital stock of \$50,000 by Charles W. Franzheim, of the Wheeling Potteries Co.; Hugh A. McNicol, of the Potters Co-Operative Co., at East Liverpool, Ohio, and Col. John N. Taylor, of the K. T. & K. Company, of East Liverpool. The company will control the output of extensive china clay deposits in Texas.

The new addition to the Van Briggles Pottery at Colorado Springs, Colo., will be ready for operations not later than January 1.

Business has been resumed in full at the plant of the sanitary pottery at Keyser, W. Va.

S. A. Anderson has tendered his resignation as manager of the Champion Brick plant at Wellsville, Ohio, owned by Thomas N. Silver, and has left for Great Lake, Mont., where he will assume the management of a large brick plant there.

The Cook Pottery Company, of Trenton, N. J., who secured control of the Pennsylvania China Company's plant at Kittanning, Pa., has also taken over the property of the Ford City Pottery Company, at Ford City, Pa.

The Dunlop & Lisk Pottery Company, of Matawan, N. J., incorporated with a capital stock of \$20,000, will manufacture sewer pipe, flue lining, flower pots, stoneware and brick.

Charles Cochran, employed at the Thomas Maddock & Sons pottery, Trenton, N. J., has invented a shipping crate which will do away with the services of a packer in the sanitary shops.

The East Liverpool (Ohio) Porcelain Company has been incorporated with a capital stock of \$50,000. William A. Andrews and C. J. McQuilken are at the head of the concern.

The Homewood Pottery Company, at Mannington, W. Va., has been purchased by Arthur Cartwright and James Brindley, the former being of Trenton, N. J.

The Shenango Pottery Co., at New Castle, Pa., has added a general line of ware to its former hotel ware business.

The Cambridge Art Pottery Company, of Cambridge, Ohio, is the only firm manufacturing cooking utensils out of red clay, and then giving the article a rich white glaze inside.

The Central New York Pottery Company, has erected a four-kiln plant fifteen miles east of Syracuse, N. Y., at Chittenango, and has commenced operations. A line of specialties and general ware is manufactured.

Robert Davis, of the Don Brick Works at Toronto, Canada, has purchased for \$20,000 the buildings and estates of the Don Paper Mills, which will be converted to the use of the brick company immediately.

Thomas B. Palmer, of Uniontown, with others, is at the head of the United Fire Brick Company, which has been chartered in Pennsylvania with a capital stock of \$500,000.

John Bellis, of No. 2,400 Beale avenue, Altoona, has been elected treasurer of the Eldorado Brick Company, which has been formed with a capital stock of \$15,000. Altoona and Burnside, Pa., capital is heavily interested.

The Elwood Brick and Limestone Company, with a capital stock of \$30,000, has been organized by Thomas J. Fulmer and Frank Douthitt, of Elwood City, Pa., and John M. Montgomery, of Sewickley, Pa.

O. MEGA.

PAYS \$250 FOR A BRICK.

Plain, red bricks sold as high as \$250 when the cornerstone was laid of the new Mt. Moriah Hospital, to be erected in Second street, near Avenue A, under the auspices of the Federation of Gallican and Bucovinaen Jews of America. Leon Sobel, a contractor, announced that \$50,000 was still needed for the hospital and he proposed to get it in a brick sale. William Fishman bought the first brick for \$250. Bernard Turkel and Morris Feldstiner paid \$175 for another. When the sale was stopped the entire sum needed had been raised.

A. H. Zimmerman, of Brazil, Ind., is at the head of a company which has been organized to erect an immense clay-working plant at Bloomington, Ind., for the manufacture of stoneware and ornamental pottery, including jardinières and umbrella stands.

Written for THE CLAY-WORKER.

BRICK NEWS OF THE TWIN CITIES AND THE NORTHWEST.



THE MONTH OF OCTOBER in building circles at Minneapolis and St. Paul has been better than might well be expected under all the circumstances, and the total volume of building done will compare very favorably with the same month in past years. The work at the present time consists, to a great extent, of residence building and finishing of the more pretentious structures, there being not much new work started at this time of the season in the northwest. The principal trouble which has developed to retarding construction operations has been the extremely tense condition of the financial situation which has made the public, in general, very backward about investing heavily in new buildings, and the projects for new work seem to have fallen off considerably in consequence. However, as most of this would only be started this fall and the superstructures erected next spring, the actual effects of the money stringency will be felt mostly after the winter is over than now. Should conditions improve before that time, the delays would not be such as to be very disastrous and a large amount of work would be rushed throughout the coming spring and summer. Just at the present time, though, the rush to complete the larger buildings and to erect dwellings which have been delayed in starting is keeping all the construction crews busy, and there will not be any let up in the work until the winter sets in. The weather throughout the month has been ideal and contractors have taken advantage of it in good shape.

Although there is a tendency to postpone decisions regarding new work which is being considered, there has, nevertheless, been some heavy construction work started and others will be commenced during the coming month. Among these are the four-story brick and steel store building which will be erected at the corner of Nicollet avenue and Eighth street, Minneapolis, by John W. Thomas & Co., work on the foundation of which has just been started. This building will cost \$175,000. Other Minneapolis buildings on which work has started are the United Norwegian Lutheran Publishing House, four-story brick building to cost \$65,000, and brick elevators and warehouse for the North Star Malting Company, which will cost a like amount. Figures are also being taken for a four-story brick addition to the Curtis Court apartments on plans by Lindstrom & Aylmars, architects, which will cost \$65,000.

The amount of building which has been done in both of the twin cities thus far this year, shows a good healthy increase over the same period last year, and the indications are that the rate of increase will not fall off very materially during the rest of the year. For the first nine months the Minneapolis building permit totals were \$8,060,665, which is an increase of \$447,075, the number of permits being 4,038 as against 3,736. In St. Paul the totals for the nine months were \$5,841,817, which is a gain of approximately \$475,000.

The labor situation in the building trades is in very satisfactory condition at the present time and contractors anticipate little or no trouble in the immediate future. The past season has been free from strikes, except in the case of the sheet metal workers, and building operations have not been delayed. The twin cities are not strongly union and, as a rule, have little trouble over labor questions. High wages prevail and everybody seems satisfied with the conditions as they exist.

Most of the brickyards of the northwest have closed for the season, only those who run all winter being still in operation. Brickmakers report that they have stocks about equal to those of last season at this time, if anything slightly exceeding those of a year ago. A growing menace to the brick industry is the rapidly diminishing supply of fuel and the problem has become one of vital moment. The number of

coal-using yards is rapidly increasing, and it seems only a matter of a short time before the use of wood will be abandoned entirely.

The superintendent of the Minneapolis workhouse proposes to establish a plant for making common brick and has asked for an appropriation of \$15,000. It is proposed to thus keep the prisoners employed and to supply the city with brick.

The annual meeting of the Iowa Brick and Tile Association will be held the third week of next January at Des Moines. Plans for the meeting are already being formulated, and it is planned to have the biggest meeting in the history of the association. A hot campaign has also been started for increasing the membership.

The gumbo beds of South Dakota are becoming quite extensively used for brickmaking purposes. A yard with 60,000 daily capacity has been started at Kennebec and will be increased to 200,000 in the spring. Tests have also been made at Fort Pierre and other points.

The Mason City (Iowa) Clay Products Company is erecting buildings for a tile and sewer brick plant which will be ready for operations in the spring.

The Red Wing Sewer Pipe Company, of Red Wing, Minn., contemplates starting a tile plant at Lehigh, Iowa.

The Jackson (Minn.) Brick and Tile Company has completed its plant, and will make both brick and tile.

A new brick and tile plant will commence operations January 1st at Carlisle, Iowa. It was erected at a cost of \$40,000.

Nearly eighteen million brick were burned at Grand Forks, N. Dak., the past season.

Sherwood & Johnson have sold their brickyard at Dresbach, Minn., to Johnson & Baker.

The capacity of the brickyard at Fort Pierre, S. Dak., will be increased from 60,000 to 200,000 daily.

The capital of the Missouri Slope Brick and Tile Company, of Dickinson, N. Dak., has been increased from \$35,000 to \$75,000.

The Luverne (Minn.) Pressed Brick Company has completed the installation of machinery in its new plant.

P. N. Swenson, of Menomonie, Wis., proposes to start a brickyard in northern Minnesota, and has been making investigations at Virginia and Eveleth, on the iron range.

A brickyard may be started at Humeston, Iowa.

The Keith Company, architects, have moved from 917 Hennepin avenue, Minneapolis, to their new offices at 1722 Hennepin avenue.

T. WIN.

AMERICAN BLOWER COMPANY BUSY.

The American Blower Company, Detroit, Mich., report that they have enjoyed a very prosperous season. They have recently booked orders for drying apparatus from the following well-known brick manufacturing firms: Atlanta Mining and Clay Company, Dry Branch, Ga.; Kleymeyer and Klutey Brick and Tile Works, Henderson, Ky.; First Avenue Brick and Tile Company, Evansville, Ind.; Muscogee Brick and Terra Cotta Company, Columbus, Ga.; Harbison Walker Refractories Company, for installation at Templeton and Stronach Station, Pa. Also an induced draft outfit for the Minneapolis (Minn.) Brick and Tile Company.

TRADE NOTES.

A. C. Newton, Crescent, N. Y., is in the market for a second-hand Potts granulator, complete, with friction clutch and pulley, all of which must be in good condition.

Wm. M. Curry writes that he is interested in a movement to start a brickmaking plant at St. Bernard, Ohio, and would be pleased to receive not only plans and specifications for a first-class, modern plant, but catalogues of machinery and appliances.

Wiley T. Johnson, of Helena, Ala., advises us that he has a fine deposit of excellent clay within twenty miles of Birmingham, which he would like to develop, but needs more capital than he now has at his disposal. He would like to correspond with parties looking for a good investment in the clayworking field.

Written for THE CLAY-WORKER.

PUGET SOUND CLAY NOTES.



OF ALL THE Puget Sound cities, Seattle stands at the head of the list for issuing of building permits. The number of building permits issued during October exceeded that of the previous month by more than 100, and of the same month in 1906 by 473. October, 1906, was the record month of that year in the number of permits.

The estimated cost for the improvements for October is \$1,929,879, which is nearly \$400,000 greater than during any month this year. From a brickmaker's standpoint the addition of large buildings is very gratifying. Some are built of reinforced concrete, but nevertheless a great many bricks are always used in such buildings. The total number of permits issued so far this year amounts to \$11,896,947.

The Seattle Brickmakers' Board of Trade has handled the greatest amount of the brick trade this year. This Board of Trade was established by the Harper Brick and Tile Company, the Hill Brick Company, and A. Abrahamson. The Hill Brick Company has been established twenty-five years, but was completely reorganized and rebuilt about two years ago, when new kilns and drying systems were put in. The Harper Brick Company has an output of 800,000 brick per month. They have added several new kilns, and also a large drying system this year. The general outlook is very favorable for a good winter trade.

The demand for face brick has been good. Many buildings in Seattle and Tacoma are now using pavers for front brick, and the effect thus obtained is very good. Architectural terra cotta is used to a very large extent in all large building.

The Columbia Clay Company, of Kennewick, have their new factory building under roof, and will install the machinery as soon as it arrives from the East. It is the intention to burn the first brick in open clamp kilns, and afterwards construct permanent kilns. C. E. Williams, one of the members of the firm, has patented a new gas producer and hopes to install his invention on the continuous kiln which they will erect next spring.

The Nepusic Brick Company, of Olympia, Ore., the capital of the State, is now ready to make brick. The plant has a capacity of 30,000 per day, and as the electric power is sufficient to double this capacity, step will be taken at once to install more machinery.

J. F. Miller & Bros., of Bellingham, are considering the plan of moving their brickyard from the heart of the city to a more suitable location of the Sound, where they will have both rail and water transportation. They are contemplating enlarging the plant, and adding nearly all new machinery.

The Rockford Brick Company will commence the installation of a six-track dryer at once. The material is all on the ground, and the masons will start the foundation within a few days. The dryer will have a daily capacity of 35,000 brick.

The Intermountain Cement and Brick Company, of Idaho Falls, Idaho, has now a large force of men on the grounds for the construction of its new factory. The firm proposes to make sand-lime brick. The material will be conveyed to the plant by a 800-foot aerial tramway. About seven cars of machinery have been shipped from the East, and will be installed in this plant.

The West Coast Brick and Tile Company, of Centralia, has elected G. A. Bartz as its president. The company did quite a large business this year, and will enlarge this winter in order to take care of the large trade next year.

The Northern Clay Products Company, of Auburn, has about completed their third terra cotta kiln. This company has large contracts for terra cotta in Portland and Seattle. They report the firebrick trade to be very satisfactory.

The Goss Brick Company, of Tacoma, has sold to the Northern Pacific for their new right of way and entrance to Tacoma, the new brickyard which was located close to the

smelter. The consideration was rather high, in view of the fact of the bad location of the yard. SIWASH.

Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.



BUSINESS AS A result of the stringency in the money market has been quiet for some time with the brick and terra cotta interests. While manufacturing is going on, the demand for brick is not what it should be. The falling off in building operations, a result of the financial depression and the difficulty in securing money for building projects, is reflected by the October building permits, which show a decrease of over 50 per cent from October, 1906.

The October showing is the poorest comparative one made by any month so far this year. The permits for the month aggregate \$1,284,000 as against \$2,853,000 for October, 1906, a difference of \$1,567,000. This decrease is almost entirely in new brick buildings, which made up the bulk of the permits. In new frame buildings a gain of \$48,000 is recorded in favor of last month.

The following are the detailed figures of the building commissioner's office, with comparisons:

	1906.		1907.	
	Permits.	Amount.	Permits.	Amount.
New brick buildings...	235	\$2,609,382	168	\$844,290
Brick alterations	107	119,305	142	273,984
New frame buildings..	414	107,736	337	155,411
Frame alterations	97	17,553	75	10,620
	853	\$2,853,976	722	\$1,284,305

On account of the shortage of vitrified brick in the St. Louis market and surrounding territory, street improvements, where this material is called for, has been delayed nearly six months, according to a statement made recently by the street commissioner of St. Louis.

He says that the St. Louis vitrified brick supply is not sufficient for the local demand, and declares that the city is greatly in need of larger facilities for brickmaking.

On account of the rigid inspection that the street commissioner has in force, contractors who have the street paving work say that out-of-town manufacturers will not sell brick to St. Louis because they can get a better market elsewhere. Contractors who have the brick paving jobs already have taken a year in putting down 11,000,000 brick, when they should have done the work in half that time, experts say. This delay was caused by the failure to get enough brick to complete the work. The city has suffered from the delay, and the contractors have lost money.

Because of the trouble the contractors have had in getting brick, the street commissioner will endeavor to get all of the legislation necessary for next year's work passed as early as possible, so that the contractors will know how many brick are needed, and will make arrangements accordingly.

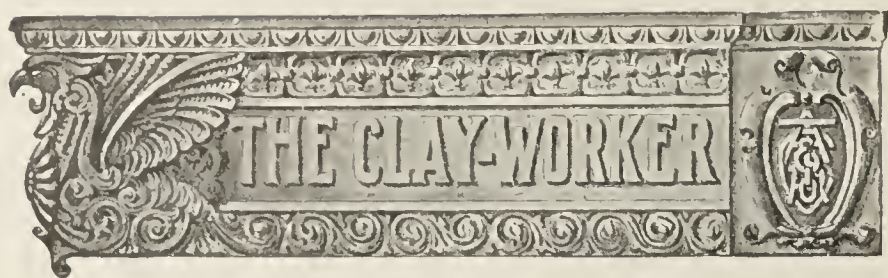
Some bills providing for street paving with brick for next year have already been sent by the Board of Public Improvements to the Municipal Assembly.

The street commissioner has aided the contractors all that he could by getting small supplies from other cities. But his success along this line has not been marked, as the out-of-town manufacturers have contracted for their output in advance.

St. Louis has used 11,000,000 brick in the past twelve months, but another 11,000,000 is needed to complete the work under contract. This supply is needed within the next few months, but the street department does not think it probable that the brick can be supplied in that time.

The estimated cost of the 22,000,000 brick used and now needed for street work this year, is \$330,000, which is based on the rate of \$5 a thousand.

On one street, the work was stopped eight weeks after the concrete had been put down. Several other streets have been delayed two or more months because of the failure to get brick. A. SAINT.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVIII.

NOVEMBER, 1907.

No. 5.

CURRENT COMMENT.

The progress in tile drainage is good, but it can be made better by more energetic and persistent effort on the part of manufacturers.

* * *

If you feel like you are in such a condition that you can't do any good for yourself, try doing good for some one else. It will make you feel better if nothing else.

* * *

There are here and there a few men who are "bricks," but some are merely "mud" and not a few, even after having been baked in the fire of experience, fail to make anything better than a soft brick of uncertain color.

* * *

In economic paper No. 315 of the U. S. Geological Survey, Charles Butts gives a description of the manufacture of sand-lime brick at Sayreton, near Birmingham, Ala. The paper also includes a list of publications dealing with the subject of sand-lime brick.

* * *

If the government can be induced to spend fifty million a year for the next ten years improving our internal water ways there probably will not be car shortage enough by that time for us to remember just how inconvenient it was, and a bigger item than that is the promised saving in freight. Let us all work for it, not fitfully, but persistently.

* * *

The poor out some men make who are paid from 60 to 70 cents an hour for laying brick does more to discourage the use of brick in building operations than any other one thing. What the country needs is not merely more bricklayers, but better ones than many who are now plying the trowel. The best and quickest way to get them seems to be via the trade school route, so let us not only keep this idea moving, but seek to encourage more people to send

their boys to learn. The pay is good and there will be more of them needed in the future than ever—keep this fact before ambitious young men.

* * *

It's a pity we can't discover some way to get our elections properly done without having to keep a political pot boiling so violently as to frequently seriously interfere with business.

* * *

This country holds one record, for which there is no room for pride. We have not only the greatest number of railroad accidents, but also more in proportion to mileage than any other country—and yet we furnish much of the equipment for other countries.

* * *

The August issue of the journal of the Western Society of Engineers contains an interesting paper by Dr. W. Michaelis, Jr., M. W. S. E., on "How to Prevent Failure in Concrete Construction." To our mind, the answer is easy; build of brick. Dr. Michaelis states frankly that it, concrete, "is the unsafest of all materials, if it is handled by a inexperienced, careless and dishonest builder." These are cogent reasons for not using concrete, but if it is used, eternal vigilance is the only thing that can prevent disaster. We repeat, the best way to prevent failure in concrete construction is to use brick instead.

* * *

Even if the weather man did act cranky early in the spring, and the panic generator did start up at every opportunity, the crops of farmers is proving so good in the end that there is no room left for generating much of a panic if we tried ever so hard. Panics, or depression and good crops don't go well together. We must get rid of one to have the other in full force.

THE GREAT COMMON BRICK.

When one contemplates the figures of the brick industry set forth in detail so that one can see how much this amounts to and that much amounts to, one is reminded somewhat of that old saying about the welfare of the country depending on the great common people ultimately more than the few distinguished ones.

We find in the figures given out by the Government experts that the great common brick industry is not only in the aggregate bigger and more important than any of the other branches, but of the long list of mineral products of the United States concerning which statistics are collected by the United States Geological Survey only three, pig iron, copper and bituminous coal, exceeded in value that of the clay products, and of the clay products themselves the product ranking highest in value and amounting to a grand total of more than 60 million dollars in 1906 was common brick. There were, to be exact, 10,027,039,000 common brick manufactured last year. New York led the production with a little over a billion and a half, which were sold at the average price of \$6.00 per thousand. The greater part of New York's common brick comes from the famous Hudson River region, which is one of the most interesting centers of the clayworking industry in the United States.

Next to New York in common brick comes Illinois, with an output reaching nearly a billion, the majority of which sold last year at an average price of \$4.79 per thousand. The only other State producing more than a billion was Pennsylvania, and next in line came Ohio, with something over half a billion. The average price per thousand for common brick in 1906 ranged from \$9.69 in Wyoming, the highest point, to \$4.38 in Kansas, the lowest point, and the average for the whole country was \$6.11. Unfortunately the price in 1906 was too low in many places and in many instances it is reported that the cost of laying brick has actually exceeded the cost of the brick itself. Moreover, everywhere there is evi-

dence that too much of the cost of brick structures has been expended in laying brick and not enough value has been realized from the brick itself. Brick is, without question, the greatest building material of this or any other age and the great common brick industry, as big as it is now, is nothing to what it should be in the course of a few years, for it is the brick which enters extensively into the building of homes throughout the country and the cost of this material is low enough with modern methods of manufacture, and if the cost of laying brick can be reduced to a point where it should be, there will no longer be any excuse for any man not to build with brick in preference to less desirable building materials. The common brick industry is a great thing! Push it along. Not to the exclusion of other finer brick, of course, but give it the attention its magnitude merits.

A SOBER THANKSGIVING.

Thanksgiving this year will probably find a great majority of people in this country in a more sober mind than they have been for several years. We should be thankful that it is so, too, because too frequently in the past, we have been intoxicated, so to speak, with prosperity and the rush of business ideas and plans, and we stood in need of some sobering up. We may not at first welcome the cure. It is seldom that a man relishes a dose of medicine, even when he knows that it is essential to his well being, for the taste is frequently unpleasant, yet afterward, he is thankful for its effects. The business world, neither as a whole nor individuals, takes kindly to business depressions, no matter if they are but temporary. Still when we are put to it, we can see therein real benefits to accrue, after we know that we have taken our medicine, so to speak, and gotten well. So brace up, be truly thankful that the first shock of it is over with, and that we will be ultimately benefited therefrom. By and by, we may reach a degree of wisdom which will so guide us that we need not have these financial flurries, these periods of settlement and reckoning to straighten us out and get us going right again. We are making progress all the time, putting longer distances between such disturbances and acquiring strength and stability, which enable us to recover from them sooner than formerly, and working gradually toward a higher and wider plane of business knowledge and ethics.

OUR MATERIAL BLESSINGS.

For all this, we should be heartily and deeply thankful, nor should we allow our spirit of thankfulness to be marred by the temporary inconvenience of existing conditions in the financial world. The day of thanksgiving in its origin was set apart more particularly as a day of returning thanks for the harvest gathered from the soil than anything else, and in this connection we are reminded of a Bible quotation frequently used by preachers in describing conditions in this country, to the effect that, "Not so hath he dealt with any other people." There is not any other country on the face of the globe that can anywhere near equal this great country for either the abundance or the variety of its product from the soil; in fact, we are blessed in this respect, as no other people on earth, and more than any other people do we owe a day devoted exclusively to giving thanks therefor. We should be thankful, not only for general prosperity this year, but especially for the fact that we have agricultural prosperity, which is the very backbone of our national wealth. Not only are the people of the agricultural districts prospering, but as has been pointed out before, are learning to use that prosperity more wisely, and in so doing are perfecting a greater safeguard than ever in the future. They build better homes, more durable ones, more aesthetic. They give more attention to the right education of the young, not only as to the schooling, but as to furnishing a home life and sur-

roundings that are conducive to right and healthy thinking. It means much, much to be thankful for, this steady and solid improvement of the great agricultural people of the country. So let us be thankful, soberly thankful.

TRADE LITERATURE.

Transactions of the American Ceramic Society, Volume 9.

We are the happy possessors of the latest volume published by the American Ceramic Society. This is the largest book ever issued by this Society, and clearly demonstrates the growth of this scientific organization. It contains 898 pages and is found in the usual blue cover. Besides the forty-one papers with their discussions, is published the report of the Board of Trustees, including the Secretary's and Treasurer's reports. Following these reports is the constitution of the society and a list of its publications. Most of the articles are finely illustrated with pictures or charts. This volume is a valuable addition to any clayworker's library. Copies can be purchased from Prof. Edward Orton, Jr., at Columbus, Ohio. The price is listed at \$4.00.

University of Illinois Bulletin.

The Ceramic Department at University of Illinois has recently issued its sixth bulletin. This is a very interesting booklet on the subject of Effect of Repeated Freezing and Thawing on Brick Burned to Different Degrees of Hardness, by Mr. J. C. Jones, of Champaign, Ill. This is a reprint from the American Ceramic Society, Volume No. 9, and is the paper read before that body at St. Louis, February, 1907. The paper is very thorough, discussing fully the structure of brick; the disintegrating forces due to change in temperature; physical properties of water; disintegrating effects of freezing water; conditions governing the durability of the brick in the wall; freezing tests and results of a freezing test of three series of brick. These bulletins are published fortnightly and have been well received. This is a fine work and deserves much praise.

Construction.

October ushered in a new Canadian publication to be known as "Construction," a journal for the building and engineering interests of Canada. This is a fine appearing magazine with a beautiful cover having an allegorical design printed in two colors on heavy glazed paper. The first number has a number of interesting articles well illustrated. We wish the editors every success, and if they maintain the high standard of this their first number, they will soon be a power in their chosen field.

Masonry Construction.

We were pleased to receive recently for our exchange table a book published by the American School of Correspondence of Chicago, Ills., entitled, "Masonry Construction," by Alfred E. Phillips, Professor of Civil Engineering at Armour Institute of Technology, and Austin T. Byrne, Civil Engineer and author of "Highway Construction" and "Materials and Workmanship." This book is a guide to approved American practice in the selection of building stone, brick, cement, and other masonry materials and in all branches of the art of masonry construction. The 128 pages are bound under a red cloth cover tastily designed in simple black lines and letters. It is well illustrated by means of photographs, sketches and tables. There are four main divisions in the subject matter dealing respectively with structural materials, foundation work, stone work and brick work and masonry structures. Those interested in masonry work will no doubt want to purchase this book, which is listed at \$1.00. Persons desiring it should address the American School of Correspondence, Chicago, Ills.

The Deck Sweeper.

Is the caption of a leaflet recently sent out by the Williams Patent Crusher Company, St. Louis, Mo., and tells impressively of the merits of Williams' latest triumph in crushing and

pulverizing machinery, which he has christened the Deck Sweeper for reasons made obvious to the reader of this interesting leaflet, a copy of which will be mailed to any address on receipt of inquiry to the above company.

Written for THE CLAY-WORKER.

JAMESTOWN PRIMEVAL.

In symmetry of line and form, thro' growth of toilful years,
As ripened fruit of centuries, the new Jamestown appears,
Personified in Progress, as the palette's colorings
Idealize a picture, with the beauty it brings.

New years of thought have cut their way and left a shining stand,
Like traceries of gold and silver, which the skillful hand
Embeds in rarest pottery; and thro' this line, we feel
The call of primal kinship with our modern progress steal.

As seeds hid from the sunlight, and imprisoned in the sod,
Are kinsmen to the flowers—which are but the smiles of God—
So grows the flowered pedigree, upon its smiling way:
Thro' seed and root, and stem and leaf, to Jamestown of to-day.

As far cloud-ships, with milk-white sails, upon the waste of skies,
Are sisters to the hoar-frost, which the night winds crystallize,
So, nebulous and beautiful ideals of the past
Have changed into snow crystals, which are falling thick and fast.

The years are all a-vibrant with the thrill of sympathy.
The new Jamestown sings to the old, in notes of melody,
"Deep calleth unto deep," and like must call to like; obey
The elemental mandate to the brotherhood of clay.

—Margaret Andrews Oldham.

THE RAILROAD MAN'S HEREAFTER.

"Who are you?" the devil asked,
As the man rapped at the gate;
"Oh, I'm a railroad man," said he,
"Please open, I cannot wait."
"What do you want within this place
Of sighs and groans and tears?"
The man's frame shook with anguish,
And his ashen face showed fears.
He said "On earth I had no place
My life was full of jars;
I lied to all the mantel men
Because they wanted cars."
The devil said "Go 'way, poor man,
This is no place for you,
This hole is full of mantel men
Waiting to put you through.
"They have a cast iron freight car
That's red hot, through and through,
They've held it now so very long
The demurrage is up to you."

—Tile and Grate Monthly.

DON'T GIVE UP.

If you've tried and have not won,
Never stop for crying;
All that's great and good is done
Just by patient trying.

Though young birds, in flying fall,
Still their wings grow stronger;
And the next time they can keep
Up a little longer.

Tho' the sturdy oak has known
Many a blast that bowed her,
She has risen again and grown
Loftier and prouder.

If by easy work you beat,
Who the more will prize you?
Gaining victory from defeat,
That's the test that tries you.

—Phoebe Cary.

No guide to success will take you there. Like sign posts on the road, they simply point the way. You have to do the going yourself.

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The Haigh Continuous Kiln Mak- ing a Good Record.....	510
Jamestown Primeval.....	530
The Railroad Man's Hereafter..	530
Don't Give Up.....	530

Index to Advertisements on Page 530.

ESTABLISHED COMPANIES, as well as beginners, find our services profitable. We correct faults of manufacture and keep plants up-to-date. Engagements for special service, or by the year.

THE RICHARDSON-LOVEJOY
ENGINEERING CO.

[See page 562.]

WANTED, FOR SALE, ETC.

WANTED

By a young man position as superintendent or sales manager. Understand stiff mud and dry press process. Have traveled extensively. Address
111 cm
Care Clay-Worker.

WANTED.

To correspond with a brick company that will manufacture radial brick for chimneys. All necessary molds will be furnished by us. Address,
E. WUERZ,
197 Havemeyer Street,
Brooklyn, N. Y.
111 L

INDUCEMENTS OFFERED FOR CLAY PRODUCT MANUFACTURERS.

There is no better clay than we have to offer. Address

BUSINESS MENS' ASSOCIATION,
113 c Box 122, Francisville, Ind.

For Sale, Wanted, Etc., Ads Continued on
Pages 541, 542, 543 and 550.

200%

MORE

Radiating Service than any "Hot Air" Dryer made.

Simple of operation and construction.

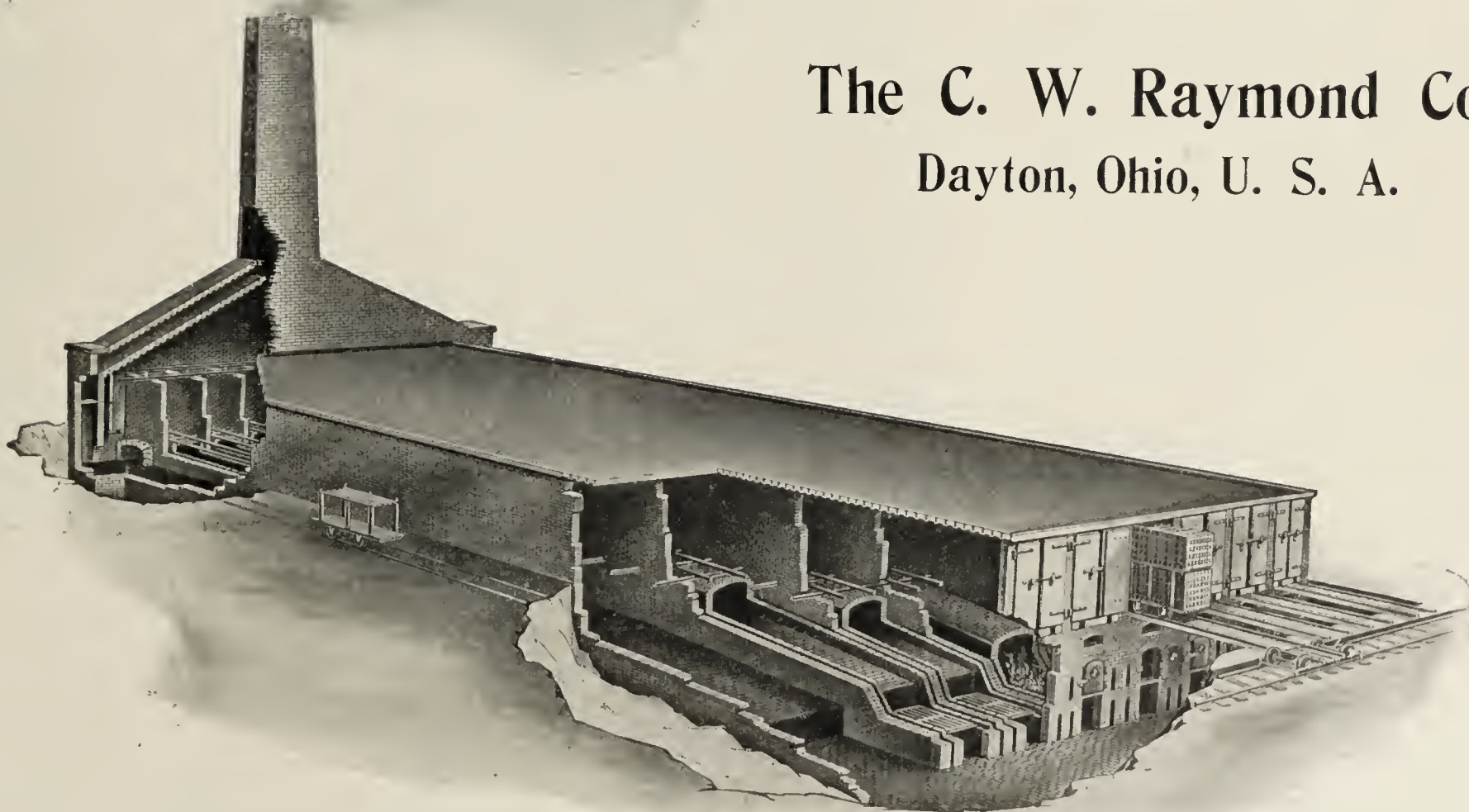
Burns any kind of fuel.

Constantly under perfect control.

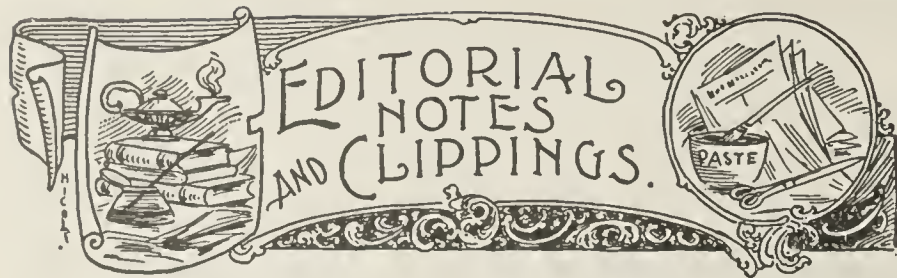
A new system of ties and a positive rail clamp absolutely prevents spreading of the track.

Write for exhibit 2077.

The C. W. Raymond Co.,
Dayton, Ohio, U. S. A.



THE RAYMOND RADIATED HEAT DRYER.



Del Rio, Texas, is to have a brickmaking plant.

C. C. DeLoach contemplates the establishment of a brick-making plant at Groveland, Ga.

W. R. Westbrook has purchased the brick plant at Laurel, Mont., formerly owned by W. A. Riley.

Fire at the plant of Edward F. Day, at Danvers, Mass., caused a loss of \$4,000 recently. The fire started from an overheated kiln.

H. S. Price, of East Jordan, Mich., is in the market for second-hand dump cars, winding drum and cable, and about 600 feet of T rails and switch. He also desires to buy either a new or second hand pug mill.

The Jeffrey Manufacturing Company, Columbus, Ohio, has begun the work of erecting a \$25,000 addition to its plant. The building will be one story, constructed of brick, and will enlarge the department of the plant devoted to mining machinery.

Charles B. Chase, of Trenton, N. J., has been named by Vice Chancellor Edwin Robert Walker as receiver for the Globe Pottery Company, a Bordentown, N. J., corporation which has been before the courts for some time because of various financial troubles.

The brick and tile factory at Packerton, Ind., formerly owned by the Schlatter Hardware Company, of Ft. Wayne, has been purchased by A. L. Bartholomew, and the first kiln has just been fired, after having been idle for five years.

The Starr Brick and Tile Company is the name of a new concern recently organized to manufacture brick at Fredonia, Kans. The company will erect a brick plant, modern in every detail. E. E. Crosswhite, of Kansas City, Kans., is the secretary of the company.

The name of the Pittsburg Brick Company, at Oil City, Pa., has been changed to the Franklin Shale Brick Company, and the plant, which is located near the mouth of Two Mile run, near Oil City, will be enlarged to nearly twice the present capacity. Sylvester W. Cramer is at the head of the concern.

R. G. Eisenhart, the well-known brick manufacturer of Horseheads, New York, met with a painful accident at his plant recently. He was standing on a wagon directing some work about the yard, when the team started and he was thrown out of the wagon backward. At last reports he was on the road to complete recovery.

After a number of experiments, the United Brick Company, of Iola, Kans., will burn their brick with oil. In their opinion oil costs no more than gas, and furnishes a quicker heat. It is estimated that the cost of installing the oil system for burning has cost the company about \$2,500, most of which has been expended for the large storage tank and pipes for carrying the oil to the kilns.

F. H. Hyatt has discovered an immense deposit of a superior grade of shale on his farm near Columbia, S. C. He has had a number of tests made with very satisfactory results. A number of brick have been made from the shale, and it has been found that burned brick will take on a polish closely resembling marble or granite. Mr. Hyatt's plans are not fully matured as yet, but he has in contemplation the erection of a plant for the purpose of developing the deposit.

The Latrobe Brick Company, Latrobe, Pa., has completed a number of repairs and changes in the equipment of the plant near that city, and has awarded a contract to Toner & Baker for the erection of a large office building on East Depot street, Latrobe. The company reports that business is very good, and that the plant is now turning out an average of 30,000 brick daily, which is just about the capacity. The demand, however, has been greater than the capacity, hence the improvements. The largest contract that has been awarded to the company during the past month is for 1,500,000 brick that will be used in the erection of the St. Joseph's Academy, at Greensburg, Pa. There are also a number of

other good-sized contracts for buildings that are being erected in that vicinity.

The Stipes Brick Company, at Urbana, Ill., has closed down the yards for the winter, after having turned out 7,000,000 brick the past season.

Henry Schrage, a well known brick manufacturer of Kansas City, Mo., died at his home there recently. He had been engaged in the manufacture of brick for many years.

The Gary Granite Brick and Stone Company has been organized at Gary, Ind., with \$75,000 capital stock. O. C. Borman and N. C. Kunert, of Toleston, Ind., are interested.

The Youngstown Roofing Tile and Machinery Company has been organized at Youngstown, Ohio, by John R. Squire, Carroll Thornton, and Will B. Jones. The company is incorporated at \$50,000.

The plant of the Peebles Brick Company, Portsmouth, Ohio, will be enlarged in order to enable the company to meet the demand for their production, which has greatly increased during the last year.

Frauenthal & Robinson, who have been operating a small hand yard at Heber, Ark., have closed down their plant and will install a full equipment of modern machinery during the winter months, and expect to have same ready for operation by early spring.

The Clarendon Clay and Mining Company, recently organized at Clarendon, Vt., with \$50,000 capital stock, has its plant well under way and expects to have it in full operation in the near future. The mill will be equipped with machinery for packing the kaolin into bags, ready for shipment.

The Hanover Red Pressed Brick Company, of Hanover, Ohio, which has just been incorporated by C. H. Forry, Geo. H. Havene and others with a capital of \$130,000, has been organized to take over the property of the Hanover Pressed Brick Company. The product of the company will be red pressed brick and red impervious brick.

The Houma Brick Company has been organized at Houma, La. A. A. Bonvillian is president; J. M. Haggarty, vice president; A. J. Bonvillian, treasurer, and M. H. Webb, secretary and general manager. The plant is equipped with machinery from the shops of E. M. Freese & Co., Galion, Ohio, and has a capacity of 25,000 brick per day. They have an excellent supply of clay and splendid shipping facilities.

The S. & W. H. Northrop Lumber Co., of Richmond, Va., has a fine piece of undeveloped clay land, consisting of some 450 acres, twelve miles north of Wilmington, N. C. The property contains an ample supply of fresh running water and sufficient standing timber to cut 15,000 cords of pine wood. In addition to all this, the town of Wilmington presents a good market for the brick. The Northrop Lumber Company writes that brickmaking is out of their line, and they would like to communicate with interested parties.

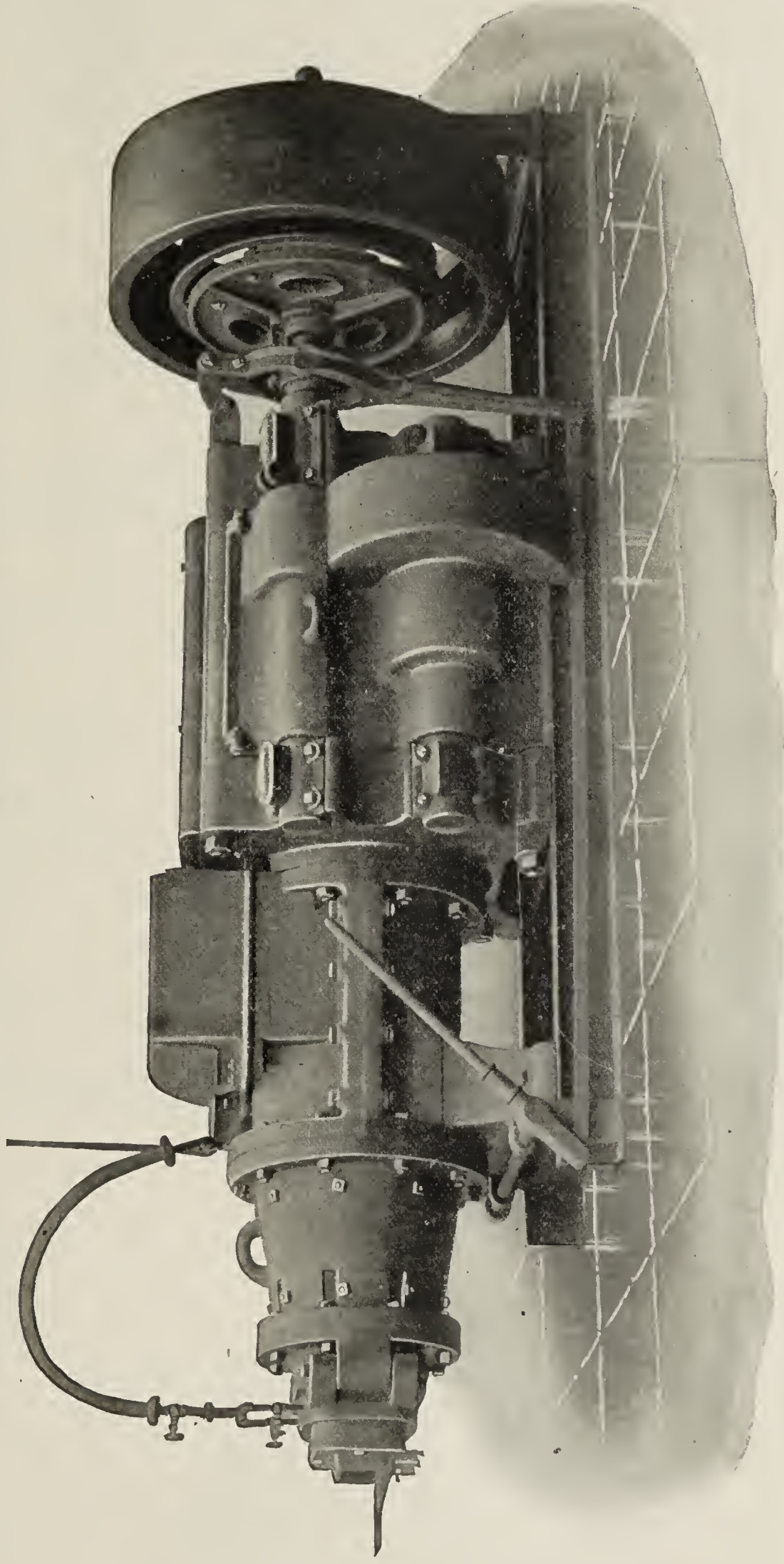
At a recent meeting of the Cheney Brick and Tile Company, of Cheney, Wash., M. F. Prouty was elected president; L. H. Houck, secretary-treasurer, and H. H. Schultz, vice president. The plant has been closed for a year and the mortgagees have foreclosed, but the time of redemption on the part of the company has not expired, and an effort will be made to place the business on a new footing and either sell or operate the plant. Much valuable property, in the way of a site and equipment, is owned by the company.

The Savannah Sand-Lime Brick Company, which operates a large sand-lime brick plant near Eden, Ga., has been placed in the hands of a receiver. Mr. Barron Carter, cashier of the Commercial Bank, of Savannah, Ga., has been named in that capacity. There are said to exist grave differences between the directors of the company and Mr. G. B. Whatley, the secretary and treasurer. Mr. Whatley declines to pay certain sums which he has been directed to pay by the board of directors. They have asked him to resign, but he refuses to do so.

Mr. Max F. Abbe, President of the Abbe Engineering Company, New York City, has just returned after a five months' trip in Europe. He visited England, Belgium, France and Germany. In several of the countries he made contracts for the manufacture of his tube mills and linings under various patents that he owns. In Germany he made a contract with the Fried. Krupp Aktiengesellschaft Grusonwerk, at Magdeburg-Buckau, for the building in the United States of their celebrated Excelsior mills, of which the Krupp people have sold 30,000 in various parts of the world. The Abbe Engineer-

(Continued on page 534).

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

(See ads on pages 578 and 579.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

ing Company will be ready within a month to supply the trade with mills of this type.

Two employes of the Yoke Brick Company, Coffeyville, Kans., were seriously injured by the caving in of a wall of one of the kilns, which collapsed without any warning.

The Friars Point Brick and Tile Manufacturing Company's plant, at Friars Point, Miss., which has been closed down for some time, will resume operations in the near future.

John Harris, of Barron, Wis., has been making experiments with clay from a tract of land at Ladysmith, Wis., and will in all probability establish a plant there in the early spring.

The Gulf States Brick Company, Beaumont, Texas, will change from oil to wood for burning, as they find oil too expensive, and have abundant timber on the company's own land which they will use for fuel.

The Weston Brick Company's plant, at Weston, Ore., has closed down for the winter, after a very successful season. The manager, P. T. Harbour, states that prospects are good for a better demand next year, and they will put the yard in readiness during the winter months to meet it.

The contract for the face brick that will be used in the construction of the large 18-story office and mercantile building, which will be known as the Keenan Building, and which is being erected at the corner of Liberty avenue and Seventh street, Pittsburgh, has been given to the American Enameled Brick and Tile Company, of New York City. These brick are of a mottled white, being spotted just enough to destroy the glare incident to the use of a pure white enameled face brick. This building will be one of the handsomest as well as one of the largest in Pittsburgh.

The Simons Brick Company, of Los Angeles, Cal., furnished 9,000,000 brick for use in the construction of the new outfall sewer at that place. All of these were subject to the requirements of the specifications furnished by the City Engineer. An absorption test of 187 cars from their Laguna yards, certified to by the inspector, showed an average of 3.8 per cent. less than the requirements of the specifications called for. They are now furnishing 4,000,000 of the same brick to be used in the construction of a lateral sewer system on Slauson avenue.

The Chehalis (Wash.) Brick and Tile Company, operated by Messrs. Bickford & Burrows, is moving its drying room to one side of the yard. A new drying room, 40x100 feet in size, will at once be built for immediate use. Tiling will be put throughout the new building and exhaust steam used for drying brick, so that the plant may be operated every day of the year. The company finds ready market for all the brick it can make. Much of the product is used locally for construction work on new brick buildings at Chehalis.

The Luverne Brick and Tile Company, which was recently incorporated at Luverne, Minn., by C. W. Sheriff, John Sheriff, R. B. Hinkly and B. S. Hinkly and took over the brick plant formerly operated by R. B. Hinkly near the Omaha Railway tracks, about one and a half miles from the business part of Luverne, is now engaged in a thorough rebuilding of the old plant and a general remodeling of everything preparatory to the manufacture of tile, brick and other clay products. All of the gentlemen interested are experienced brickmakers.

The Ceramic Supply Company, has been granted a charter by the Secretary of State of West Virginia. The principal office of the new concern will be at Wheeling, W. Va. The company will buy and sell all kinds of materials entering into the manufacture of sanitary, utilitarian and art pottery wares. The organization is composed of representatives of the potteries in the Wheeling, East Liverpool and Eastern districts. The idea is to buy through the one agency the materials for the potteries. The incorporators are: C. W. Franzheim, John H. Taylor, H. A. McNicol, A. M. Haddox, C. H. Cook, John A. Campbell and John Maddock.

William Cushing Brush, a pioneer of Buffalo, N. Y., and senior member of the firm of Brush Bros. Brick Company, died at the family home in Buffalo, October 20. Mr. Brush was eighty-eight years old and had been engaged in the brick business sixty-seven years. In the early forties, Mr. Brush, together with his brother, Alexander Brush, formed the Brush Bros. Brick Company, which is still in existence, having been conducted since 1890 by Wm. Brush and his three sons, Wm. H. Brush, an ex-president of the N. B. M. A., Warren

H. and S. C. Brush. Although advanced in age, Mr. Brush took an active interest in the business, and was at the plant the day before he died.

The stables and a section of the stock sheds of the Miller Brick Company's plant, at Vanport, Pa., were destroyed by fire, which is supposed to have been of incendiary origin.

James Bell, pioneer brick manufacturer, of Clinton, Ill., died at his home in that place October 30, at the advanced age of seventy-four years. He is survived by his wife, three daughters and one son.

The Michigan Enameled Brick and Tile Company is the name of a new company recently organized at Alpena, Mich. W. T. Jones and J. D. Walker are at the head of the company. The work of erecting a factory will begin at once.

The big new plant of the Tennessee Brick and Manufacturing Company, at Chattanooga, Tenn., is now in full operation, turning out 50,000 brick a day. The president of the company, R. B. Henderson, is very proud of the showing made by the plant since the start.

The work on the new plant of the Algodones Pressed Brick and Tile Company, Algodones, Mexico, is progressing satisfactorily. M. L. Schutt is at the head of the concern. A. J. Frank, the manager of the plant, is superintending the work of hauling the heavy machinery ten miles across the country to the plant.

One of the pet projects of Superintendent Frank McDonald, of the Minneapolis, Minn. workhouse, is to establish a brick plant there, in order to prevent a work famine at that institution. It seems that he has discovered a fine deposit of clay that can be utilized for the manufacture of both common and face brick.

The Okmulgee Brick and Mining Company, Okmulgee, Ind. Ter., has completed its plant and will begin the making of brick at once. Its present capacity is 50,000 brick per day, which it is expected to double in the near future. The shale is of excellent quality, and the gas supply used in burning is obtained from the company's own wells.

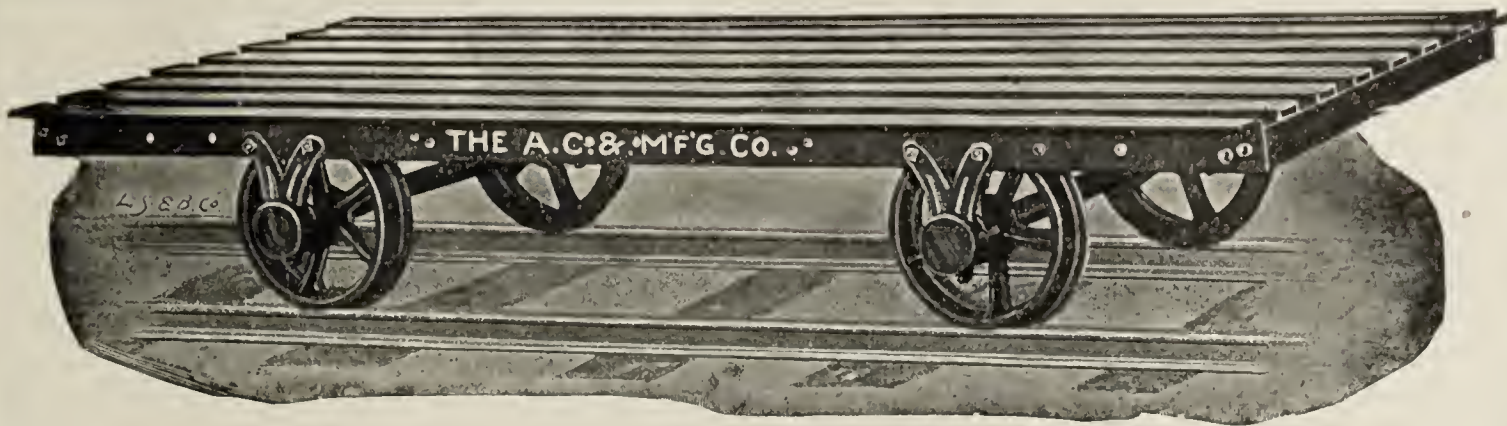
The D. C. Richardson-Taylor Lumber Company is installing a large face brick plant at Mooringsport, fifteen miles north of Shreveport, La., where they have an inexhaustible supply of fine clays. R. H. West, formerly of St. Louis, has charge of the construction of the plant, which is equipped with the American Clay Machinery Company's machines throughout. The brick will be burned with gas from the company's own wells. The capacity of the plant is 50,000 daily.

A MODERN PENNSYLVANIA CLAYWORKING PLANT.

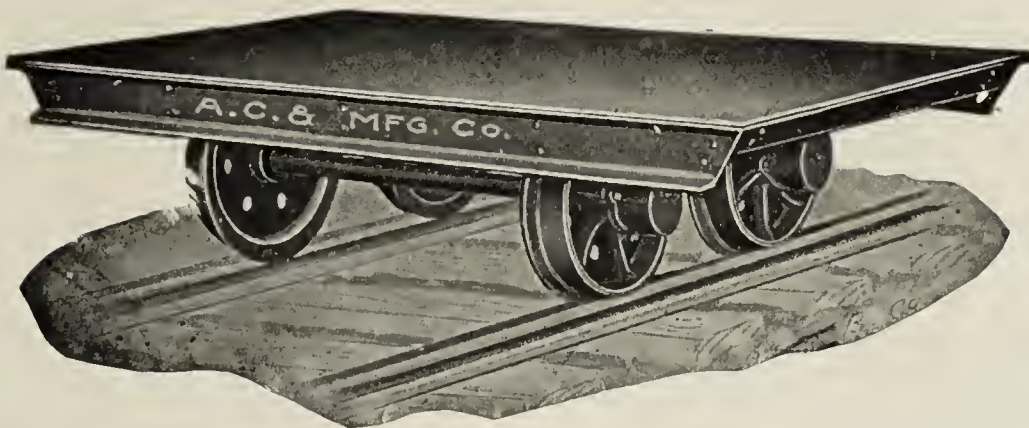
William W. Swengle, formerly identified with brick and clay industries in various parts of the State, is now at Paxtonville, Snyder County, Pa., where he is now identified with the Sunbury Brick Company, which concern is building an immense brick manufacturing plant in that city. The concern was promoted by Mr. Swengle, who first discovered the clays in this vicinity. The concern is capitalized at \$100,000, and is headed by Judge Savage, one of the most highly esteemed men in the county. A. W. Day, also of Paxtonville, is the secretary of the company, and George Shutt is treasurer.

The plant, when fully completed, will be one of the largest and finest equipped in this part of the country. Every modern mechanical apparatus for the speedy and economical manufacture of brick will be used. All machinery will be electrically driven, and a large electrical power plant will be built. Hand labor will be almost entirely eliminated. By means of the apparatus specified for the plant, it is claimed that the concern will be able to effect a saving of \$1.00 to \$1.50 per 1,000, which will in itself be a good dividend.

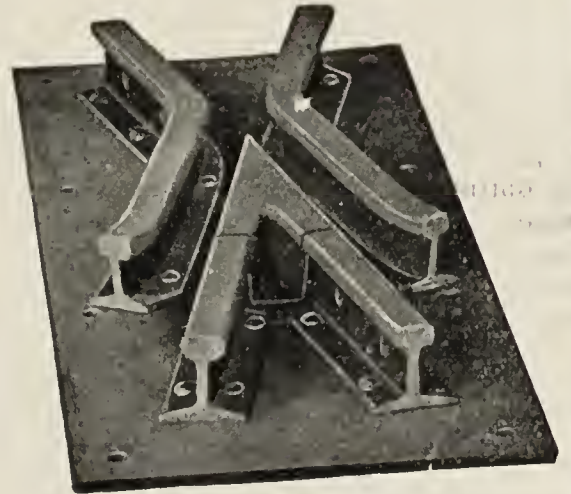
The capacity will be, at the beginning, about 100,000 nine-inch equivalent per day, and this will be increased to double this amount after the plant has been in operation a short time. The company has been awarded a contract for the manufacture of 30,000,000 brick, to be used in the construction of the immense new dam to be built at Shamokin, Pa., and it is anxious to get the plant in operation to start on this order. In the meantime it is the intention of the company to erect another large brick plant near the site of the dam, and this plant will then complete the order, while the plant now under construction will take care of the current orders, which the concern is already assured will be awarded.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

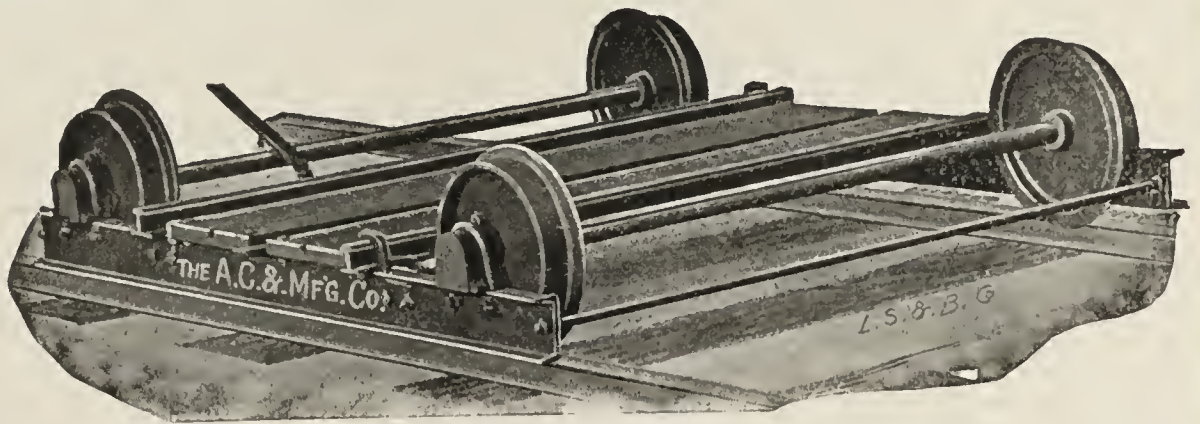
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



FINANCIAL STRINGENCY of the past three weeks is being widely felt in the world of the builder and building material manufacturer and dealer. Unless there is a material brightening in the economic horizon within the next three weeks there will be little early building next season. If there is immediate improvement and resumption of public confidence to an extent that will restore the situation to a normal plane, there is every reason to believe that next season will not differ materially from last, except in so far as orders for winter delivery may be concerned.

On the other hand, of course, should the situation settle down to one of steady depression—hard times in other words—the result would be too unpleasant to contemplate. Chicagoans, however, are optimistic, and, in spite of such signs as there are to the contrary, are of the opinion that next season will prove a good one for the people in the building lines. This optimism is based partly, no doubt, on the splendid summer that has just closed. Many firms report last month as one of the best, and in some cases the very best in their histories, and it is hard for them to believe that these good things have come to a sudden end. But then they advance more logical reasons for their faith in the fact that there have been few or none of the physical phenomena that usually precedes a period of “hard times.” Crops, with the exception of corn, have been fairly good this year, and while the corn crop has been a disappointment this yield cannot be termed a failure in any sense of the word. Neither are there indications of over-production. The crux of the whole trouble is held in building circles to lie in the fact that the credit margin, the country over, has been too broad for the supply of actual currency, and artificial remedies are looked for generally to restore the business world to a sound basis.

Taking the situation as it actually exists, however, and disregarding the extreme optimists, a marked reduction in speculative building enterprises may be looked for. Comparatively few buildings will be put up on loans—practically none, if money stays up where it has been, of course—and this means that the general character of the constructive work in Chicago will lose through lack of new big buildings, for the erection of which it is almost always necessary to float large loans. If things remain in statu quo it will be the chap with the ready money to spare that will indulge in building activity. Indications point, too, to a drop in the price of labor and materials unless there is relief before long, and while this will make it hard for folk in general it will be pie and nuts for the chap who has hoarded a little ready cash to use on the other fellow's rainy day.

It seems to have taken the present epidemic of currency “grippe” longer to get hold of the building market than of any other industry in the city. The panic—so-called—broke here on October 22. The week before had been a banner week so far as new plans were concerned. In fact, more business was actually projected that week than had been planned since the middle of August. The flurry in stock exchange and banking circles produced absolutely no excitement among the trade here, and in fact it has only been within the past few days that any tendency toward cancellation of orders has developed. When it is stated that most of these “cancellations” have amounted merely to requests for delay, it will be seen that everything considered there is far more cause for encouragement than for despair. Some of the enterprises planned, of course, will go right ahead anyhow.

Such an enterprise is that of the remodeling of the New Southern hotel, Dowie's one time college building and dormitory at Thirteenth street and Michigan avenue. It is expected that this work will proceed as originally intended. The S. S. Kimbell Company have the contract for furnishing about 80,000 Purington purple continental front brick for this job.

A pretty piece of work in brick exteriors is being put into

the new Cribside hospital, a charitable creche or day nursery, at Orchard street and Fullerton avenue on the North side. The architecture of the building is quaint, of Colonial type, and quite out of the ordinary for its use, and the brick work is in perfect keeping. Holabird & Roach, the architects, sought something in the style of the Flemish bond, now said to be popular in the East. Thirty thousand red and black Continentals are being furnished by the S. S. Kimbell Company. The red brick are laid in stretcher courses set off by the black “headers,” so arranged as to form a regular and pleasing pattern on the wall. The joints are to be white. The same dealers have the contract for 50,000 Coshocton repress brown brick for a new city hall in East Chicago. In the same neighborhood as the Cribside creche the Purington Continentals have been used in the University Hospital, West Congress and Lincoln streets—a 60,000 job, and for the power house which is to supply heat to the aforementioned infirmaries and to the Porter Memorial Hospital a short block away.

The Bonner & Marshall Company report continued popularity for their Oriental brick. They have an order for 50,000 to be used in the residence of M. B. Pine, manager for the Singer Sewing Machine Company, at South Bend, Indiana, and a somewhat larger order for an apartment house in Chicago at Fifty-third street and Monroe avenue.

More attention than ever is being given by park architects to the field houses in the small parks, and as they tend to make them more and more durable, sanitary and beautiful, the number of brick-constructed park buildings increases. Orientals and No. 13 Colonials are being used in the new golf house in Humboldt Park. Upwards of 100,000 No. 13 Colonials are being used in a new field house at West Chicago avenue and Noble street on the Northwest side, and in Garfield Park the Orientals and the No. 13s are going into the walls and the artistic gateways about the new rose gardens.

It looks, however, as though the field house in the new small park at Elm and Sedgwick streets, is going to carry off the palm for field houses of brick construction. Perkins & Hamilton, the Lincoln Park architects, have prepared the graceful lines into which the dark Orientals from Bonner & Marchall Company fit like a rich covering of tapestry for the exterior. The interior, however, is also in brick. The S. S. Kimbell Company have the contract for this work and are furnishing 25,000 Brazil glazed brick for the six feet of rich brown wainscoting from the floor up. Then comes a header course in black, and above this comes the buff, vitrified Cayuga brick to the ceiling, 170,000 being called for in this part of the interior work. The topic of the new park houses that are being erected and some of the pioneers in this line is worthy of special treatment, but it is sufficient to say that the superiority of brick over other material is in no line better demonstrated than in this.

The more work there is done in interiors in brick, the more ingenuity we find displayed. In planning still another park house on the North Side which is expected to come along in a few months, a picture mold was called for. The architects thought that wood would not be in perfect keeping with the brick walls and trimmings, and it was found that a special mold of brick could be made that would carry the picture rail on its face.

Another job in which the Purington purple continentals are to figure is the Ryerson office and warehouse at West Sixteenth and Rockwell streets, 200,000 being used.

The Chicago Housewrecking Company is planning in spite of the financial situation to erect another warehouse in Thirty-fifth street near Ashland avenue. It will be of brick and fire-proof construction throughout, it is understood, and will be fully as large as the present warehouse of the concern, which is rapidly extending its business.

SCRIP.

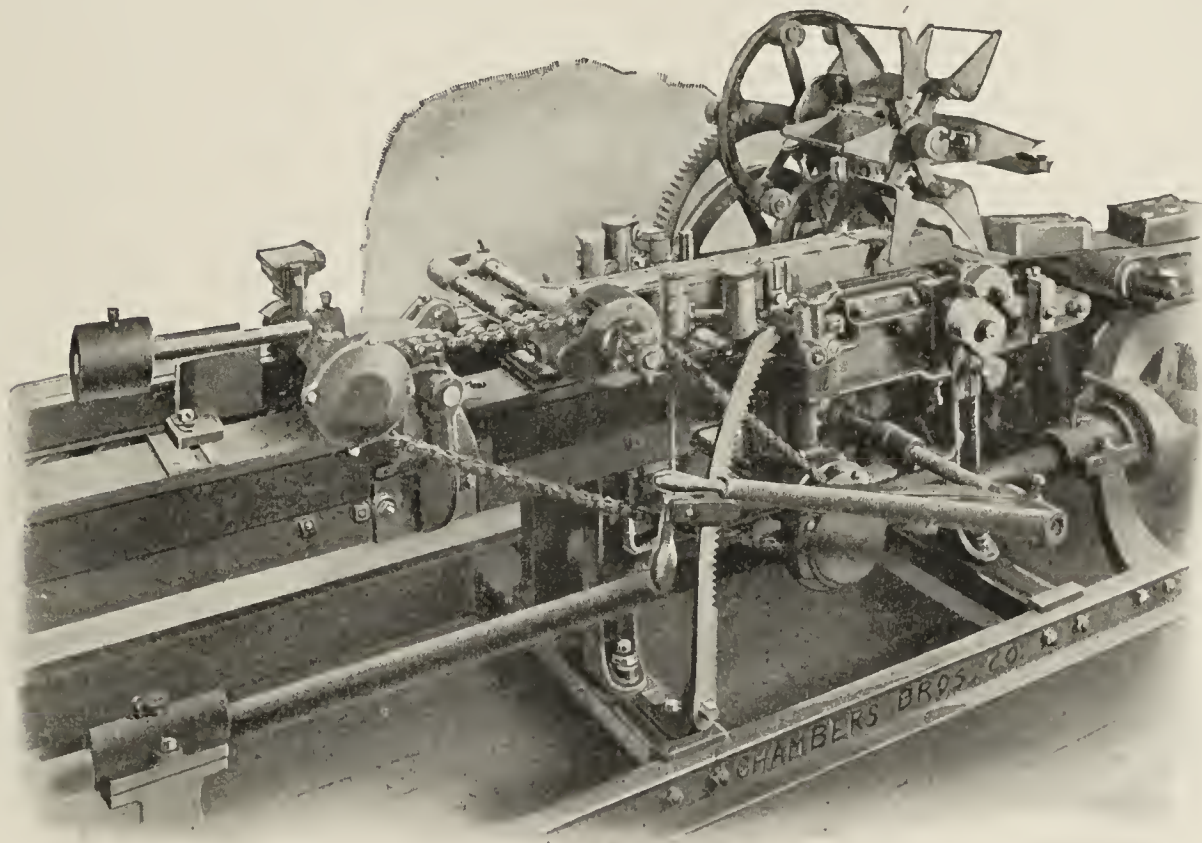
GLASS FRONT SKYSCRAPER.

Ex-Alderman Louis Minsky and Martin Engel, of New York City, have instructed Fred Ebeling, an architect, to prepare plans for a glass skyscraper which they will erect at No. 43 Second avenue. The building will be twelve stories high, and the entire front will be of glass enclosed in steel framework. As the lot is only 22x100 the structure will look like a tower of glass.—Ex.

PAVING BRICK MACHINERY.



Round Corner Pavers Without Repressing.



The Round Corner Cutter Greatly Improved.

Ribbed brick with grooves for cement produced by the new Automatic Indenting Cutter.

CHAMBERS BROTHERS COMPANY

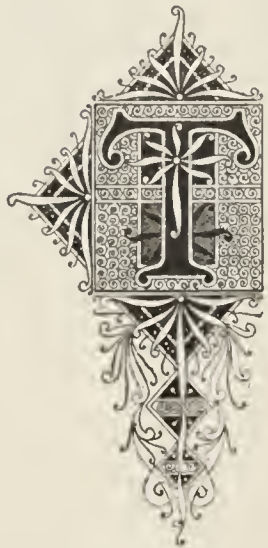
Fifty-Second and Media Streets, Philadelphia, Pa., U. S. A.

59 West Jackson Boulevard, Chicago.

SEE AD ON PAGE 497.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



HOSE WHO are engaged in the sale of building material are predicting a very dull season for the balance of this year and until spring of next year, and it appears that they have good grounds for the foundation of this prediction. At the same time the cause of this dull spell will be the assurance of a good season next year, according to some authorities. In other words, the financial depression, which is going to cause the dropping of building projects for a time, will cause more building projects to be started a little later, after money settles down again,

for many people would prefer putting their money into realty mortgages, which represent a property which can be seen and felt of, than to put it back into stocks again. In fact it is the history of past financial flurries of the kind which we have just had, that those who lose money in stocks are sure to hunt up realty investments or place their money in realty mortgages, when they invest again, on account of the feeling that the security is of the very best. The coming year there is every reason to suppose will be no exception, and when people look for a place to loan money or invest in real estate they generally go to the part of the country having the most prosperity, and that means out this way, so there would be nothing surprising if our building development next year was exceptionally large.

Just at the present time it is reported that nothing is in prospect. Most of the larger buildings started this year are well along towards completion, and the demand for brick from that source will soon be over, and the brick men will be ready to supply brick on new contracts, and that is the point where the dull times are expected, for new contracts will probably be very scarce. In fact some of the Kansas brick yards are already anticipating this time by trying to contract large quantities of brick for future delivery, at a greatly reduced price, even sending out circular letters to that effect to builders, and not being satisfied with trying to reach dealers, they are willing to pare down the price a good deal in order that they can continue to run regularly, and it seems apparent that brick prices will be low while the demand is slack.

It is stated on good authority that ninety per cent. of the building being done in this city at the present time is on loans, and it is apparent that with this tightening of the money market the loans will not be forthcoming unless contracts have been already signed. This is where the delay in building will occur, and what will make the dull season. If people with money to invest were able to handle it as they wished, the building loans would probably continue to come to the front as needed.

The admission of Oklahoma to statehood is going to have a good effect on building operations down that way, and the completion of the pipe line to the gulf will be a factor. This pipe line has been in operation now for several weeks, and is giving a market for a great deal of oil that could not be marketed before, and with an open market the Indian Territory oil producers will soon have so much money that they will be interested in building up the cities, and spreading out in all kinds of building operations. In fact there would be nothing surprising to see a steady building business in Oklahoma and Indian Territory throughout the winter, and brick men will do well to turn their attention in that direction for a market, especially Kansas brick producers.

To the present time there seems to have been no let-up on paving, for the demand for paving brick is very strong, and everything indicates that it will hold up right through

the winter, for most cities have already taken the necessary steps to raise their money for paving, and do not have to wait for any loosening up of the money market to go ahead. In fact their worst trouble is in getting the paving brick, and there could be no better indication of this fact than that they are already letting contracts, to be paved as soon as the brick can be supplied, and no definite date set for the supplying. If all brick plants in this part of the country were making a good paving brick, there would be little prospect of shut-downs, for the plants making a good paving brick are also pretty well supplied with orders for building brick, as vitrified brick is in great demand for building purposes. Of course the gas burned vitrified brick is exceptionally fine for the building business, and one brick manufacturer declared a few days ago that he believed 75 per cent. of the brick being put into buildings in this city this year was vitrified brick. He probably guessed a little heavy, but a drive over the city is what he was basing his guess on. It then looks like all of it was of the vitrified kind.

The building permits for the month of October were more numerous, and the estimated value was greater than for the same month of last year, the total number of permits being 384 as compared with 370, and the total value was \$951,710, as compared with \$764,700, and of this amount \$553,900 was for the construction of thirty-eight brick buildings.

Strange as it may seem, Kansas City has been wanting to let a contract for brick pavement, and can not do so. The paving companies have for a good while wanted to put in paving here, but could not get together on it, and now that the demand for pavers is so great that all are contracted for a while ahead, the people on Twelfth street, which is to be paved right away, are calling for brick instead of either asphalt or sandstone blocks. A petition has been circulated for sandstone blocks, but almost everyone signing it has protested that he would rather have the street paved with brick, but would rather have the sandstone than asphalt. The ordinance for this paving throws it open to sandstone blocks, creosoted blocks, asphalt or brick. To complicate the situation, the man who was circulating the sandstone petition is now out with an asphalt petition, and states that the sandstone people had made a contract to give a monopoly of their sandstone to one Kansas City firm. It is a shame, now that things are in this condition, that some good brick company does not step into the field and get the contract, and lay a pavement that can be looked upon as a model for years. It would mean the enlargement of the market for brick at a later date, when it may be badly needed.

The Pittsburg Brick Company is preparing to enlarge its plant in Pittsburg, Kas., by adding a new brick machine and enlarging other parts of the plant to take care of the extra product.

K. A. W.

WILL REBUILD PLANT.

The works of the Rochester Composite Brick Company, Rochester, N. Y., were almost entirely destroyed by fire some time ago, but the management resolved to rebuild the works on a more extensive scale so that the new plant will probably be one of the largest in the United States.

The contract for designing, engineering and reconstructing the works was awarded to the National Brick Machinery Company, of Chicago, Ill., whose advertisement of their brick press appears on page 478 of this issue. One of the latter company's six-mold machines was installed in the works of the Rochester Composite Brick Company some time previous to the fire, but fortunately it was not damaged beyond repair, and the National Brick Machinery Company received the contract for not only repairing the six-mold press that was exposed to the fire, but also received an order for a new one, to be exactly the same as the press previously supplied. This was "a feather in the cap" of the National Brick Machinery Company and showed that the appreciation of their six-mold press by the Rochester company induced the latter to order another one just like it.

For desirable situations, read THE CLAY-WORKER "Want" ads.

Supposin'

Suppose, first, that you have a brick plant; that this brick plant, we will say, is making money, and that you are fairly well pleased with your product and your business in general. Now comes a man or a concern who offers to send a practical expert to your yard to study your case and point out to you such defects or leakages which, no matter how careful an observer you may have been, may have escaped your eye. Now, just suppose this man's sojourn should result in your making some simple change which might increase your profits by decreasing your cost of production, or improving the quality of your product to the extent of from eight to forty cents a thousand. Just suppose all of this.

Wouldn't it pay you?

Luce Engineering Company

Commonwealth Trust Building

Saint Louis, Missouri

Written for THE CLAY-WORKER.

NEW YORK AND VICINITY.



BUSINESS IN New York has not changed much during the past month. Sales have been made in a general way at about the same prices as previously reported. Buyers have been conservative in placing orders, but as a whole there has been fairly liberal buying. Shipments from up the Hudson have about ended for the season, excepting such as are required to supply the demand for winter work and leave a few for the opening of trade in the spring. The quantity held over last spring was light, but this spring it is hoped that holders here will be in better position to do business when the demand opens. Consumption during the coming season promises to be quite as heavy as it was last season. At any rate dealers are under the impression that there will be plenty of business when the new season opens.

The financial difficulties, created by the New York bankers, have made some trouble for brick dealers, though manufacturers have not felt the pinch very much. They have passed the season when it will trouble them. If there is any difficulty for them it will come next year after the season opens. The market may suffer some then, though it is hoped that it will not. The artificial panic which the bankers and so-called financiers have caused, partly to discredit the political powers at Washington and partly to line their own pockets, may curtail operations next season. The reduction of work on the Pennsylvania railroad improvements will not make any difference with the quantity of brick used.

Houghtaling & Wittpen are making a bid for business in some very attractive advertising in which they call special attention to their terra cotta bricks made at their own works which they are furnishing in any surface as desired. They mention specifically white, cream, light gray, dark gray, speckled white, speckled cream and light and dark gray speckled. Special shades will be made to order at any time, and they will be made to match almost any color scheme. Attention is called to the fact that terra cotta bricks have been

used in some of the more prominent buildings in New York and always with satisfaction to the builder and those who must look at the building. The firm also handles impervious mud front brick and the famous Kittanning brick, made by the Kittanning Clay Products Company, in white, blue, light gray, cream, blue gray and buff shades. They handle the red brick made by the Tuna Valley Pressed Brick Company from the well-known Bradford shale. They are sorted to fourteen distinct shades, varying from a deep red wine color to a bright cherry red, and are made in standard and Roman shapes. In addition they have mottled or Pompeian bricks, Harvard bricks, and make a specialty of paving blocks and brick. The combination is sufficient to attract any buyer, and it is not surprising that the firm is doing an increasing business.

The closing of the yards on the Hudson and the cessation of active business indicates that the approach of winter will send brickmakers to retirement shortly. Most of the yards are already in shape for the winter, though they could have made brick up to the present had they so desired. Few freezing nights have been noted yet and the weather has been generally clear. Rains have been comparatively few, and then not serious. The situation has been materially improved, however, by the cessation of manufacture and the condition of the market next spring will be enough better to warrant the change. There is a feeling that the circumstances under which the agreement was reached to cease operation in October were sufficient to create almost any degree of conservatism. It has been wise to do this, since by stopping manufacture the supply has been reduced and prices have been maintained on a firmer basis.

Prices of brick in the New York market have declined some recently. The last reduction was 50 cents, and leaves the price as follows: Front buffs No. 1, \$32.00; grays, shaded and speckled, \$32.00; white No. 1, \$32.00; Hudson river common, \$5.50@6.00; light, hard, \$4.50@5.00; pale, \$3.50@4.00; No. 1 fire, American, \$25.00; No. 2 fire, American, \$20.00; Scotch, \$35.00.

It is said that the Mason Builders' Association, of New York, has decided not to reduce the wages of the workmen from 70 cents an hour when the present agreement expires, January 1, notwithstanding half the workmen are idle at present, and the building prospects for 1908 are anything but satisfactory.

BURTON.

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E. WUERZ Kiln & Chimney Construction Co.



197 Havemeyer St.,
Brooklyn, N. Y.

KILNS for firing Brick, Lime,
Cement and Porcelain.

MUFFLE KILNS for Glaz-
ing and Enameling Brick.

CHIMNEYS with radial and
common brick, round or
square.

Old chimneys straightened,
pointed or bent without incon-
veniencing or delaying opera-
tions.

Estimates cheerfully fur-
nished on application.

Agents Wanted.

An Emergency Accident Cabinet

Free On 90 Days Trial

FOUR OF OUR
CABINETS for
FACTORY,
SHOP,
HOME, and
TRAVELER

FACTORY SIZE contains 150 yards of bandages of
various widths and 34 other articles liable to be needed
in case of accident.
Price, \$9.50. Sent on approval.

HOUSEHOLD SIZE contains 18 articles for First
Aid. No home can afford to be without one. Price, \$2.00.

Ready Reference Chart sent with all cabinets shows
at glance how to treat all cases until doctor arrives.

Agents wanted to handle these fast selling necessities.

The Accident Cabinet Co., Kalamazoo, Mich.

WANTED, FOR SALE, ETC.

WANTED—One hundred second-hand
double-deck dryer cars, track, transfer
cars, etc., for six-track dryer. Address,
BRICK YARD,
11 1 d North Madison, Ind.

FOR SALE—One 9 ft. Bonnot dry pan, used
six months; one 40 h. p. Skinner engine,
fair order; one No. 6 Clark hand cut-
off table. Address,
GOTEBO BRICK CO.,
11 2 cm Gotebo, Okla.

WANTED.

Have you a brick or brick and tile plant,
well located, and need a manager? I will
take charge and furnish the capital to
operate same for share of profits. Twelve
years experience. Address B,
11 1 cm Care Clay-Worker.

FOR SALE OR LEASE—A brickyard in
good running order, or will take partner.
Twenty-five acres of best material. Rail-
road switch 2,000 feet long on property. On
line of New York and Long Branch Rail-
road. Address C. E. CLOSE,
11 1 dm Matawan, N. J.

DRY PRESSES FOR SALE.

One 2-mold U. S. brick press. One 2-mold
Boyd brick press. One 4-mold brick press
of standard make. One 3-mold Andrus
brick press. Dry pan, pulverizer, screen
and transmission. One set of plates for 7-
foot wet pan. 1,000 horse power Corliss en-
gine and boilers. B-K BRICK CO.,
9 tf d Denver, Colo.

FOR SALE—A 75 h. p. gas engine, com-
plete with air tank and gasometer, in
good condition. Let go cheap if sold at
once. Address
RAY,
9 3 L Care Clay-Worker.

FOR SALE—Sixty thousand dollar brick
plant, center gas and shale belt. Good
railroad facilities and business. Write,
FRED PFENDLER, Homestead Bldg.,
10 3 cm Muskogee, Ind. Ter.

FOR SALE—An up-to-date dry press brick
plant, Fernholtz machinery, with 20 acres
of fine clay. Plant well located and doing
a nice business. Can be bought at a bar-
gain. Write to
W. T. PITTS,
10 2 dm Indianola, Miss.

FOR SALE—Within 100 miles of the City
of Chicago, 60 acres of the best Illinois
fire clay and shale land. Will join party
in erecting plant or sell outright. This is
worthy of thorough investigation. Address,
8 6 d G. A. R., care Clay-Worker.

FOR SALE—Up-to-date dry pressed brick
plant, practically new; down draft kiln;
red shale bank. Two railroads and canal.
New York State; \$5,000 to a quick pur-
chaser. Cost nearly three times that
amount. Best of reasons for selling.
P. T. M.,
11 1 cm Care Clay-Worker.

FOR SALE—Two brick and tile machines,
Nos. 9 and 10 Brewer. Have made 5,000
per hour on No. 9 and 10,000 on No. 10. All
in good condition. Reason for selling, clay
not suitable for stiff mud process. Will
change to dry press. Address,
D. A. LAYTON,
7 tf d Marion, S. C.

FOR SALE—One three-mold Andrus dry
press; one American two-roll crusher,
corrugated rolls; one Raymond hand re-
press. All in good condition. Address,
MILLER & SON,
11 1 cm Clermont, Ia.

FOR SALE CHEAP.

Freese A1 combined union machine and
cutter. Thirty thousand capacity. One
sixty h. p. engine and two pumps. One
five tunnel Iron Clad Dryer. Address,
J. W. WELLS & BRO.
11 2 c Chattanooga, Tenn.

FOR SALE—Up-to-date dry press brick
plant in a growing town; 16 acres fine
clay; capacity 20,000 per day. Sale for
all that be made and good prices. Good
reason for selling. Address,
GIVENS BRICK CO.,
11 1 cm Providence, Ky.

FOR SALE—One 14 h. p. traction engine;
one all iron Quaker brick machine, steam
power; three trucks; 21 panel bottom
cherry molds, all in No. 1 condition and
good for several million brick. Cheap for
cash. Address,
GEO. H. JENKINS,
11 1 d Monona, Iowa.

TO LEASE—Former brickyard site of the
Middlesex Brick and Tile Company, on
shore of Pentwater Lake, Michigan. Cham-
bers machine. Railroad and government
harbor. Abundance of clay adjoining
plant makes fine white brick. Cheap labor.
Also marl deposit. Address,
C. MEARS, 345 Ohio street,
10 3 cm Chicago, Ill.
Continued on next page.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

WANTED—A tallings grinder; Williams preferred. State price and condition of machine. BENTON BRICK CO.,
11 1 c Benton, Ill.

WANTED.

A man to make himself generally useful. One who can make a plaster mold, experiment with glazes, enamels, clays and repair kilns. Address, X. Y.,
10 3 1 Care Clay-Worker.

WANTED.

We are in the market for a second-hand heating apparatus, fan, etc., and coil containing about eight or ten thousand feet of one-inch pipe. Address,
SOUTHERN BRICK AND TILE CO.,
10 3 d Louisville, Ky.

ASTORIA—One of best places in whole country to establish brickmaking plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brickmaking plant within 100 miles. Chamber of Commerce, room 200, Astoria, Oregon.
11 1 dm

WANTED.

Man to take charge of dry pressed and stiff mud brickyard that works all the year. Must thoroughly understand the business, and have all references showing that he not only understands the business, but can handle men successfully. Plant is located west of Rocky mountains. Fine climate, growing country and growing plant.
Address, KANE,
11 2 d Care Clay-Worker.

BRICK PLANT WANTED AT JACKSONVILLE, ILL.

One of the best places in the whole country to establish a small up-to-date, modern brick plant. Local consumption 3,000,000 annually. Abundance of good clay; no competition. Will give detailed information upon application to the JACKSONVILLE BUSINESS MEN'S ASSOCIATION,
11 3 dm Jacksonville, Ill.

FOR SALE—ENGINES AND BOILERS.

4 72x18 horizontal tubular, high pressure.
1 84x18 horizontal tubular, standard.
1 78x16 horizontal tubular, standard.
1 72x16 horizontal tubular, standard.
5 72x16 horizontal tubular, standard.
1 66x16 horizontal tubular, high pressure.
3 60x16 horizontal tubular, standard.
1 60x18 6-inch rivetted flue, standard.
Sixty others, all styles and sizes.

ENGINES.

20x48 Wheelock.
18x42 Hamilton.
18x36 Wright.
16x32 Buckeye.
18x26 H. S. & G.
16x20 Brownell.
14x20 Atlas.
14x14 Vertical.

Forty others, all sizes and styles.

Also pumps, heaters, tanks, saw mills and general machinery. Send us specifications of your wants.

THE RANDLE MACHINERY CO.,
1735 Powers St.,
7 tf d Cincinnati, Ohio.

FOR SALE—Valuable patent kiln and waste heat system. Owner has no time to handle same. Address, W. N. W.,
11 cm Care Clay-Worker.

FOR SALE—An up-to-date red clay building brick plant in Central Pennsylvania. Capacity 25,000 daily. Ready sale for more than entire output. Good shale near by. A money-making proposition for experienced brickmaker. Excellent reasons for selling. Full particulars by addressing, O,
11 1 d Care Clay-Worker.

FOR SALE.

My tile plant, located in the village of New Bremen, a prosperous town of 2,000 population. The plant is in first-class condition and on paying basis. Will sell very reasonable and give very liberal terms owing to ill health. Address,
J. C. STEINEMANN,
10 1 cm New Bremen, Ohio.

SITUATION WANTED—As bookkeeper, general office man or traveling salesman, by young man experienced in the tile business. A high school and business college graduate. Competent to handle the entire office work, and have had very good success as a brick and tile salesman while on the road. Best references, salary reasonable. Address IOWA,
11 1 d Care Clay-Worker.

FOR SALE.

One steam power and one h. p. soft clay machines.
One feed water boiler heater.
A number of dryer cars.
Two second-hand dump carts, practically as good as new.
All of the above in first-class condition. Address,
THE HORTON MANUFACTURING CO.,
6 tf L Painesville, Ohio.

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH,
5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE.

In accordance with a decree of the Circuit Court for the City of Williamsburg and County of James City, entered in the Chancery Cause of A. Heaton et al., vs. the Williamsburg Brick Co., Inc., I will sell at public auction to the highest bidder on the premises, near Williamsburg, Va., on December 7th, 1907, at 12 o'clock, m., a valuable brick plant, consisting of 20 acres of clay land; one stiff mud 25,000 capacity brick plant complete; one soft mud (Henry Martin) 50,000 capacity and consisting of 100 h. p. boiler, 50 h. p. engine, disintegrator, pug mill and brick machine, and latest type steam dryer. Perfect and complete in every detail and not used more than 20 days. Dwellings and employes quarters, with best shipping facilities, within 30 miles of cities using 100 million brick annually. Terms one-third or as much more as purchaser may elect to pay cash, balance six and twelve months. Address,

FRANK ARMISTEAD,
Trustee and Special Commissioner,
11 1 dm Williamsburg, Va.

FOR SALE.

One 75 h.p. Brownell Engine.
One 80 h.p. Brownell Boiler.
Three 10 Ft. Freese Pug Mills.
Three 14 Ft. Freese Pug Mills.
In good condition. Immediate shipment.
FRUIN & COLNON,
615 Merchants-Laclede Bldg.
11 3 cm St. Louis, Mo.

CASH FOR YOUR BUSINESS OR REAL ESTATE.

If you want to sell, send me full description and price. Confidential. Established 1881. I bring buyer and seller together. If you want to buy, sell or exchange any kind of business or real estate, anywhere at any price, address

FRANK P. CLEVELAND,
965 Adams Express Building,
11 tf d Chicago, Ill.

FOR SALE.

My tile factory, located at Barnard, Ind. We have ready sale for all tile on yard at good prices. Have Stewart Kiln and large new dry sheds, J. D. Fate Machine and automatic cutting table.

JOHN C. HILL,
11 3 cm Barnard, Ind.

WANTED.

By one of the largest face brick, fire brick, common brick and pottery plants in the South. First class help of all kinds.

For our face and fire brick plants we want first class pressman, setters, tossers, burners and laborers of all kinds; also men that are handy with the trowel on repair work around kilns.

For our pottery plant we want first class jolly men, pressers and turners for majolica ware.

We have a fine climate the year round, no cold weather, pleasant surroundings, and our superintendents are all northern men.

To good men that understand their business we can offer good inducements and steady work all the year around.

Address with experience, wages expected, etc. to SOUTH,
9 3 dm Care Clay-Worker.

Wanted SUPERINTENDENT

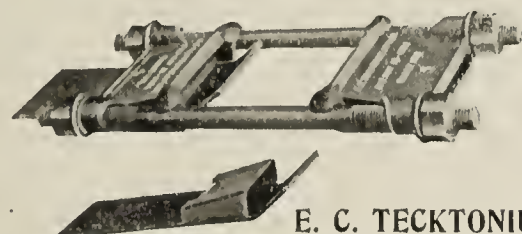
For a Stiff Mud Brickyard.
Permanent position. Good location in

CALIFORNIA.

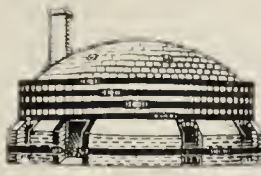
In reply state experience, age, wages desired, and when could accept position.

Address FRESNO,
Care Clay-Worker.

Philadelphia **LINK-BELT COMPANY** Indianapolis
 New York St. Louis Chicago Denver Pittsburgh
CONVEYING & POWER-TRANSMITTING MACHINERY



The Best and Cheapest
BAND LUG
 on the market.
 Write us for price.
 E. C. TECKTONIUS MFG. CO., Racine, Wis.



TO PRODUCE POTTERY ECONOMICALLY
 USE

CROSSLEY MACHINERY

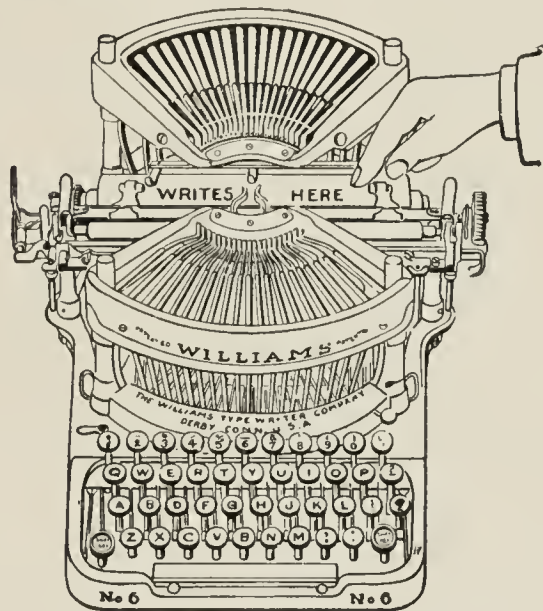
THE CROSSLEY MFG. CO.
 TRENTON, N. J.

SEEING

Saves the beginner time when learning.

Saves the learned time when beginning.

New
 Number
 Six
 Visible
 Writer



Saves time, energy,
 worry and money.

Gives speed, simplic-
 ity and beautiful work.
 Single shift. Strictly
 visible writing.

Old machines of any
 make taken in trade.

The Williams is sold
 under a positive guar-
 antee and on easy
 terms.

If you want the best
 value in a typewriter
 ever offered, write us.

Williams Typewriter Agency,

Indiana Agency, 221 East Ohio Street, Indianapolis, Ind.

Home Office and Factory,
 Derby, Conn.

Old Machines Taken in Trade.

FOR SALE.

Well equipped fireproofing, tile and brick
 plant near Portland, Ore., runs the entire
 year. Will take the entire output of plant
 at a good price per 1,000; \$6,000 needed
 to handle this plant. Best of reasons for
 selling. Address, C. E. FULLER,
 8 tf d 374 Water st., Portland, Ore.

WANTED—Position as superintendent with
 a good reliable brick company. Am at
 present employed making buff face and fire
 brick by stiff mud process. Have also long
 experience making high-grade fire clay
 goods, also hollowware. Address,
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 Plant equipped throughout with modern ma-
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 dryer sheds, machine shop, barns, boarding
 house for employes. Everything in first
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STEAM SHOVELS, CARS, LOCOMO-
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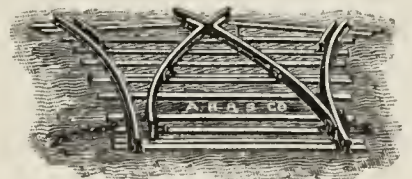
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Right and left hand one, two and three way
 switches of various gauges, radius and weight
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THE ATLAS CAR & MFG. CO.,

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Continued on page 550.

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Consulting Engineers and Factory Architects.

Manufacturers of Controlling Apparatus and Special Machinery.

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The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Clay Glazes and Enamels, by Henry R. Griffen. Price \$5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application.

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A valuable and reliable treatise on the origin of clay, chemical and physical properties, kinds of clay, methods of mining and manufacture and distribution of clay in the United States, including a chapter devoted to Fuller's Earth, its distribution in the United States, mining and uses, etc. The book is well illustrated, which adds much to its value.

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A review of present practice in the manufacture, testing and uses of Vitrified Paving Brick.

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A manual for all engaged in the manufacture of articles from clay, containing chapters devoted to Materials Used in Clayworking, Preparation of the Clay, Machinery, Transport, Conveyors, etc., Drying and Dryers, Engobing and Glazing, Setting or Charging, Kilns, Firing, Discharging, Sorting, Packing and Dispatching, Defects, Tests, Analysis, etc., etc.

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This is the heaviest Press of the kind on the market.

It has great weight, great strength, rigidity and accuracy. The massive side frames, securely tied together, make a frame in every way ample.

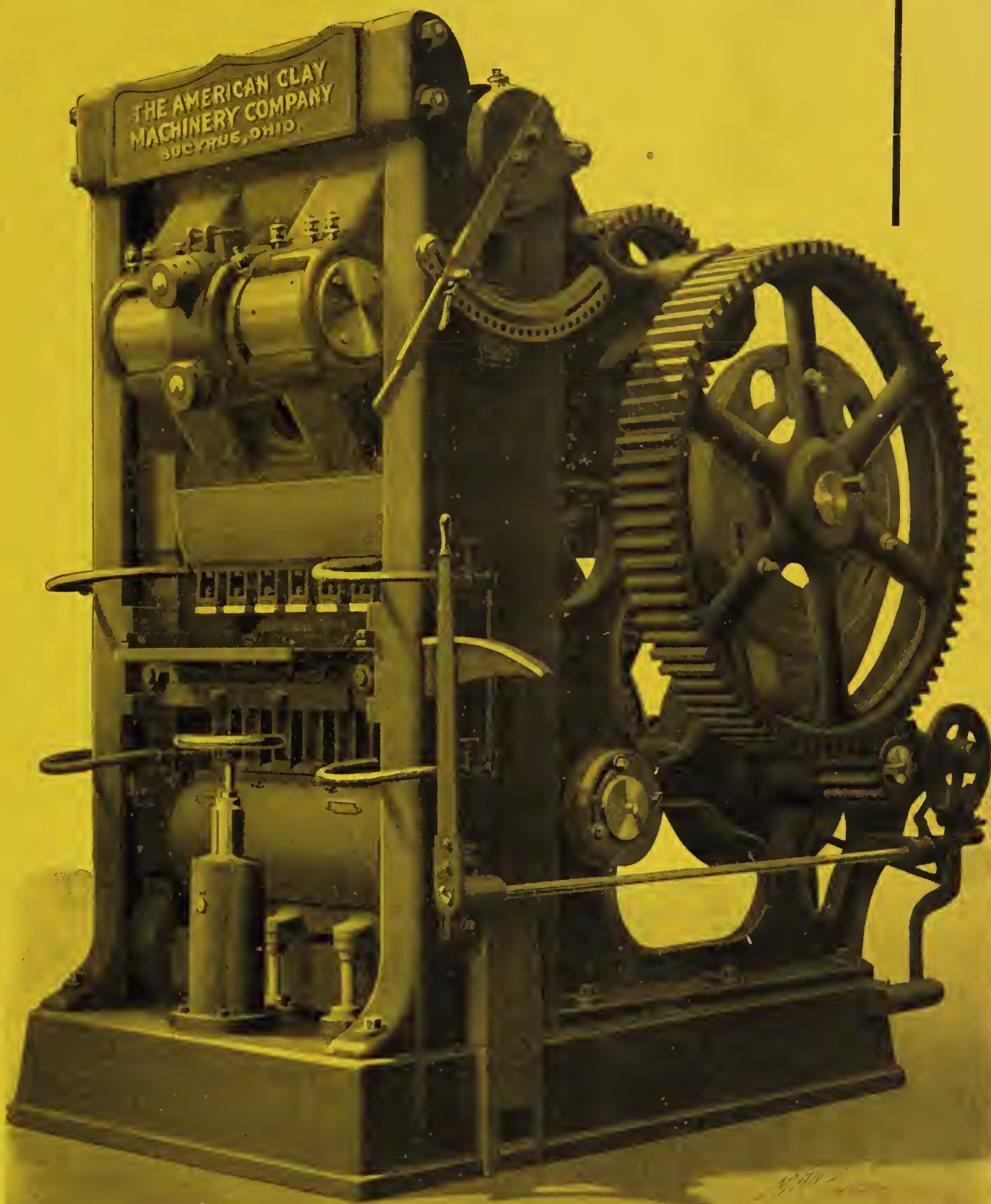
The shafting is of forged steel, made in our own forging shops.

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The feed is adjustable. The pressure mechanism is designed to give a long dwelling pressure. There is no press of better quality or that will produce more or better brick.

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Being the largest Manufacturers of Clayworking Machinery in the World we are better equipped than others to supply your every need, in every line of Clay Manufacturing.



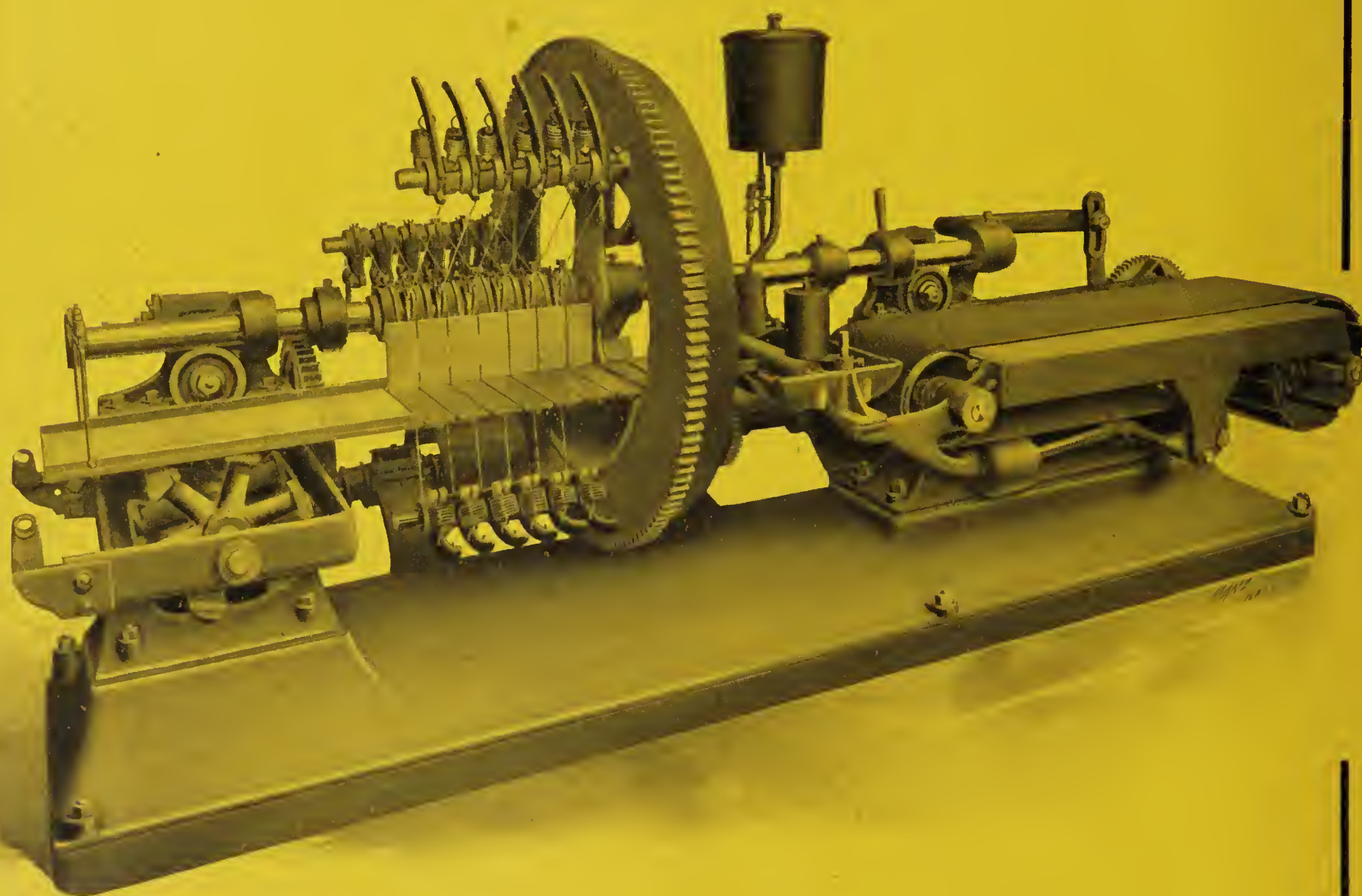
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The American Clay Machinery Co.,
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No. 96 Automatic Three Wire Cutting Table



Our new No. 96 Cutter is designed to meet the demand for an automatic cutter with all the advantageous features of the Celebrated No. 25 Cutter but of greater capacity. Our successful method of reversing the movement of the table makes it possible to increase the number of cuts per minute and we have given the No. 96 cutter an extra set of cutting wires making three sets instead of two.



No. 96 Automatic Three Wire Cutting Table.

The No. 96 Cutter is built throughout in a substantial manner to make it capable of producing its full capacity. It is simple and easily operated. It has strength, rigidity and speed and will be found the best automatic cutter built.

We also build every machine and appliance necessary for the manufacture of every class of clay products by every known process. Particulars on any class of machinery for the asking.

The American Clay Machinery Co.,
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There is many a clay which can best be worked on Soft Mud machinery. To handle such clay on Stiff Mud or Dry Press machinery would prove a failure in the long run.

We build a complete line of Soft Mud Brick Machinery and appliances to meet the needs of such clays. We are not interested in selling you machinery which may prove a failure. We have the very machinery you require to make a success of your business, and that is the only machine we will sell you.

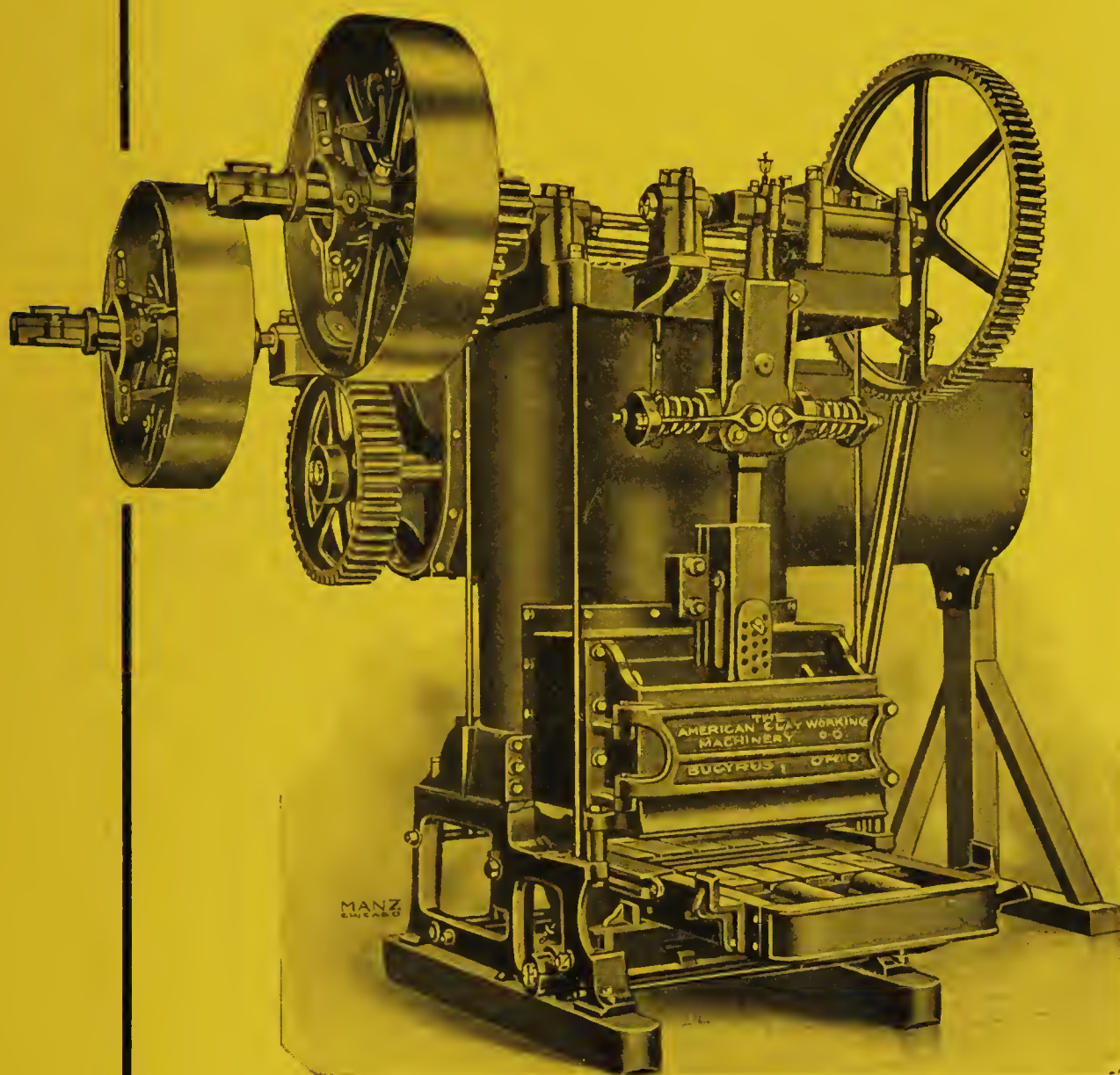
Our Upright Stock Brick Machine is built for long and continuous use. It has many satisfied users who will cheerfully recommend it.

Our line of Plunger machines is complete, with a size range to meet your requirements.

Our Eagle Horse Power and Eagle Steam Power machines are popular favorites in their class.

Every machine we build has a quality behind it attained only by faultless designing, excellent material and superior workmanship.

In buying the "Built Right Run Right" line you buy quality and that means successful operation.

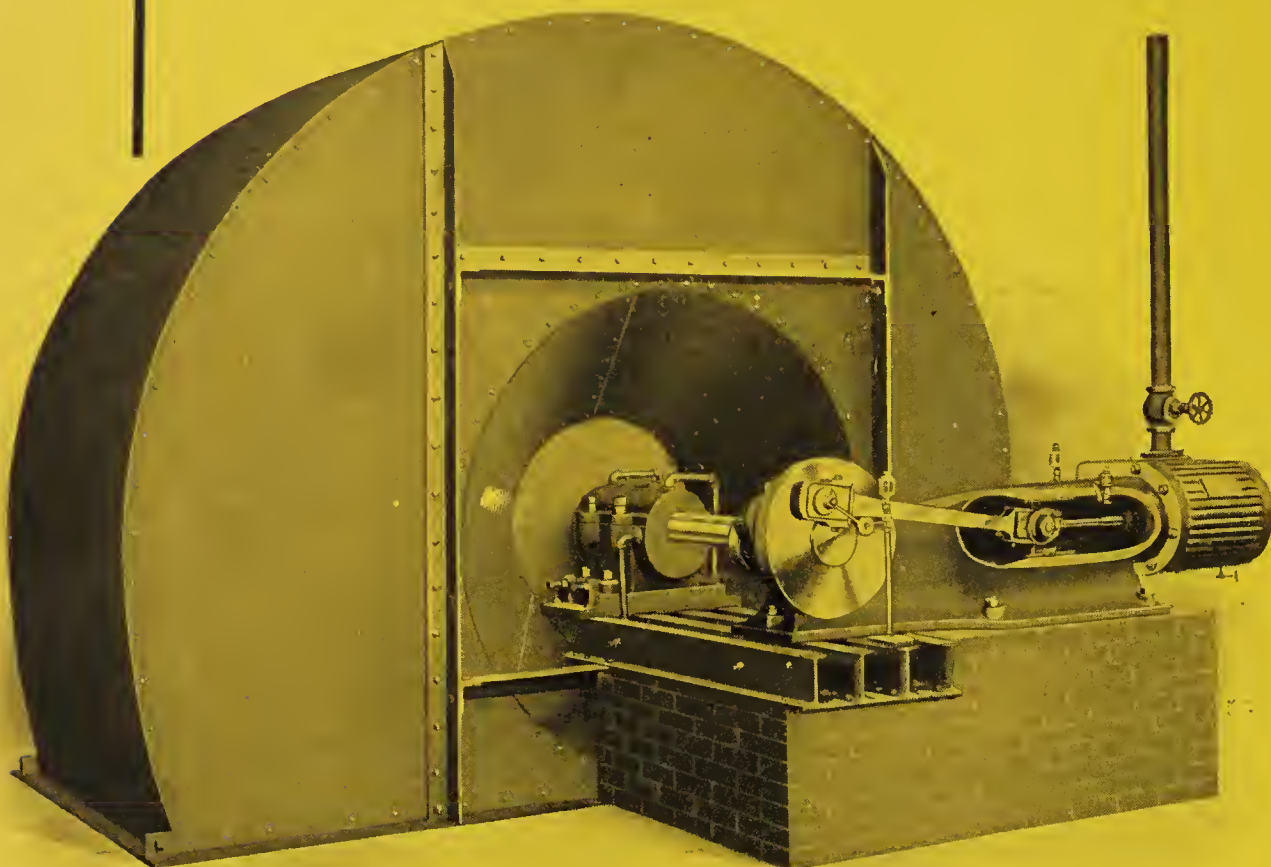


We build every machine and appliance needed to manufacture Clay Products by any known process. Every machine built in our own factories, so that we are able to guarantee the quality because we know that quality to be all that material and workmanship can attain. Sand-Lime Brick Machinery a specialty.

The American Clay Machinery Co.,

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Waste Heat Dryers And Other Dryers.



We are Dryer Specialists in every sense of the word. We are not content with making one kind of Dryer, but make every kind. We are, therefore, in a position to consider your interests without any bias or prejudice toward any one kind of Dryer. This insures your getting a Dryer which will most successfully handle your clay, whether that Dryer be a Waste Heat, Steam, Hot Air, or Furnace Dryer. We build a full equipment for every Dryer in our factory, including Fans, Heaters, Cars, Transfers, Turntables, etc. We also build and equip Dryers operated by the carless system.

If you are in the market for a Dryer let us look over your plant, consider the clay and conditions, and design you a system that will be a success. Then if you place the order with us the equipment will be made in our own factory and will be of our standard quality.

As it is with Dryers, so it is with every class of Clayworking machinery. We build a full line for making Clay Products by every known process.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

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ON HAND**

THE AMERICAN CLAY MACHINERY CO.

Willoughby, Ohio, U.S.A.

**COMPLETE EQUIPMENT
FURNISHED,
AND INSTALLED
SET IN OPERATION**

SAND-LIME BRICK MACHINERY

**PLANTS
DESIGNED**

REMARKABLE OFFER.

We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for

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“POST” SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen.

Guaranteed by Makers.

NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



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Gen. Lew. Wallace: The author of “Ben Hur” writes, “I have tried every kind in the market and unhesitatingly give the preference to the “Post.”

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FOR SALE—Steele & Sons No. 4 brick ma-
chine and cutter, pug mill, disintegrators,
crushers, winding drum, cars, etc., used one
month, same as new. Inquire,
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As superintendent by an up-to-date
man experienced in the manufacture
of all clay products including fire,
building and paving brick. Hollow
ware, conduits and other brick and
tile of either shale or clay. Under-
stand all the different processes, and
the handling of men. Also able to
superintend the building of factory
for either process. Strictly sober.
Address R. M. S.,
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FOR ALL USES.
LUMP, GRAIN AND GROUND
60-70% 70-80% 80-90% OXIDE.
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the technical problems of clay manufacture

Tuition is free. Laboratory fees are nominal.
Faculty of over one hundred instructors.
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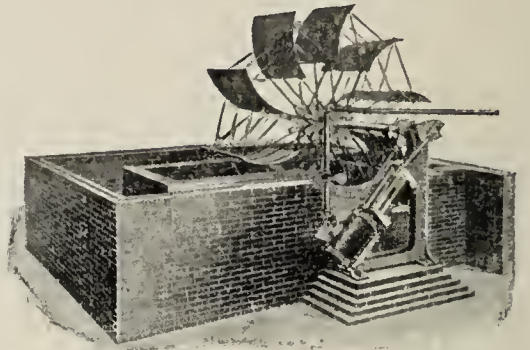
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Waste Heat Fans.

While we frequently have to repair other
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Durability is a strong feature and the use of
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Efficiency is proved by the many thousands
of these fans sold for Mining purposes. Out-
side journals. No water cooled boxes to make
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ESTABLISHED 1869.

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A New Clay Feeder and Mixer.



Send for full descrip-
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BOSTON BRICK COMPANY,

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Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

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Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been
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The greatest trouble brick men have is getting hands to feed regularly—they will over feed and
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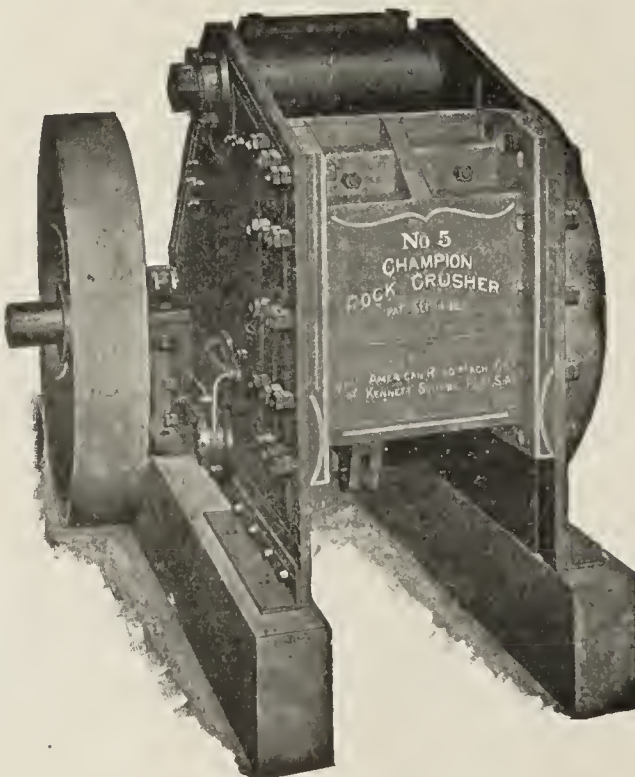
(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

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NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good
on paper.

It Looks Better

crushing shale, fire clay,
rock and other hard ma-
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THE CHAMPION CRUSHER

is expensive, *to do with-
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AMERICAN
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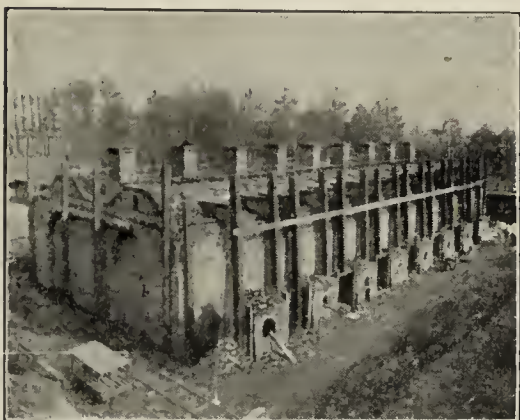
HELICOÏD SCREW CONVEYOR is heavier, stronger and better made than any other. Requires fewer repairs—no lapped and riveted joints to come apart—flight all one piece. We are the only people who actually roll a continuous flight conveyor by either the hot or cold rolling process. All other steel conveyors have sectional flights. Our No. 28 Catalogue explains the difference. Elevating, Conveying and Power-Transmitting Machinery.

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Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

ANY KILN OF THE MORRISON OR WINGARD TYPE CAN EASILY BE CHANGED INTO THE DENNIS DOUBLE DOWN DRAFT KILN.



Double Up and Down Draft Kiln.

1st. They can be built as cheaply and are more durable than old style up draft Dutch kilns.

2nd. I can change your old style up draft kilns into my type down draft,

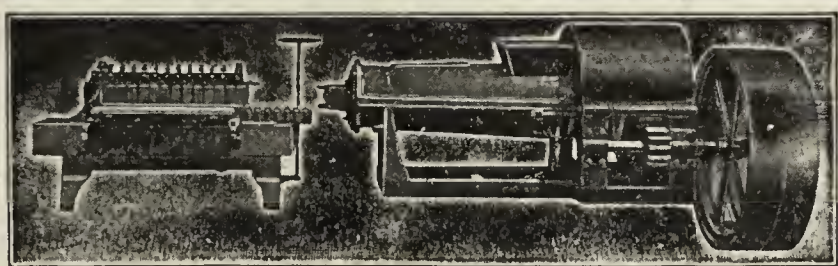
3rd. My type kiln needs no roof, consequently saves lumber, reduces fire risk, saves labor of removing and replacing kiln roof each burn.

4th. Less skill required in burning; draft under perfect control; easier to direct heat to any desired point; practically burns all hard brick.

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Wood burning kilns changed to coal burning. Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

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It has had few rivals and no superiors. Improved from year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed information desired.

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The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

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The COLOR

That Never fades.

Tried out for 20 years.

For mortar, brick, cement, stone, etc.

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Instructions how to improve burning Paving Brick, Drain Tile and Face Brick. Saves Coal, Time and Labor.

New simple method to create draft from the start of the fires.

Down-draft kiln plans for sale.

The least expensive and most effective kiln on the market.

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Good Clay

Disintegrator

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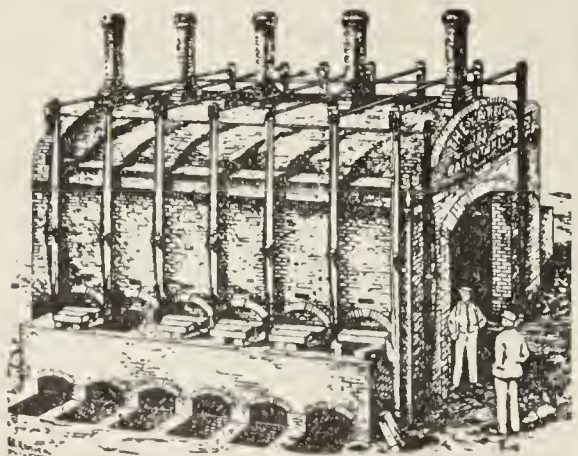
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If So

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For Economy of Fuel and Percentage of Hard Burned Brick, This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

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Unsurpassed for Strength and Durability.

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Satisfaction guaranteed. Send for samples and prices.

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The strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick.

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If you intend to build or rebuild your brick plant acquaint yourself with the

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That's just the thing you need to get prosperous.
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The Improved Flue System.

The most profitable kiln on the market
for burning any clay product.

Absolute Draft Control. Economy of Fuel and Time.
All Hard Brick.

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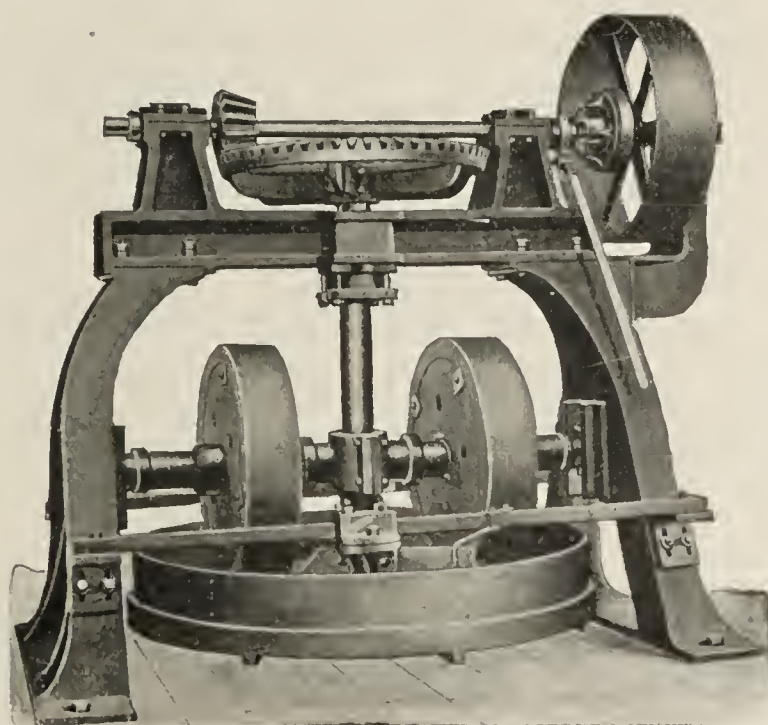
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Dry and Wet
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Also
Rock and Ore Crushers.

When writing for Prices state
kind of Clay or Material to be
ground and capacity desired.

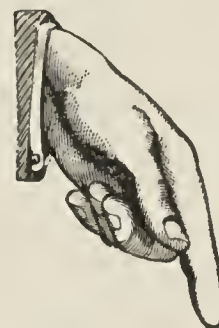
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Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable recipes. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address, **T. A. RANDALL & CO.,** Indianapolis, Ind.



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Loan and Trust Building,
Washington, D. C.

LACLEDE=CHRISTY FIRE BRICK

"CHRISTY" PLANT
formerly
Christy Fire Clay Co.

Are the Best for

"LACLEDE" PLANT
formerly
Laclede Fire Brick Mfg. Co.

BUILDING KILNS.

Laclede=Christy Clay Products Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

**Fire Brick for
Building Kilns.**

Factories:

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General Office:

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Phone Yards 525.

Evans & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

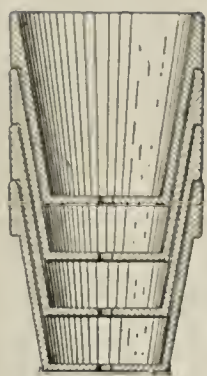
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MITCHELL CLAY MFG. CO.,

5627 Manchester Avenue.

ST. LOUIS, MO.

\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.

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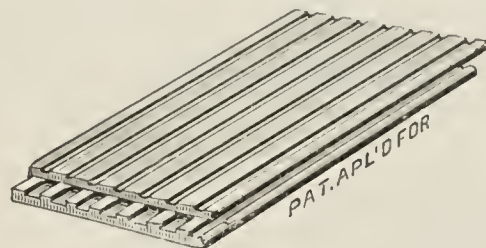


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Sewer Pipe and Clay-
Working Machinery.

ESTABLISHED 1862.

Roofing Tile Machinery.



Patent Revolving and Hand Presses for
Interlocking Tiles, Dies for all shapes,
Hips, etc., in metal or plaster.

Special Roller and Auger Presses for
Shingles, Interlocking Spanish Tiles, Au-
tomatic Shingle Cutting and Punching
Tables. Special Tile Tables.

Stiff Mud Machinery for smaller capa-
city and horse power, stiff mud brick
and hollow block dies, dry press liners.

MUELLER BROS.,

39 South Channing Ave.

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Mention The Clay-Worker
When Writing to Advertisers.

THE WEBB WIRE WORKS

MANUFACTURERS OF

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NEEDLE WIRE

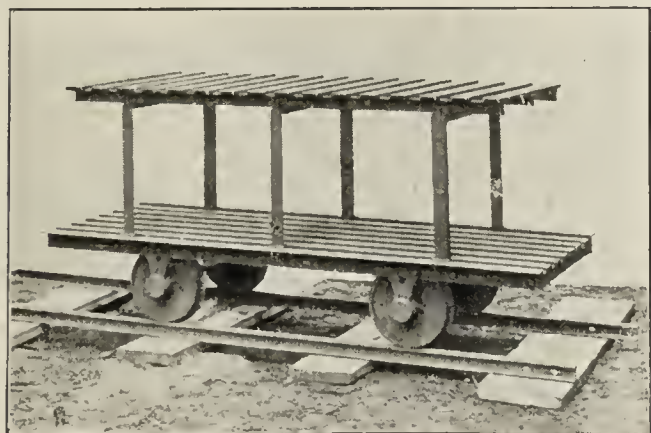
NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE
CUTTING WIRE, drawn especially
to withstand abrasion.

Send for prices of wire in coils.



WHAT YOU ALL DOIN'.



No. 244.

Remember we have never shown a more complete
line of up to date brickyard equipment than we are
showing this fall. Should you desire complete es-
timates on Brick Plants let us know and we can
supply you with information. We are one of the
largest producers of brickyard equipment in the
world.

Write for Catalogue
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Brick Cars	{	Single deck	Switches	Kiln Bands
		Double deck	Frogs	Pallets
		Triple deck	Rail	Anything in
Dump Cars		Transfers	Turntables	Special designs

Complete Estimates for Brick plants.



No. 52.

The Cleveland Car Company

West Park, Ohio, Suburb of Cleveland.

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

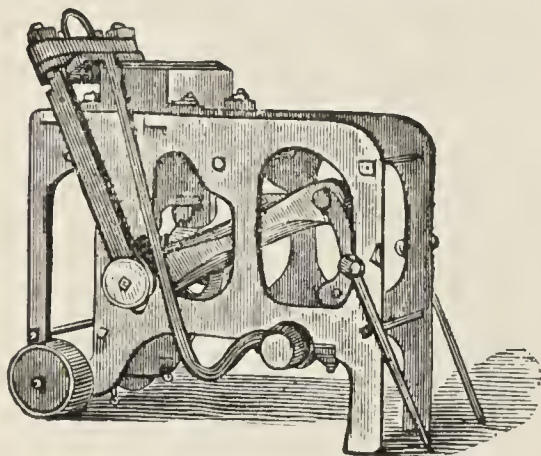
Arranged to Suit All Locations. These Kilns Can be Seen Burning

Roofing Tile, Dry Pressed Facing,
Paving and Common Building Brick.

POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further particulars, address **H. HAIGH, Brick Works Engineer, Catskill, N. Y.**

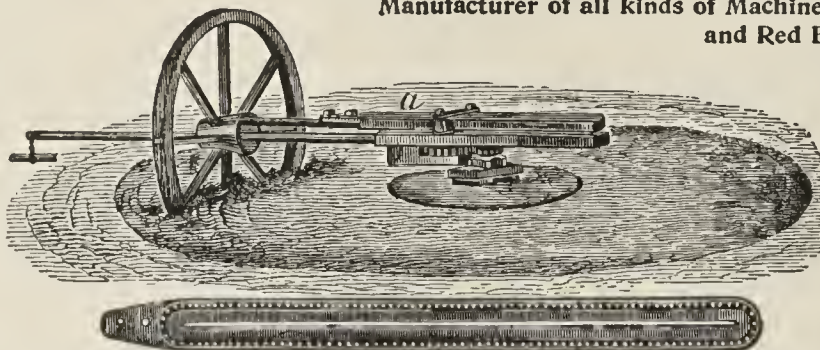


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

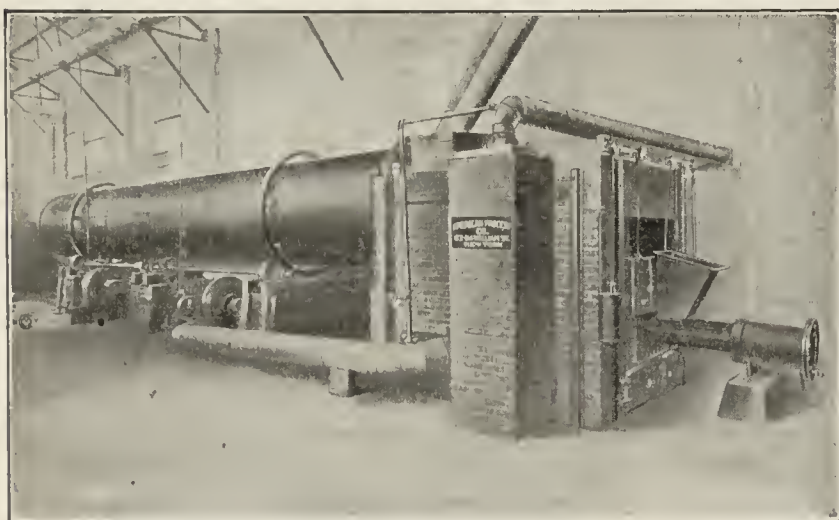
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL. 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.



Style No. 3—For rack cars. Made from No. 13, 14 or 16 Gauge Steel. Either black or galvanized. 5/8-inch roll running full length of Pallet. Very Light, Strong and Rigid.

MADE BY

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.

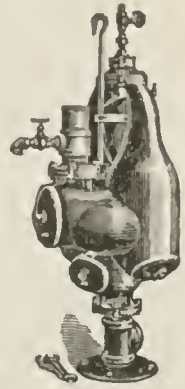
NO MECHANISM

of a complicated nature in connection with

The Pulsometer Steam Pump.

Handles GRITTY, MUDDY water without the slightest injury to the pump or any of its parts. Requires no engine, belt, oil or packing. Operates as well suspended as stationary.

Our free illustrated descriptive Catalogue tells all about them.



PULSOMETER STEAM PUMP COMPANY, 14 Battery Place,
New York.

The ROESSLER-HASSLACHER CHEMICAL COMPANY,

100 William Street,
NEW YORK.

As a Preventative of Scums Use
CARBONATE OF BARYTES
R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

Ludowici-Celadon Company,

General Sales Office—Chamber of Commerce Bldg., Chicago.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.



These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

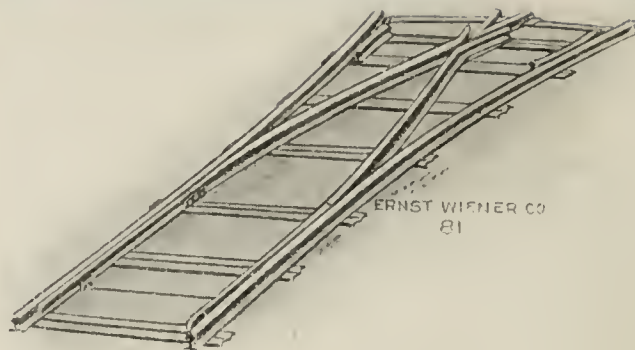
For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.



COMPLETE TRACK LAY-OUTS

for Sand Banks, Limestone Quarries, Brickyards, Sand-Lime Brick Plants, etc.

We have for **PROMPT SHIPMENT** from

Youngstown, Ohio and Brooklyn, N. Y.,

a large stock of Rails and accessories, Switches, Turntables, Portable Track for any gauge of track or weight of rail, also Industrial Cars for clayworkers' requirements. Our new Catalog 2B on economical handling of material sent upon request.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
COMPANY.

64-68 Broad Street, New York, N. Y.
WORKS

Youngstown, Ohio. Brooklyn, N. Y.
715 Hartford Bldg., Chicago. 402 Oliver Bldg., Boston.
Barnaby Bldg., Bisbee, Ariz. 333 Cooper Bldg., Denver, Col.



B. E. BECHTEL.

We Are PRACTICAL BRICKMAKERS.

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906

Pittsburg Kiln Construction Co.,
Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good hurns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we get in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in. tile of 5,000 each,	15,000
2 " 4 "	" 3,000 "	6,000
1 " 5 "	" 2,040 "	2,040
2 " 10 "	" 550 "	1,100
2 " 12 "	" 415 "	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.
The 10 " " 6 ins. and 4 ins.
The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am
Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.



HARRIS SMOKELESS FURNACE—Patented.

ALBANY BRICK COMPANY,

Capacity, 10,000,000 per Annum.

Terms, Strictly Cash.

Albany, Ga., Sept. 2, 1907.

The Milledgeville Brick Works, Milledgeville, Georgia:

Gentlemen—Replying to yours of the 29th., we beg to advise you concerning the Harris furnace as follows:

It certainly consumes the smoke, and the only time that we can see even the slightest bit of smoke from the exhaust fan on our dryer is when the fireman is putting in fresh coal.

We are using this furnace successfully with our dryer. In regard to fuel saving, I have not the slightest doubt that we save considerable, although I have not made official tests; however, I have given instructions to our engineer to use only the least desirable grade of coal that we have on the yards, and he seems to be burning this very successfully.

As to whether we would advise you to install this furnace, we do not care to take the responsibility, but will say that we ourselves have installed one evidently for the same purpose that you are considering its installation.

Yours truly,

ALBANY BRICK COMPANY.

Later—Milledgeville Brick Works have installed our furnace.

Our furnaces are easily and cheaply installed, last forever with little repairs. Absolutely smokeless on soft slack coal, so waste heat of stack can be carried to brick and lumber dryers—impossible for sparks to leave furnace when burning shavings, slabs and sawdust. For further information address

J. B. HARRIS, M. D.

921 Fatherland Street.

Nashville, Tenn.



FREE

A fine memorandum book, containing interesting and useful information, sent to any engineer, superintendent or owner sending us firm name and horse power of plant.

**LEVIATHAN
BELTING**

is a scientifically constructed belt which gives most satisfaction for least money—elevating, conveying, transmitting. We will send some facts about it also.

Main Belting Company

1224 Carpenter St., Phila.

59 Market St., Chicago

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Ripley, Ohio, Sept. 11, 1906.

John C. Boss, Esq., Elkhart, Ind :

Dear Sir—We herewith enclose you our check in settlement of our account in full.

I neglected to tell you that we burned the first kiln with 1,800 bushels of coal, whereas we have been using with a kiln of that size 1,500 bushels of coke and 3,000 bushels of coal. So you see we will soon make our money back which we paid for your system. We are delighted with it and are glad to praise it at any time. With kindest regards, I beg to remain,

Yours very truly,

THE RIPLEY BRICK CO.,

Per Leon Swiles, Sec'y.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

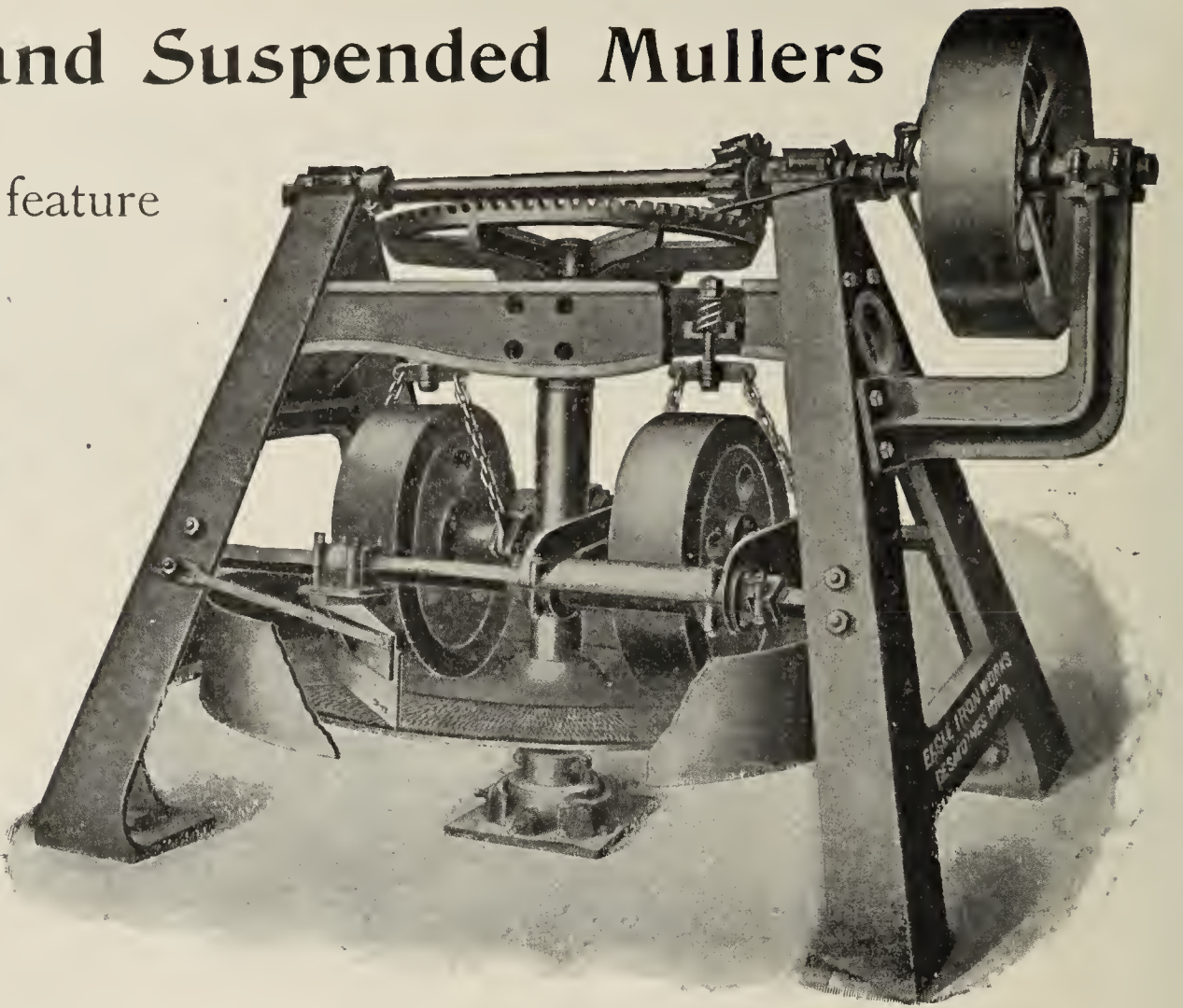
ELKHART, IND.

Independent and Suspended Mullers

the distinguishing feature
of our

DRY PANS.

Other valuable
features which our
catalogue fully
describes.



EAGLE IRON WORKS, Des Moines, Ia.

STEAM SHOVELS FOR BRICK YARDS.



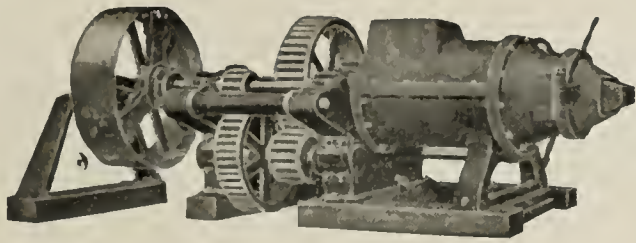
We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from $\frac{3}{4}$ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

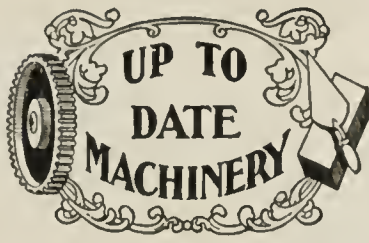
GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

Marion, Ohio.

F. H. HOPKINS & CO., Agents,
Montreal, P. Q.



Auger Machine.



Combination Machine.

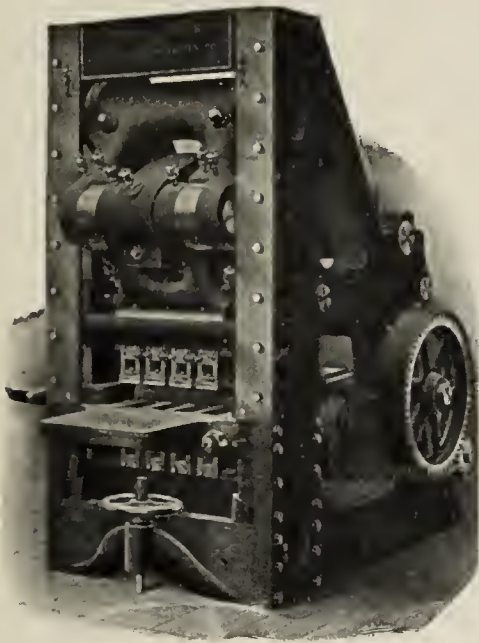
Up-to-Date Machinery

For Making

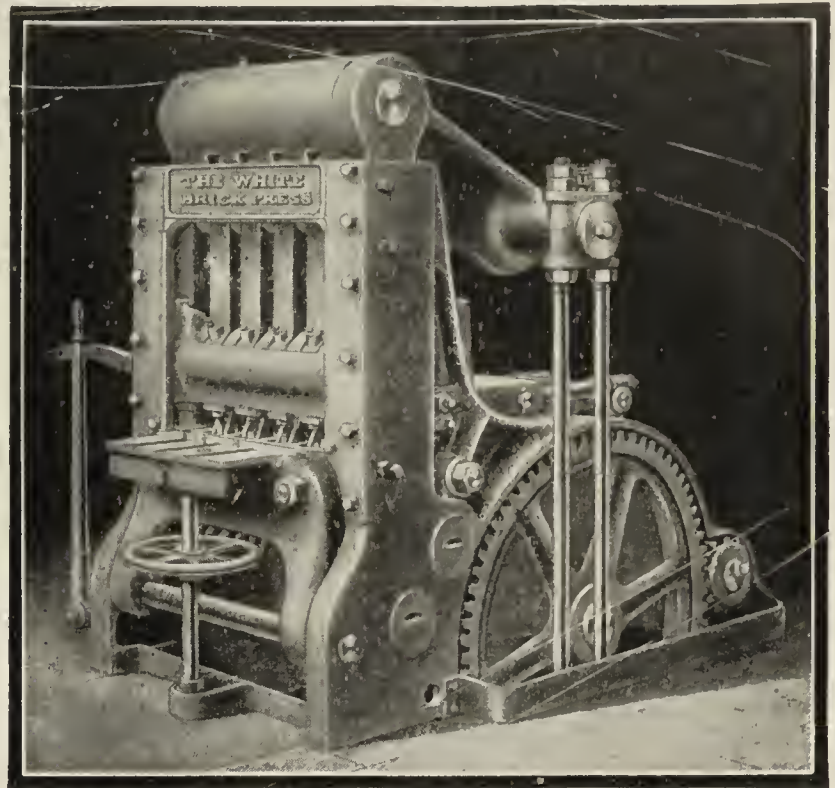
**ALL KINDS OF
BRICK.**

Specialty for 1907
**Rocking Grates
for Kilns.**

**CHICAGO
BRICK MACHINERY
COMPANY,
77 JACKSON BLVD.,
CHICAGO.**



Berg Press.



White Press.

Handle Your Clay With One Man and The Thew Steam Shovel.



Type No. 1—Traction Wheels or Car Wheels, $\frac{3}{4}$ -Yard or One-Yard Dipper.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

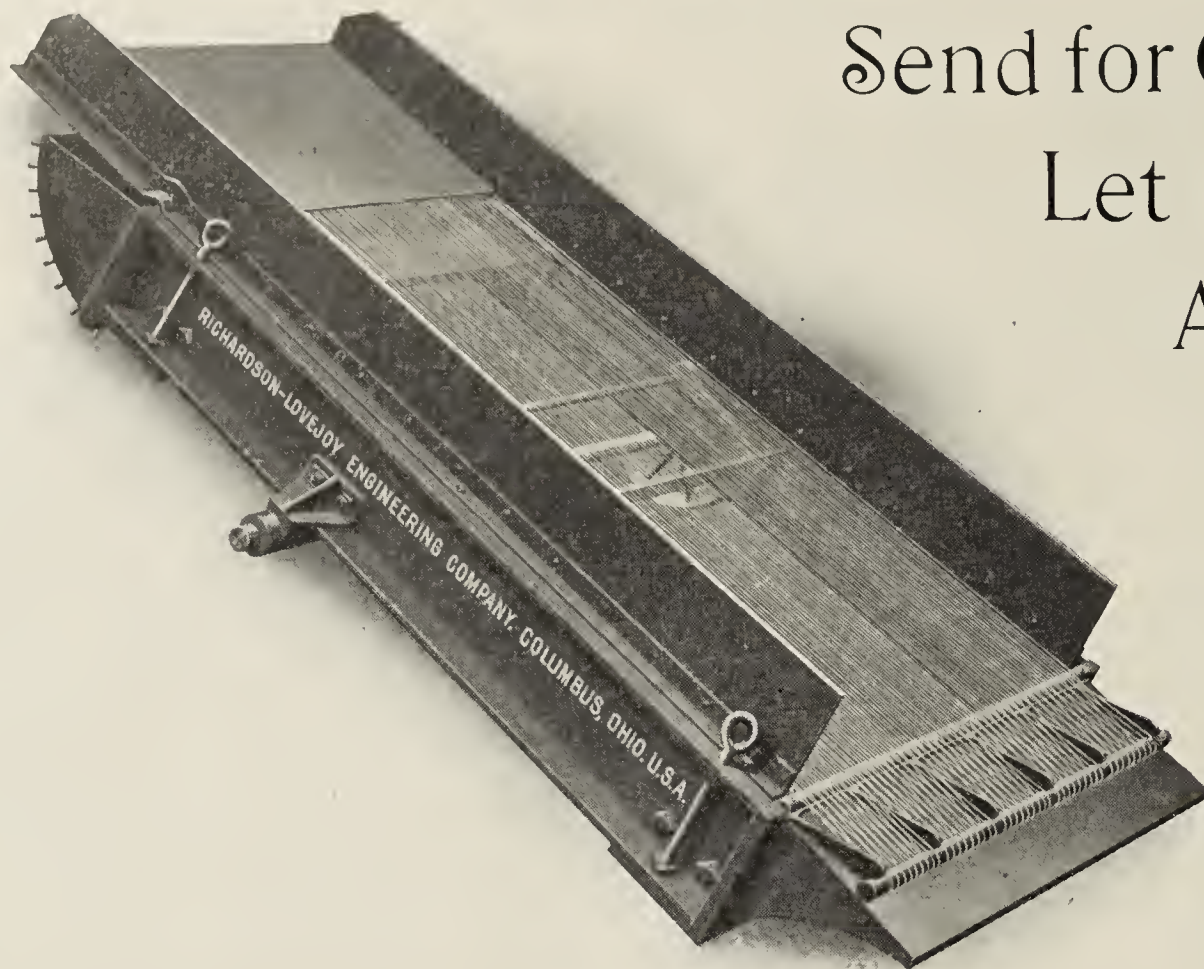
WRITE US FOR CATALOGUES OR INFORMATION.

**THE THEW AUTOMATIC SHOVEL CO., LORAIN,
OHIO.**

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

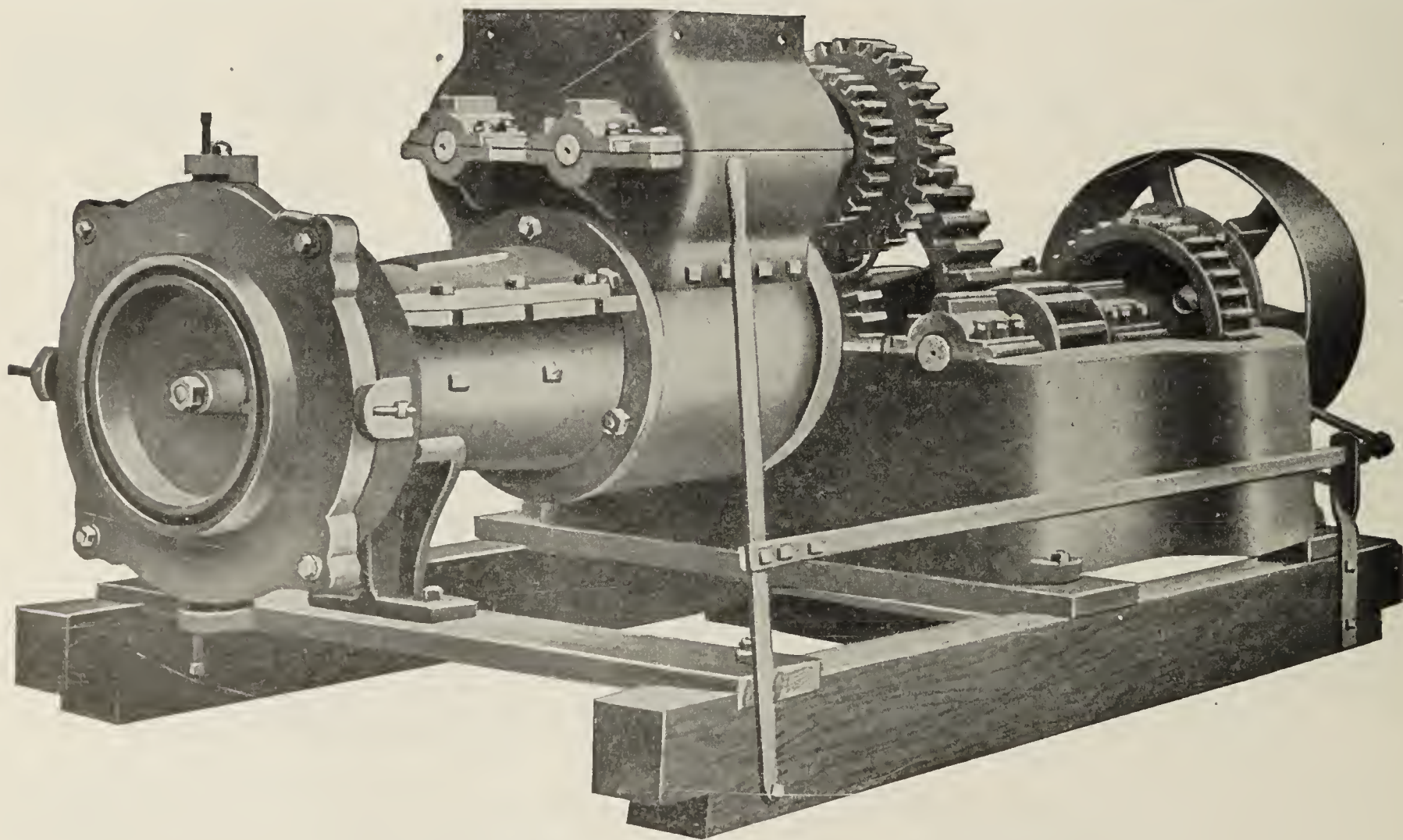
Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.



Send for Catalog and
Let Us Tell You
About the
Best Clay
Screen
on
Earth.



THE RICHARDSON-LOVEJOY ENGINEERING CO.,
1534 NORTH HIGH STREET, COLUMBUS, OHIO.



NEW MODEL STIFF MUD MACHINE.

Write us for
information.

MADDEN & CO., Rushville, Ind.

BRICKMAKERS WHO FAIL

to take advantage of every opportunity to reduce the cost of manufacturing their products are working on a smaller margin than is necessary.

Every dollar's worth of labor or fuel saved is clear profit to the brickmaker.

Our new catalogue explains how a small investment will greatly increase the profits of every manufacturer of stiff mud or soft mud brick.

THE DRYMORE SYSTEM

7TH AND CHESTNUT STS., ST. LOUIS, MO.

EXHAUST STEAM

And a **NATIONAL DRYER** will enable you to make brick Every Day in the year. So that your customers can **DEPEND** upon you for brick. You could make a surplus in the winter and be ready for the early spring trade.

The **NATIONAL** is the best.

Our large catalogue gives details and contains information that will be of value to you.

Send for it today.

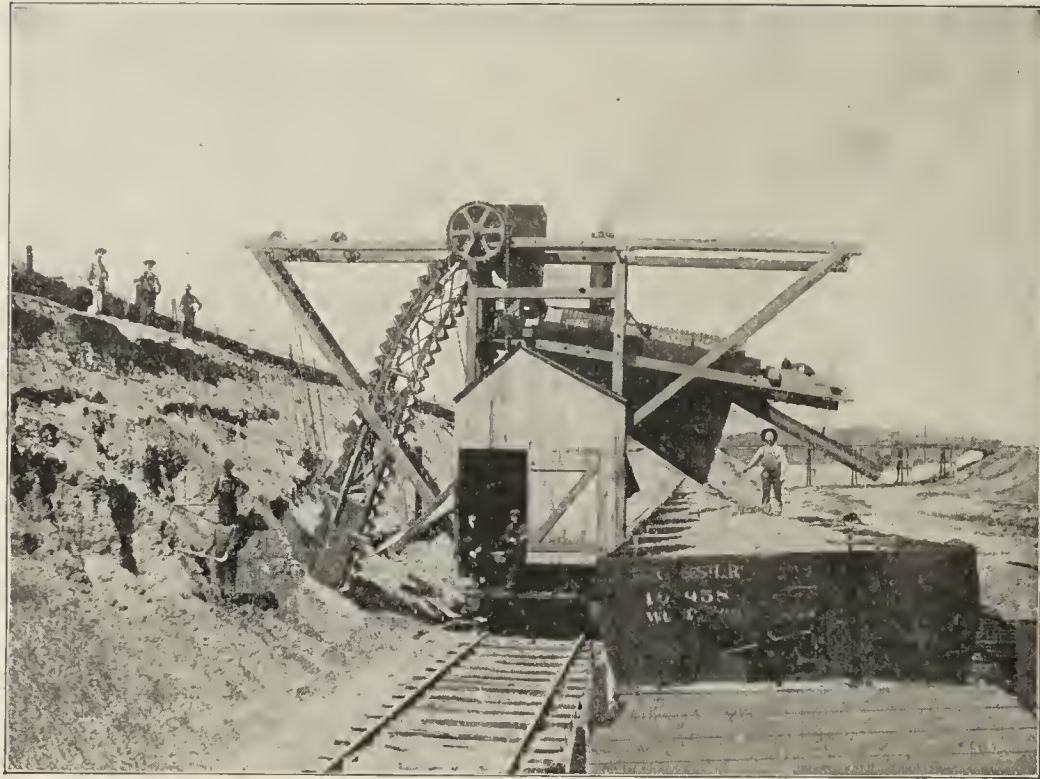


Steel Roller Bearing cars of all kinds. Transfers, Turntables, "T" Rail, etc.

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & ROWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

THE NATIONAL DRY KILN CO., Indianapolis, Ind.

Portable Excavating, Screening and Loading Machines For Sand and Gravel of Jeffrey Construction.



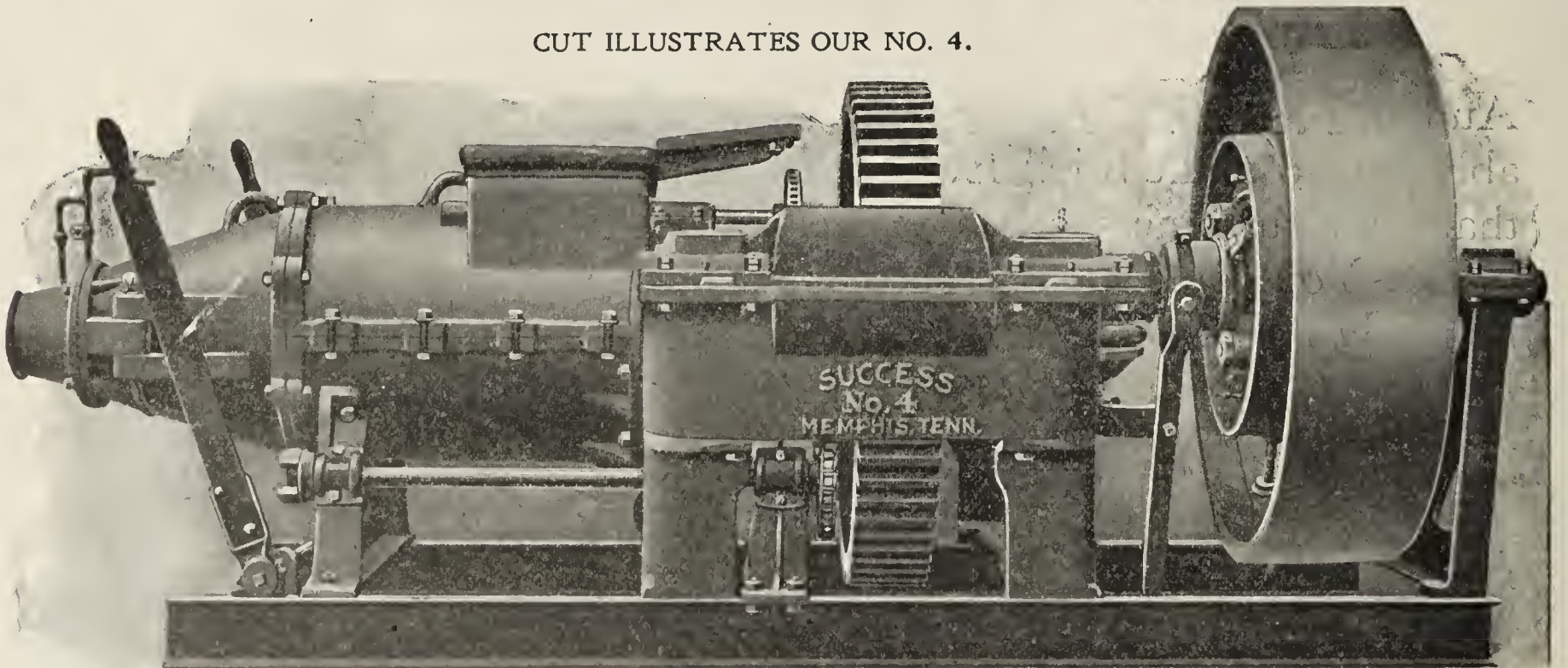
Elevating-Conveying Catalog No. 80 Mailed Free With Others on
Drilling, Screening, Mining, Crushing, etc.

THE JEFFREY MFG. COMPANY, Columbus, Ohio, U.S.A.

New York Chicago Boston Denver St. Louis Pittsburg Knoxville Charleston, W. Va. Montreal

SUCCESS STIFF MUD MACHINE

CUT ILLUSTRATES OUR NO. 4.



We have five sizes, ranging in capacity from five to seventy-five thousand per day, with end cut or side cut automatic cutters, as desired.

FULL LINE SOFT MUD MACHINES, CAPACITIES FROM FIVE TO FIFTY THOUSAND PER DAY.

Granulators, Pug Mills, Disintegrators, Hoisting Drums, Clay Cars, Wire Rope, Steel Rail, Automatic Switches, Trucks, Barrows, Castings, etc., H. S. & G. Engines and Boilers. Machinery guaranteed. Freight paid both ways if not found as represented. Building of complete plants our specialty. "SUCCESS" is what you are looking for; write us.

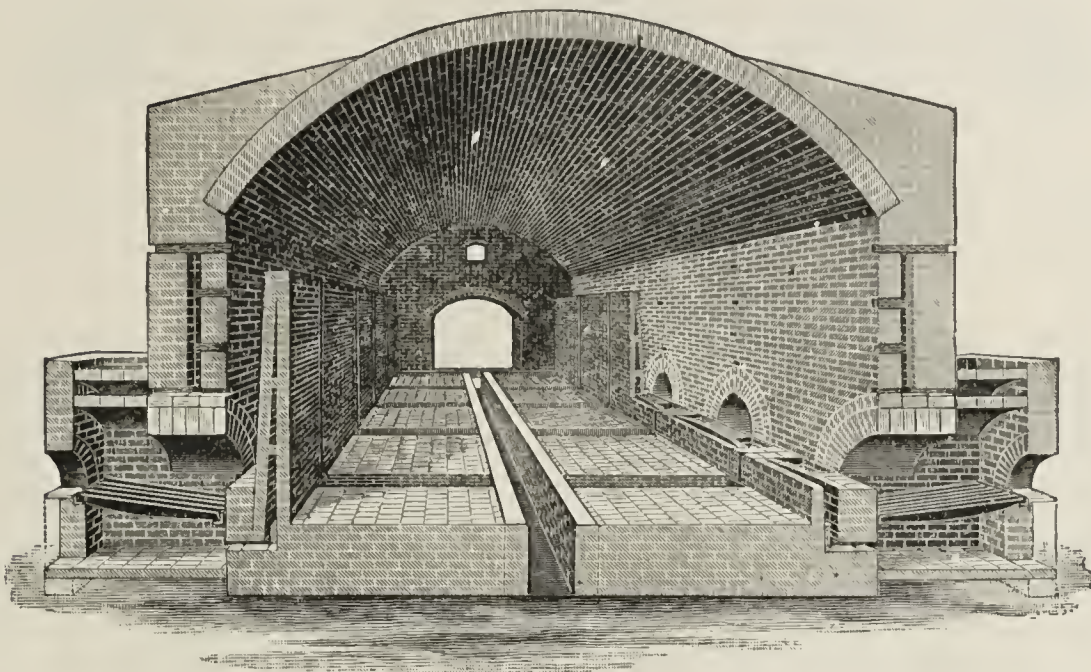
Success Brick Machinery Company,

Cable Address "SUCCESS," Memphis, Tenn., U. S. A.

504 Goodwyn Institute, Memphis, Tenn.

The EUDALY DOWN DRAFT KILNS

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

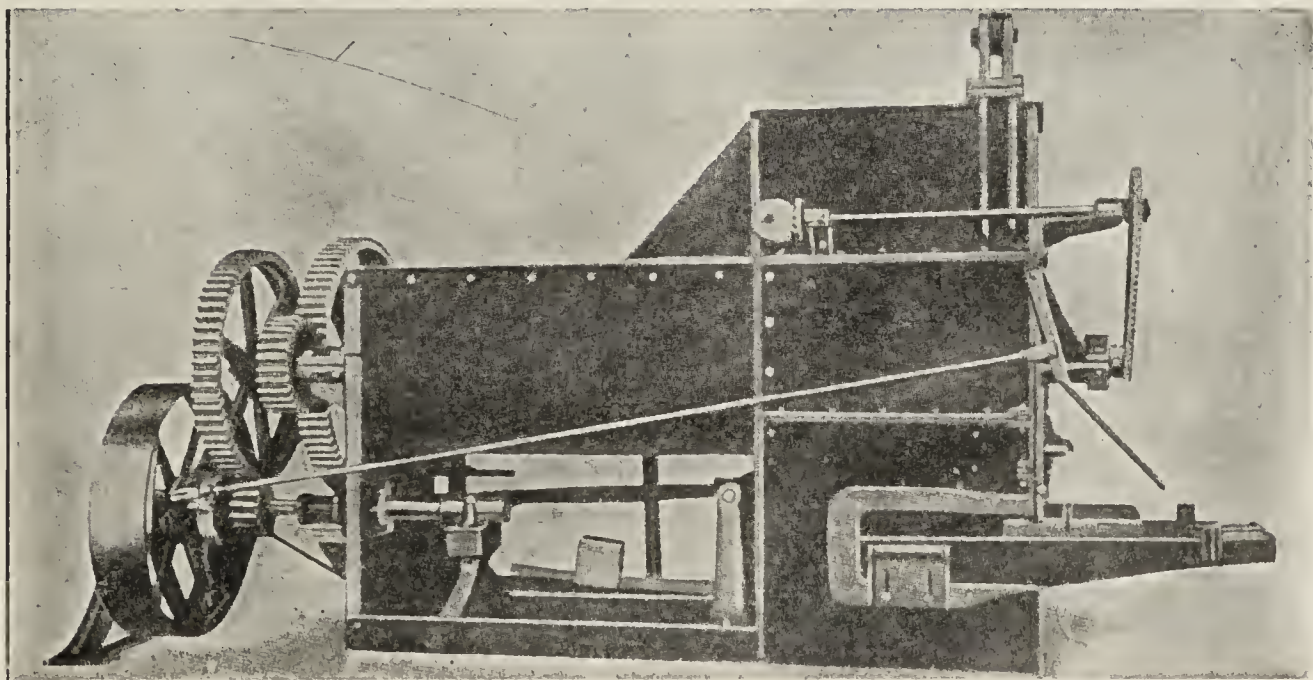
The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal, or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

W. A. EUDALY, 509 Johnston Bldg., Cincinnati, Ohio.

The Duke of Wellington Brick Machine.



We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

There is a growing demand in all sections of the country for a brick machine, of large capacity strong and heavy, with vertical press. To meet this demand we have constructed a new machine to be known as the "Duke of Wellington." It possesses elements of strength and efficiency that will commend it to those desiring large capacity.

For small capacity yards there is nothing that is quite as good as the "QUAKER" Machine, which is made for horsepower as well as steam.

James W. Hensley,

Indianapolis, Ind., U. S. A.

Let me give you full particulars.
List of users furnished on application.

THE CLAY-WORKER'S POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES

1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.



INVALUABLE TO
Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for

\$2.50

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlery steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untieing knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the issue. Enclosed find \$.

Name

Postoffice.

Street and Number.

County. State

The Youngren Continuous Kiln

Producer Gas Fired.



SETTING BRICK IN THE YOUNGREN CONTINUOUS TUNNEL KILN.

If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

Kilns are in constant operation burning all kinds of brick, hollow ware and drain tile. For particulars address

P. L. YOUNGREN,

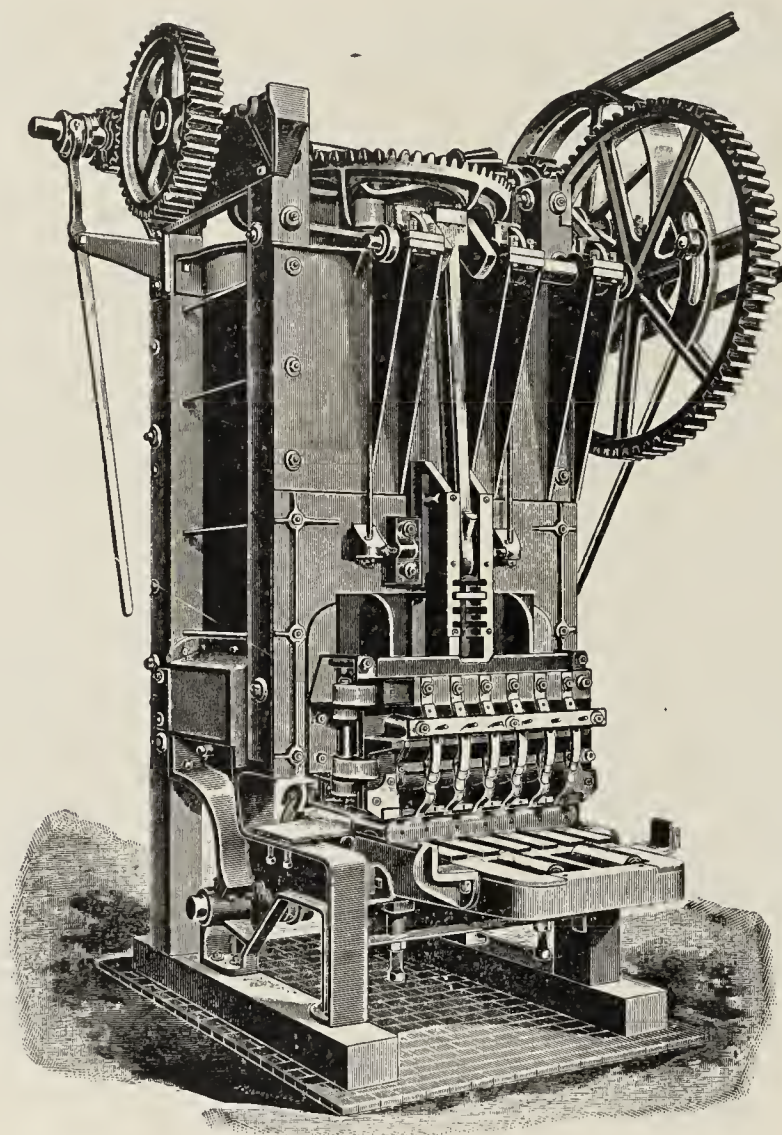
299 Twenty-fifth St.,

MILWAUKEE, WIS.

SOFT MUD BRICK MACHINES

are the only kind we make, and we make them right.
New Haven Brick Machines are thoroughly RELIABLE.

Every
Buyer
a
Satisfied
User.



Every
User
a
Satisfied
Brickmaker.

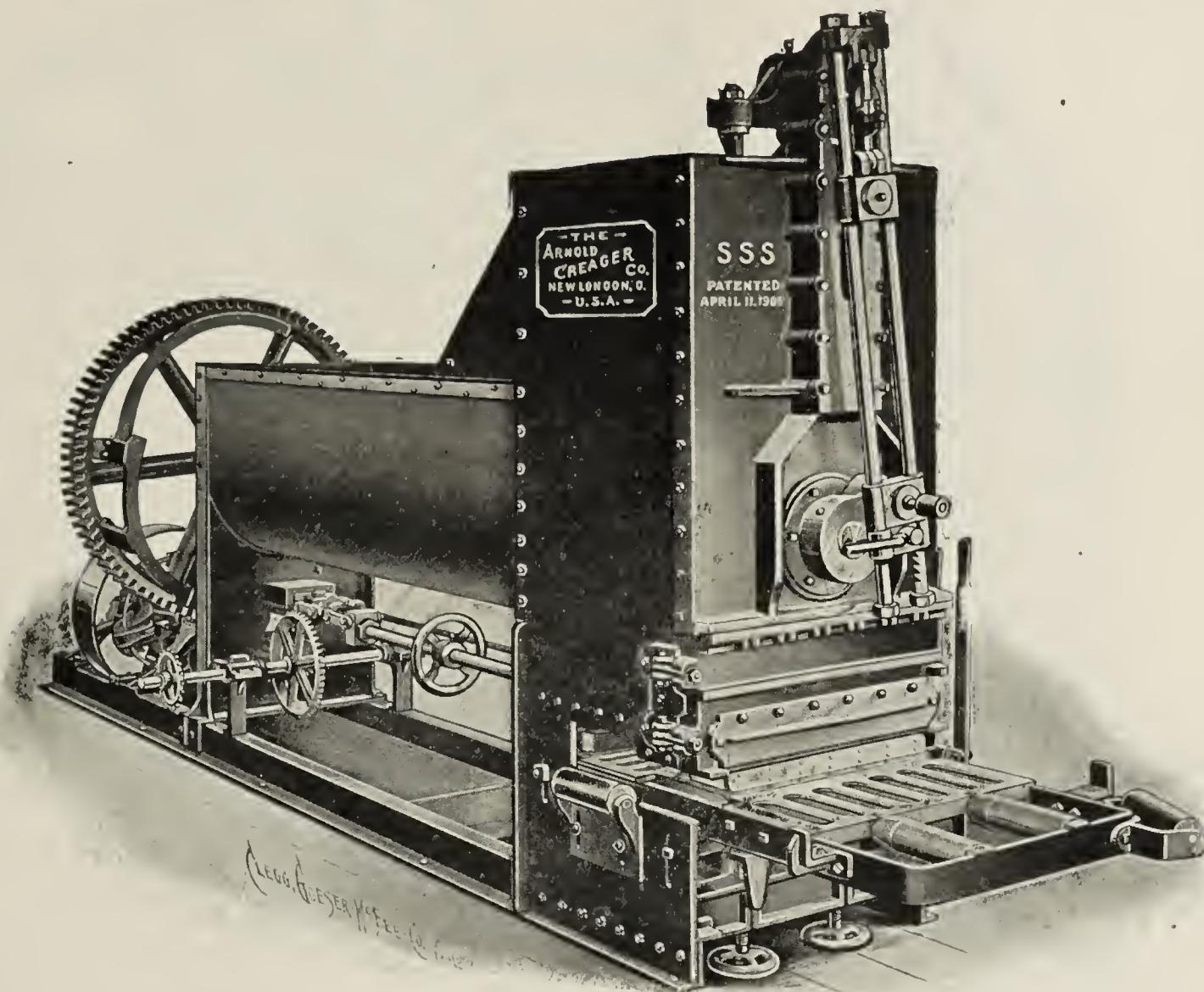
"NEW HAVEN"
VERTICAL BRICK MACHINE.

When you buy a New Haven Brick Machine you get a machine that will not break down, The New Vertical is the most substantial Upright SOFT CLAY Brick Machine on the market, hence its earning capacity is only limited by the ability of the Brickmaker to handle the brick.

The EASTERN MACHINERY CO.,

NEW HAVEN, CONN.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

For complete catalog giving details of this, and other high grade machinery and the "1907—Grand-Automatic" address

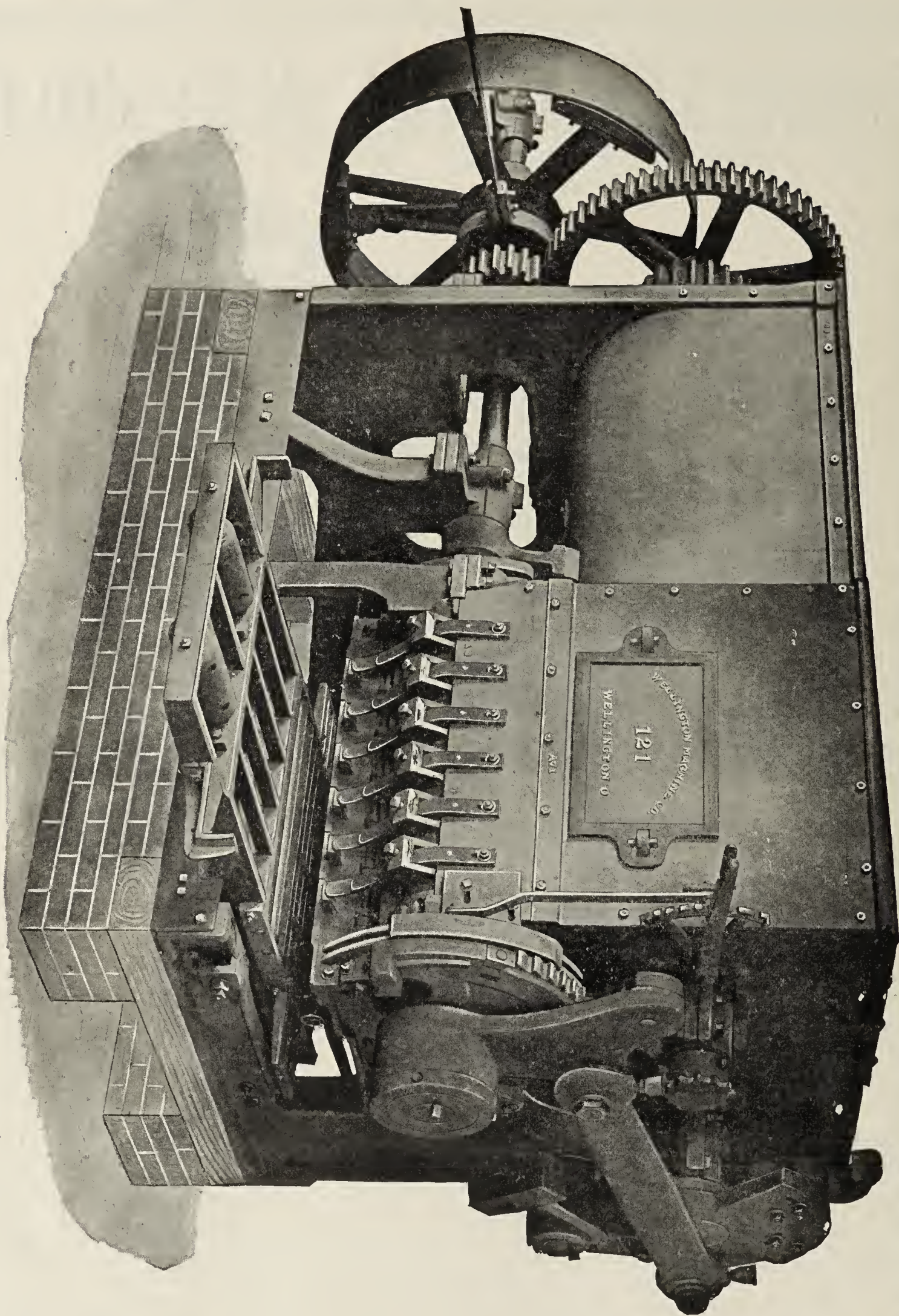
The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO.

CINCINNATI, OHIO.

CABLE "AUTOMATIC".

OVER
235
"Monarch"
Brick
Machines
in use
==
OVER
565
"Quaker"
Machines
in use.
==
WRITE
to us
regarding
Disinte-
grators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.



The "Big No. 6" "Monarch" Brick Machine.

REMEMBER:

You are losing
money wheeling
brick unless you
have our

**ROLLER-BEARING
BARROWS.**

The Wellington Machine Co.,

WELLINGTON,

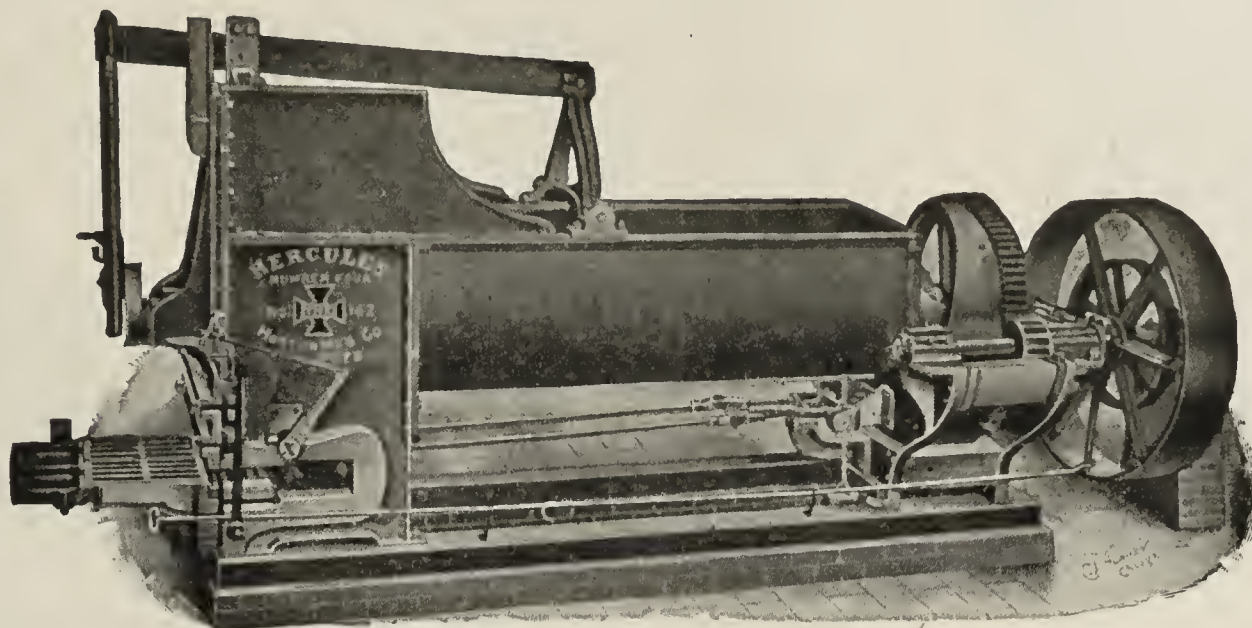
OHIO.

Send for Catalogue.

"HERCULES."

"Perfectly Simple. Simply Perfect."

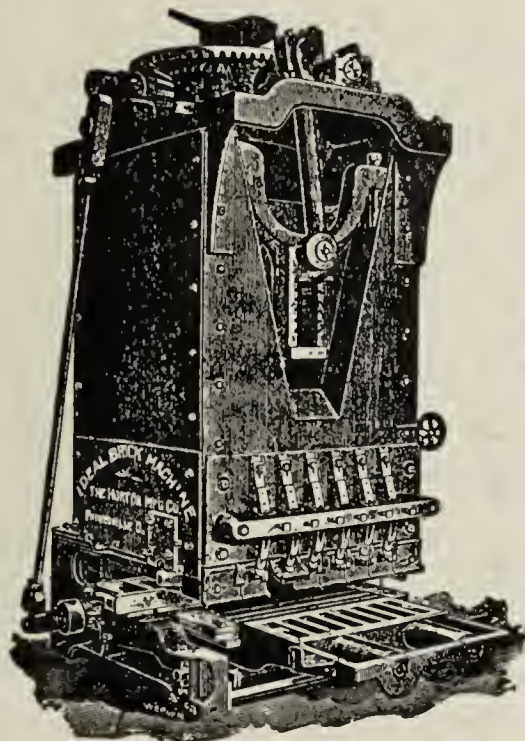
NOTHING TO
EQUAL IT IN
HANDLING
STIFF CLAYS.
THE LATEST
FIRE BRICK
MAKER
MADE.



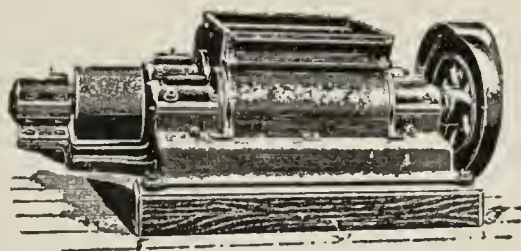
LET US
REFER
YOU TO A
LONG LIST
OF MORE
THAN SAT-
ISFIED
USERS.

Hercules No. 4 Brick Machine.

Now is the time to get ready for
next season's work. Tell us your
needs—We know we can please you.

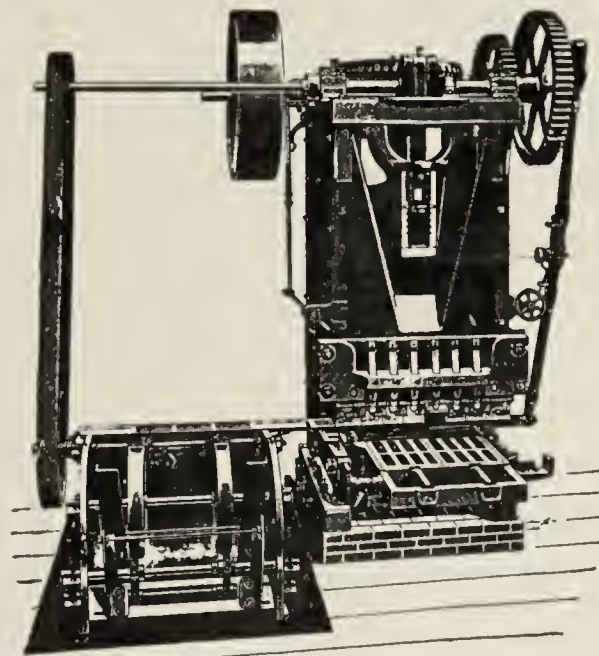


Ideal Horse Power Machine.



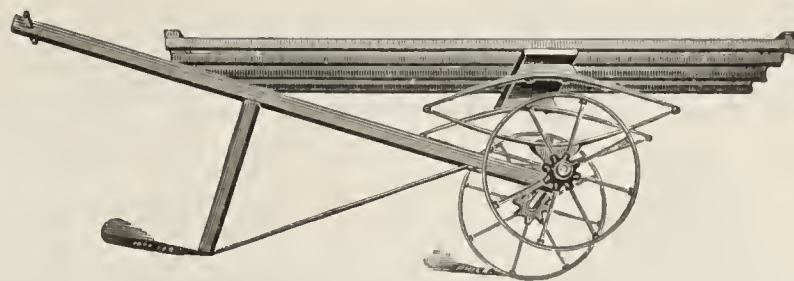
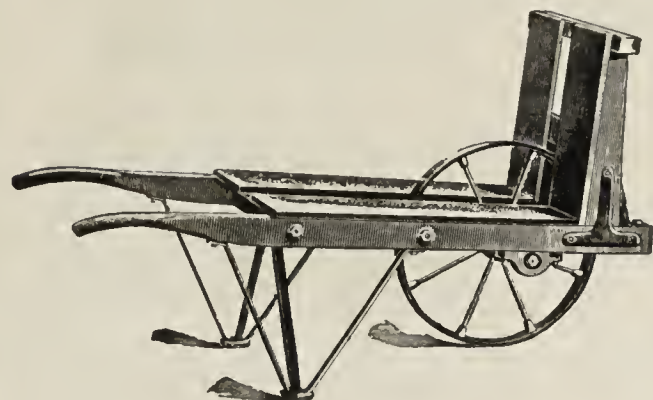
Disintegrator.

We also make a full line of Crushers.



Ideal Steam Power Machine and Sander.

WE MAKE A COMPLETE LINE OF BARROWS AND TRUCKS.

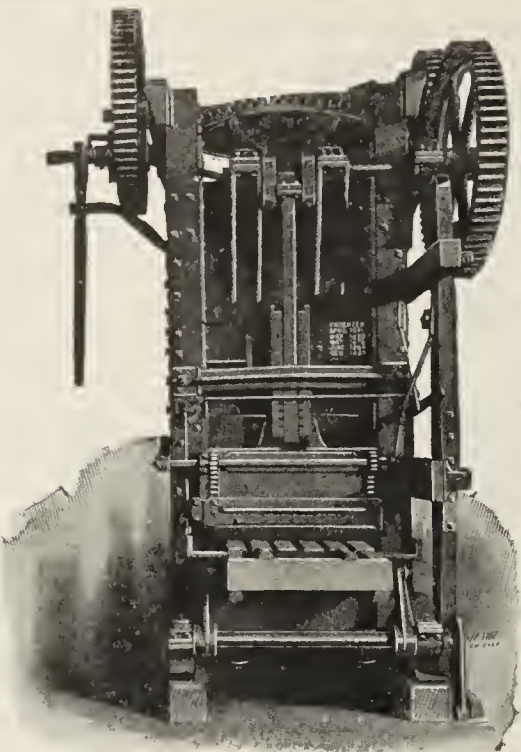


MOLDS.

This is a frequent source of complaint, if you allow *price* to be the *factor in deciding*. We want you to send us
a *trial order*, and we will *guarantee* the molds to satisfy and the *price right*.

A complete line of Brickmaker's Supplies. "Catalog C."

The Horton Manufacturing Co., Painesville, Ohio.



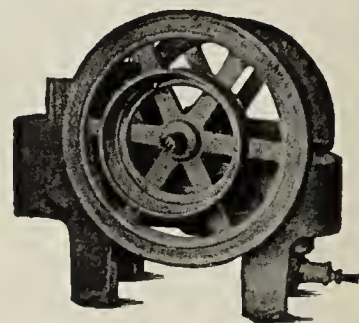
MARTIN'S STYLE "A"
STEAM POWER MACHINE

IF IT'S
CLAY-WORKING
MACHINERY

"MARTIN"

WE MAKE A SPECIALTY OF EQUIPPING
BRICK PLANTS--AND NOT A SIDE ISSUE

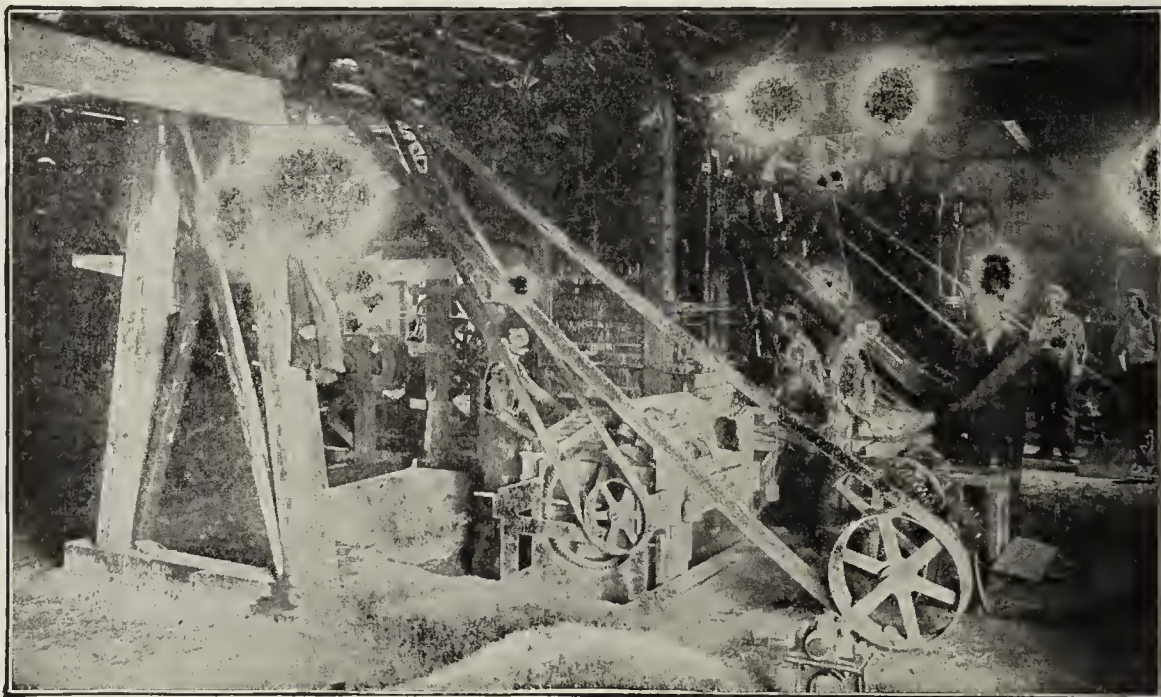
Our Line of Machinery is the
Most Complete Yet
Placed Before the
Clay Worker--In Every
Branch of the Business



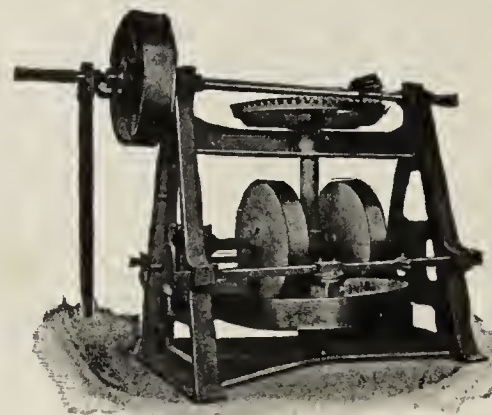
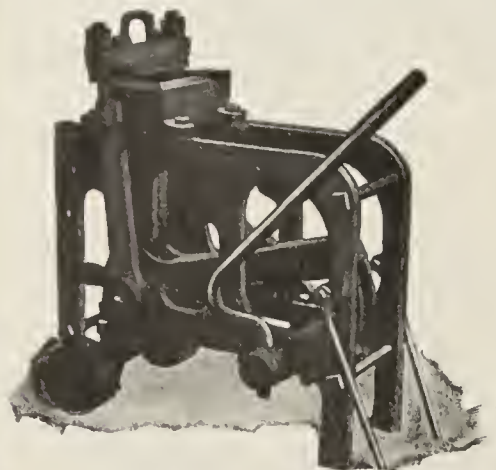
INTERIOR VIEW 
OF AN UP-TO-DATE BRICK-
MAKING PLANT--CAN WE
SUBMIT A SET OF PLANS
THAT SHOW YOU THE BEST
WAY TO MAKE BRICK?



YARD
SUPPLIES



"WE FURNISH EVERYTHING THE BRICKMAKER NEEDS"
CLAY CRUSHERS, CLAY CARS, TEMPERING MILLS, TRUCKS,
DISINTEGRATORS, ELEVATORS & CONVEYORS, DRY PANS,
HAND OR STEAM REPRESSES, MOULD SANDERS, SAND
DRYERS, DRYER CARS, HOIST-
ING DRUMS, EVERYTHING TO
MAKE UP A NO. 1 BRICK PLANT



DRY OR WET PANS

THE HENRY MARTIN
BRICK MACHINE MFG. CO.
LANCASTER, PA., U. S. A.



BRICK DRYERS

The "MARTIN SYSTEM"
STEAM RACK PIPE
DRYING & CONVEYING

BRICK--ARE FULLY COVERED BY "PATENTS" GRANTED



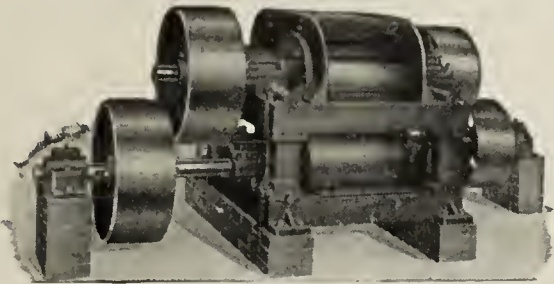
NOTICE

==PATENTED==

February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.

OWNED AND
CONTROLLED
BY THE

HENRY MARTIN BRICK MACHINE
MFG. CO., INC.==LANCASTER, PA.



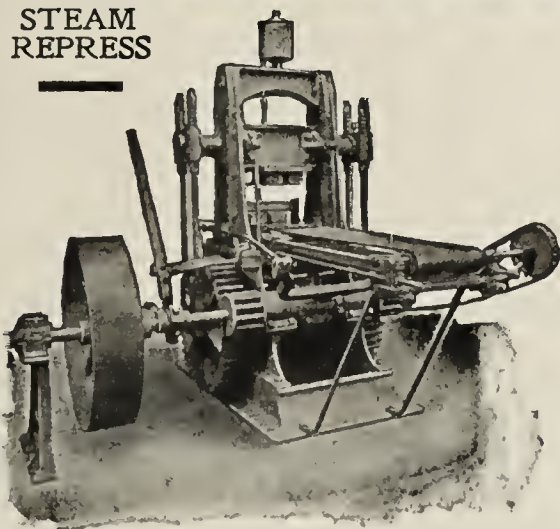
ADAPTED FOR SOFT-MUD OR STIFF-MUD
BUILDING BRICK==LABOR-SAVING THROUGHOUT
NO FANS, BLOWERS, TUNNELS, ENGINES OR CARS



→ Exterior View of
an Up-to-Date Brick
Plant Showing a "Mar-
tin Patent System"
Dryer==in Background

The "Martin Patent
System" of Drying is
Superior in Every
Respect to Any Other
System--Quick to In-
stall and Low in
Price and Takes up
Very Little Yard Room

STEAM
REPRESS

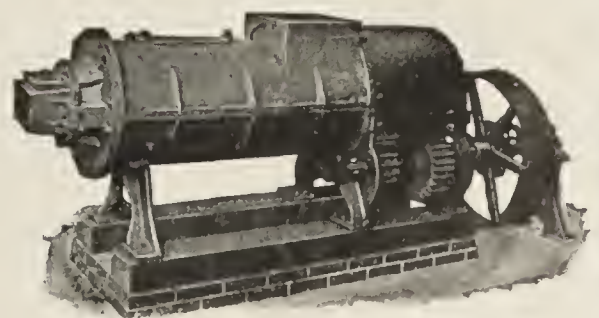


THE SALE AND THE CON-
STRUCTION OF THE "MARTIN
PATENT SYSTEM" DRYER IS
UNDER THE DIRECT SUPER-
VISION OF THE FACTORY
OFFICE AT LANCASTER,
PA., U. S. A.

LET US MAKE
YOU AN INTER-
ESTING OFFER



THE HENRY MARTIN
BRICK MACHINE MFG. CO.
LANCASTER, PA., U. S. A.

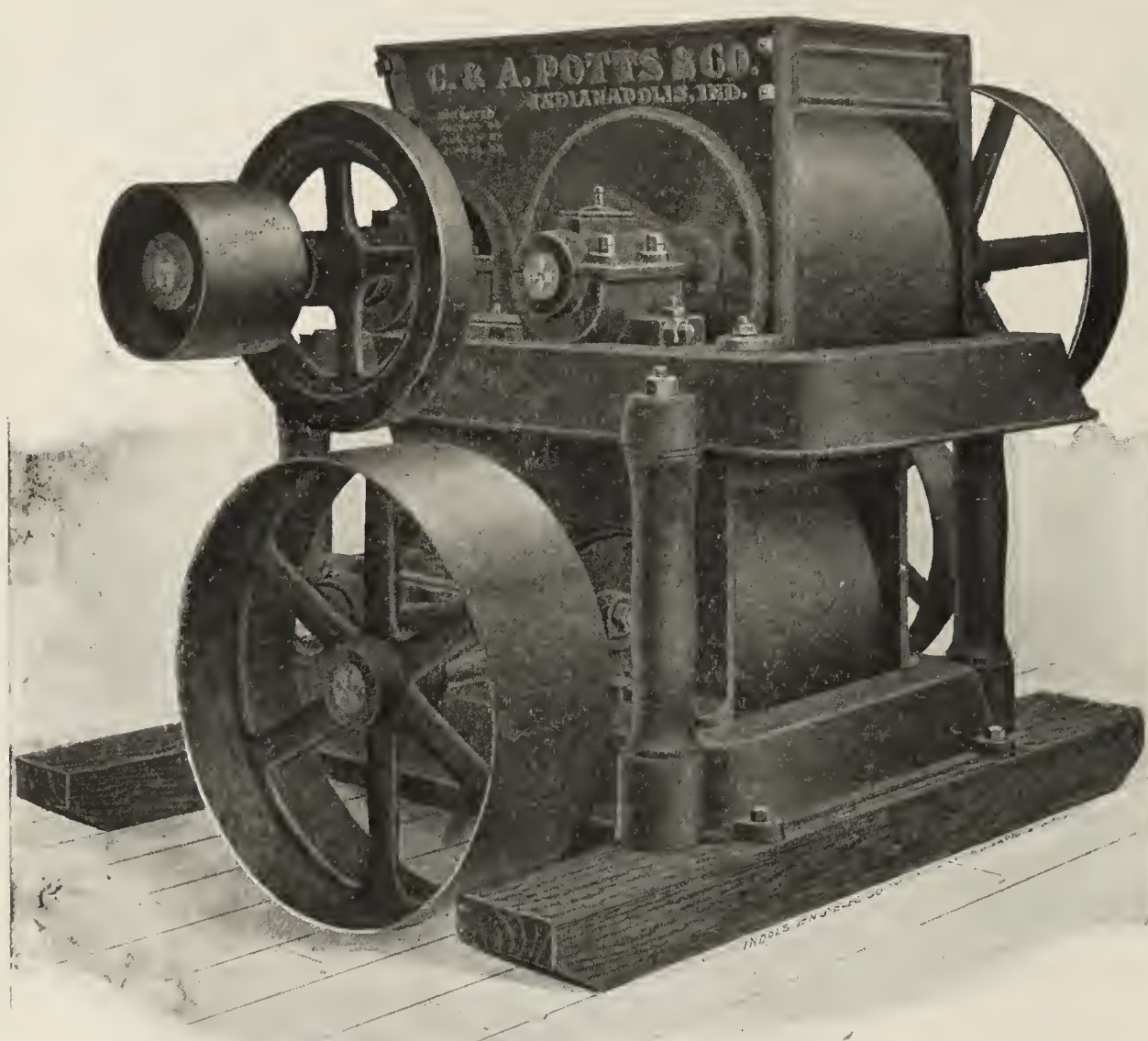


NO. 1 AUGER BRICK MACHINE

Potts Clay Disintegrators and Compound Disintegrators and Crushers

Have a National Reputation as Being The
Standard Machines of This Class.

When you get a POTTTS you have the Best.



**Disintegrators in
six sizes.**

**Capacity from
25M to 100M
Brick per Day.**



**Compound
Machines
Capacity from
25M to 75M Brick
per Day.**

COMPOUND DISINTEGRATOR AND CRUSHER.

These machines are well built of good material. Rolls thoroughly chilled. Adjustable steel cutting bars. Ring oiling journals.

We manufacture a complete line of Sand Mould Brick Machinery and Brick Dryers. Our specialty is erecting complete plants.

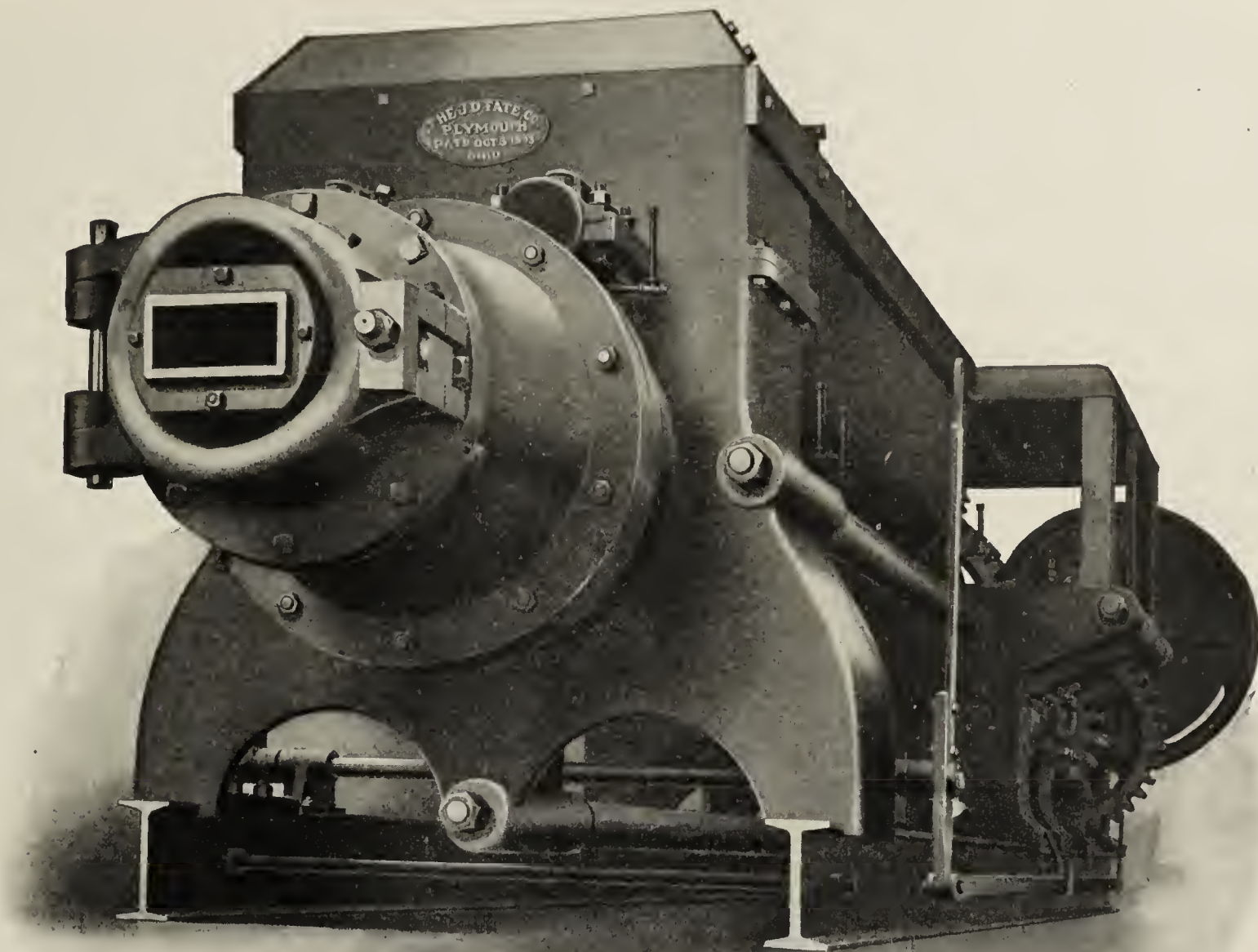
Let us know your wants. We will be pleased to quote prices.

C. & A. Potts & Co., Indianapolis, Ind.

Mention The Clay-Worker.

THE FATE SPECIAL

The Largest Combined Brick Machine in the World.



Length of machine over all, 25 ft. Width, 6 ft. 4 in. Height, 6 ft. 6 in. Weight, 35,000 lbs. Mounted on steel "I" beams, has interlocking hubs and independent knives. Capacity, 15,000 to 20,000 brick per hour. All the bearings have automatic wick oiling device and all those with heavy end thrust are of the marine type.

One of these machines has been recently installed in each of the following plants: Johnson Bros.' Clay Works, Iowa; La Prairie Brick Works, La Prairie, Quebec; Fredonia Brick Co., Fredonia, Kansas, and the Logan Brick Co., of Logan, Ohio, and all are doing fine work. This is especially true of the one at Logan where they make a paving block $4\frac{3}{8} \times 4\frac{3}{8} \times 9$ and weighing 13 pounds and they get a capacity of about 90,000 of these blocks per day, being more than they formerly got with two large machines. If you want the largest, strongest and best brick machine and one with the largest capacity, write us and we will tell you more about this machine.

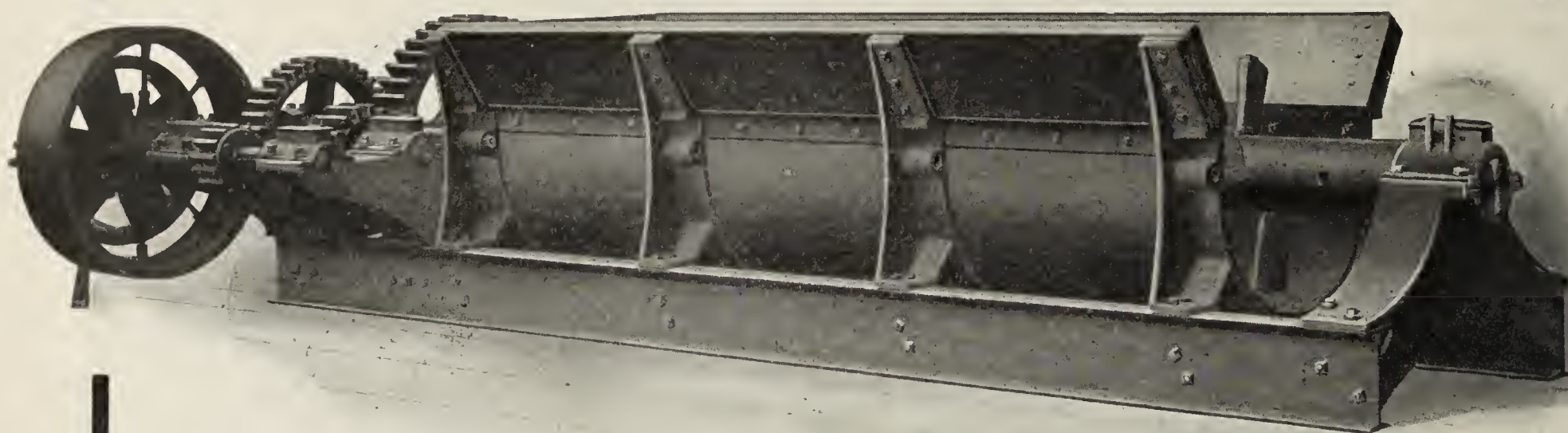
The J. D. FATE CO.,

Plymouth, Richland County, Ohio.

Mention The Clay-Worker.

GRANULATORS.

IT DOESN'T PAY TO BUY A SMALL, FRAIL, LIGHT-WEIGHT POORLY BUILT GRANULATOR AT ANY PRICE. ITS REQUIREMENTS ARE TOO SEVERE. GET A GOOD, STRONG, HEAVY, WELL-BUILT MACHINE AND KEEP YOUR PLANT FREE FROM BREAKDOWNS.



THE BREWER NO. 17

IS CERTAINLY A BIG, STRONG WELL-BUILT MACHINE. IT WEIGHS 18,000 POUNDS. THE KNIVES, OF WHICH THERE ARE 48, ARE FORGED FROM HARD HIGH-CARBON STEEL, AND EACH ONE IS INDEPENDENTLY ADJUSTABLE FOR PITCH. THE MAIN SHAFT IS 10-INCH DIAMETER. THE MAIN GEARS ARE 8-INCH FACE. THE THRUST BEARING IS OF THE MARINE PATTERN. THE SHELL IS ROLLED FROM A SINGLE SHEET OF 5-16 INCH STEEL.

WE HAVE BOTH SPUR AND BEVEL-GEARED PATTERNS, PUSHING OR PULLING DELIVERY.

If Marked



It's Good.

H. BREWER & CO.,

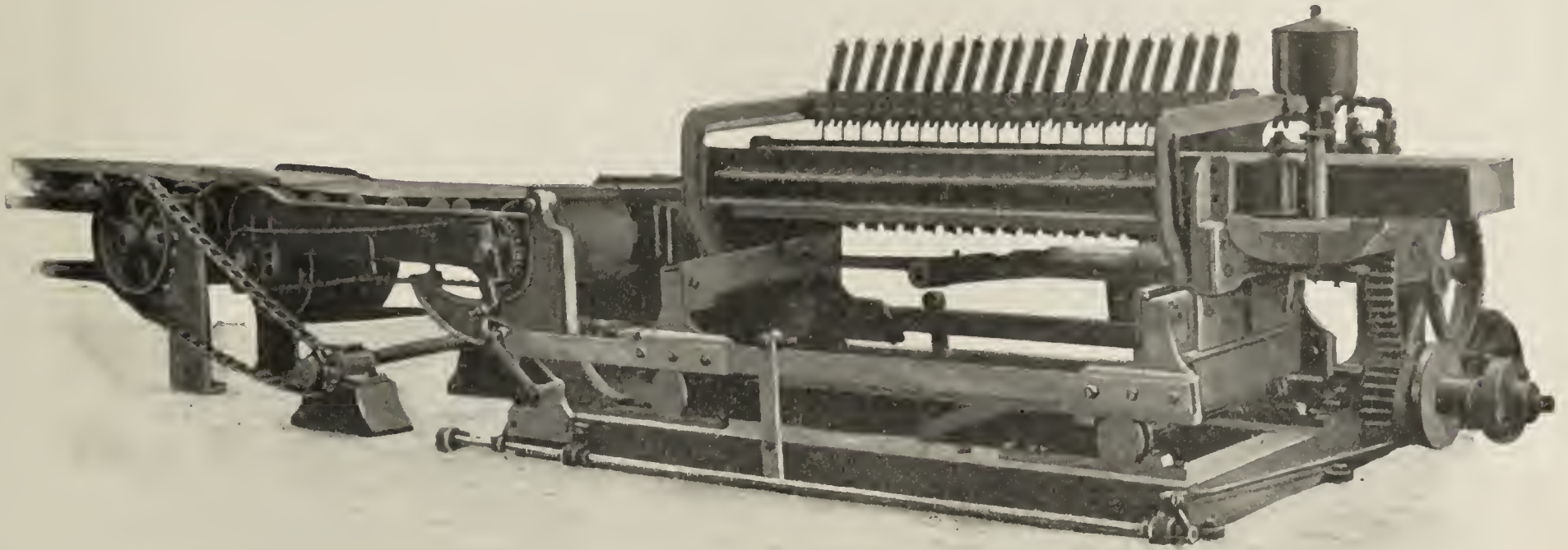
Tecumseh, Michigan.

If Marked



It's Good.

Modern Clayworking Machinery.

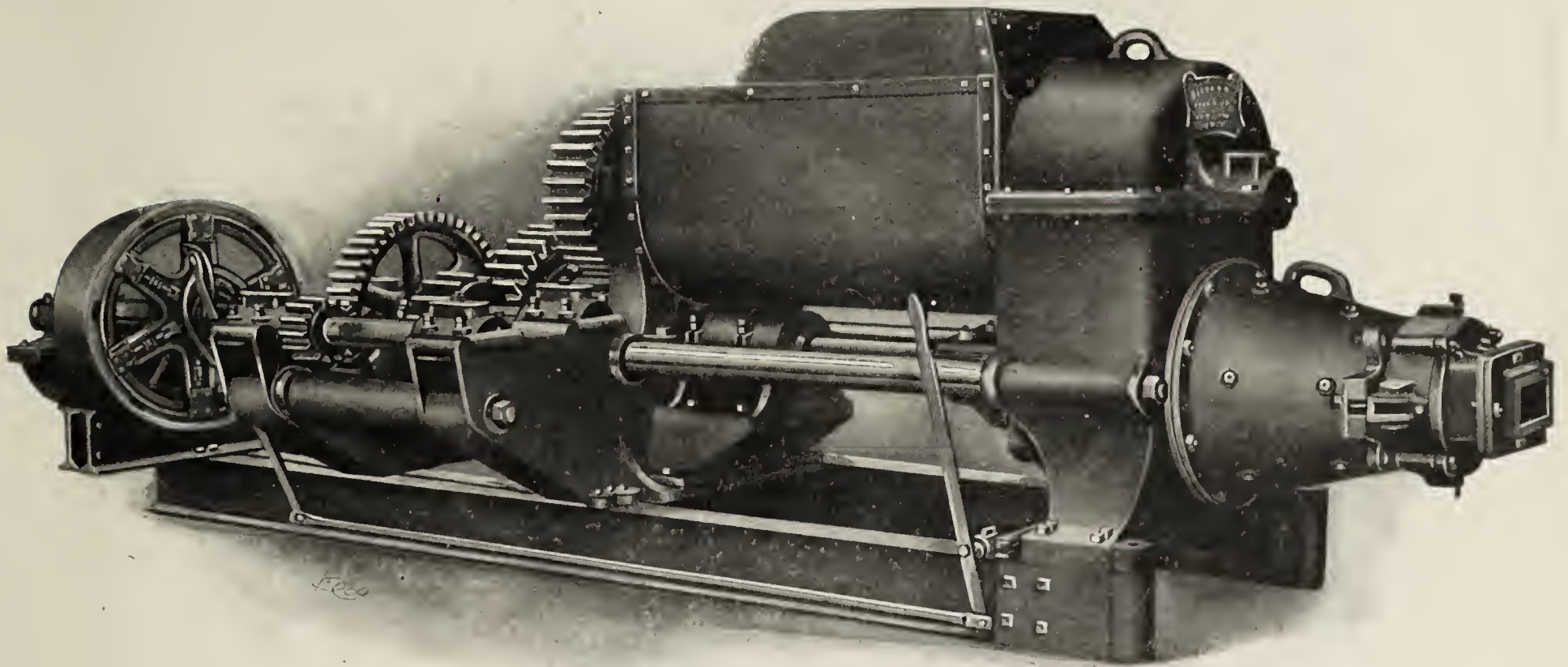


Automatic Side-Cut Table.

Cuts brick 28 inches from brick machine die.

Short cutting wires.

Capacity 25,000 to 125,000 brick in 10 hours.



No. 6 Combined Brick Machine and Pug Mill.

Steel gears throughout.

Self-contained on steel I beams.

Length of pug mill five to thirteen feet.

Interlocking hubs and independent knives.

Capacity 50,000 to 75,000 brick in ten hours.

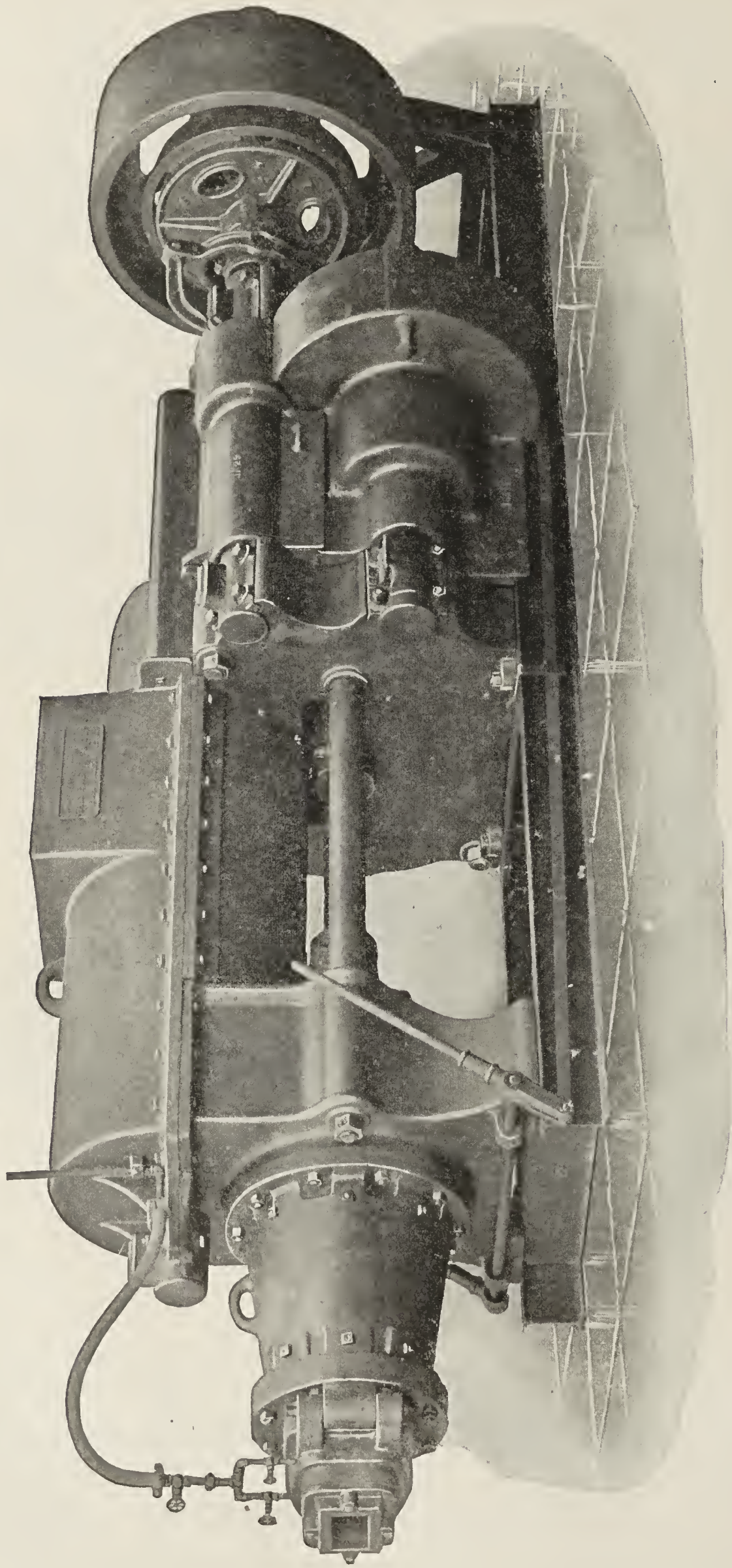
Our Piano Wire Screens Are Doing Excellent Work.

THE BONNOT COMPANY, Canton, Ohio.

Write for Circular No. 12.

Mention The Clay-Worker.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel 'I' beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

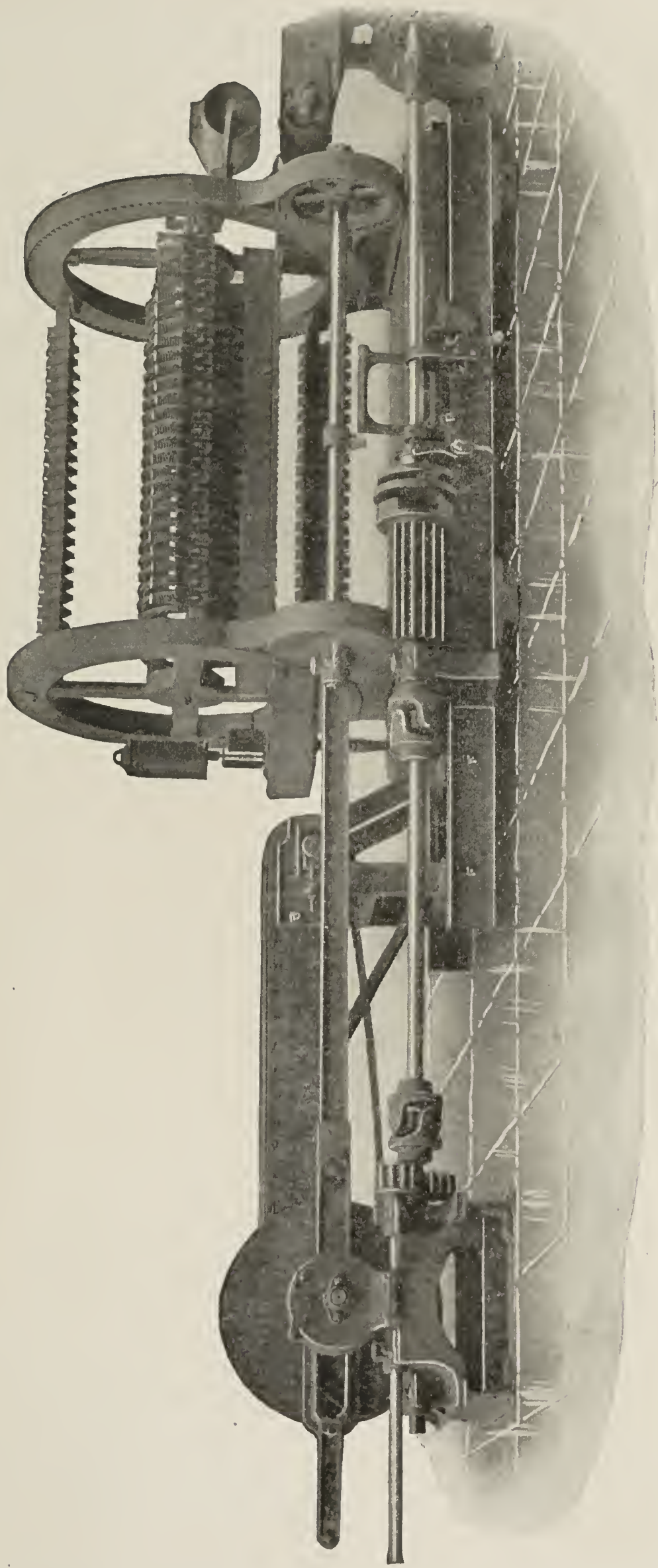
Height from floor to top of hopper, 5 ft. 8 in.

Size of hopper, 26-in. x 26-in. Weight of machine about 26,000 pounds.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

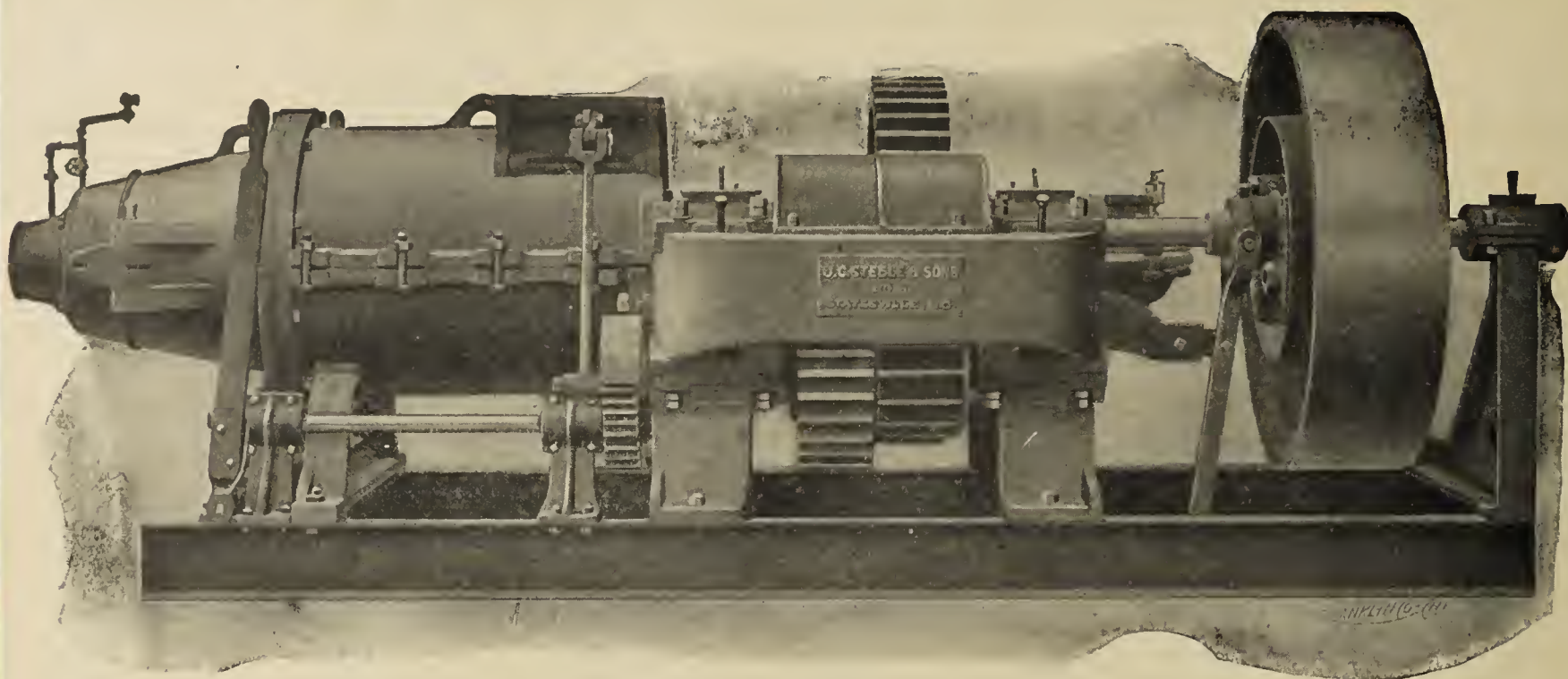
We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled.

If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.



No. 5. CAPACITY 50,000 to 100,000 PER DAY.

Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen:—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.

Save the Expense of a Dryer by using The

SCOTT
KILN
DRYING
SYSTEM



SCOTT
KILN
DRYING
SYSTEM

You can actually save at least 50% of labor expense about your yard by substituting the Scott Kiln Drying System for the old dryer method.

The expense and trouble of the dryer, with its accessories and complications, is entirely done away with. By a simple and rational method of conveying the bricks direct from the machine into the kiln and drying them there, all the trouble and expense of the dryer is saved, and you get better results than under the old system.

It has been proved that by substituting the Scott Kiln-Drying System for the old method, yards run at a loss have been made to return substantial profits.

The Scott Kiln-Drying System strikes directly at the root of the extravagant labor-cost in the brickyard, and as an investment is the most attractive proposition before the brickmaker today.

Is it not worth while to investigate a system that will actually put hundreds of dollars in your pockets every year?

We publish a book giving full and complete description of every detail of the construction and operation of the Scott Kiln-Drying System. Send for it. Ask for Catalog 213C.

American Blower Company,

(Licensees Alex. A. Scott Patents)

Detroit, Mich.

141 Broadway,
New York.

1019 Empire Bldg.,
Atlanta.

1550 Marquette Bldg.,
Chicago.

Are You in the Market for Brick and Tile Machinery?

WE SUPPOSE THAT YOU DO NOT CARE TO PURCHASE SCRAP IRON.

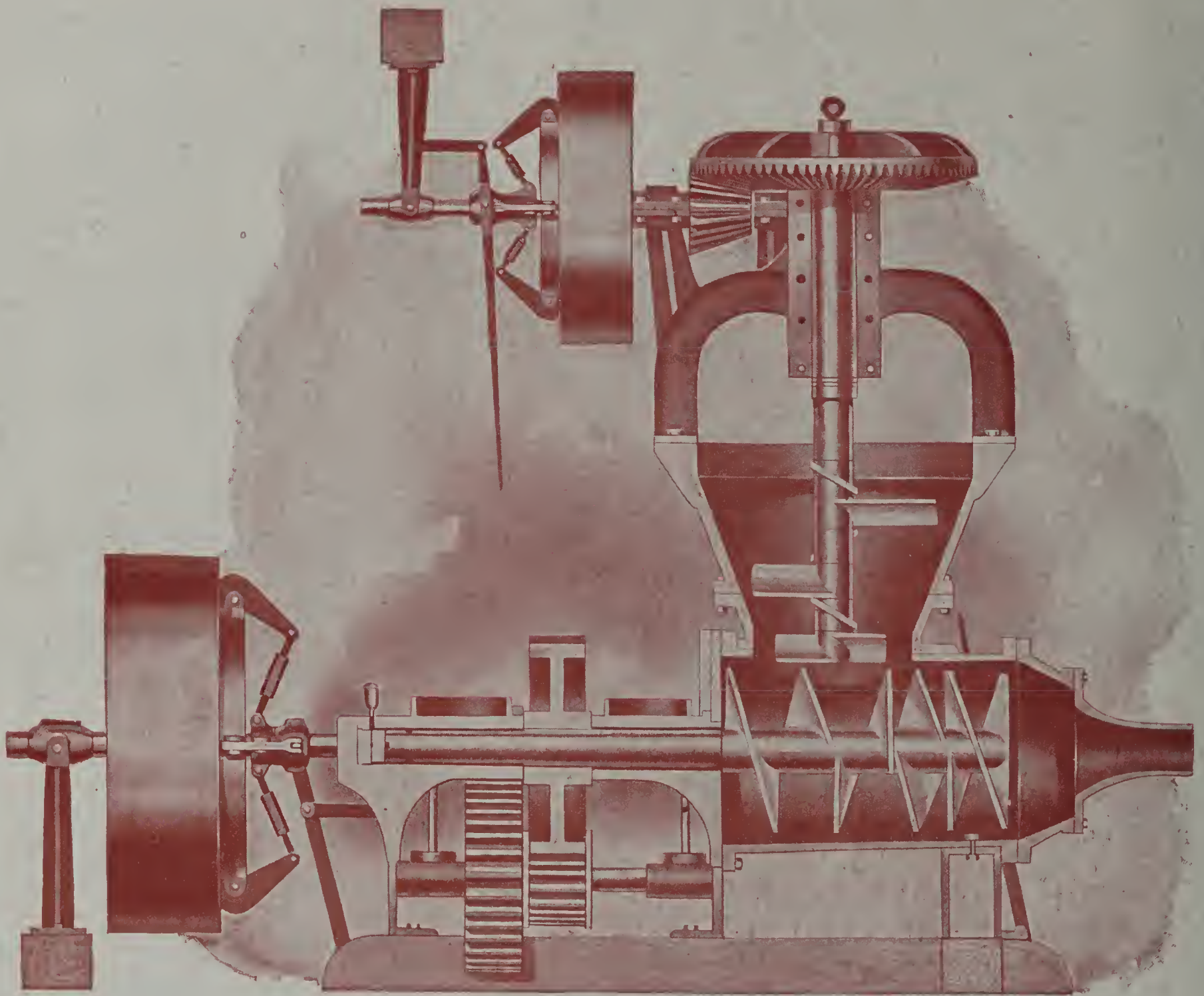
Our machines are so constructed that while they are the most durable machines on the market they contain only about one-half the material used in other machines.

REDUCE YOUR FUEL BILLS.

You get the same results from our machines with half the power required by other machines. Fuel is expensive, and this great saving is worthy of your careful consideration.

OTHER MACHINES REQUIRE FROM 50 TO 60 H.P.
OUR SPECIAL "ELI" ONLY 30 H.P.,

making a difference of 20 to 30 h.p., or from one-half to three-quarters of a ton of coal for ten hours. This means that our machine saves you \$1.50 to \$2.25 per day in fuel.



SPECIAL "ELI" BRICK AND TILE MACHINE.

LATEST IMPROVED. LARGE CAPACITY. RUNS EASY.

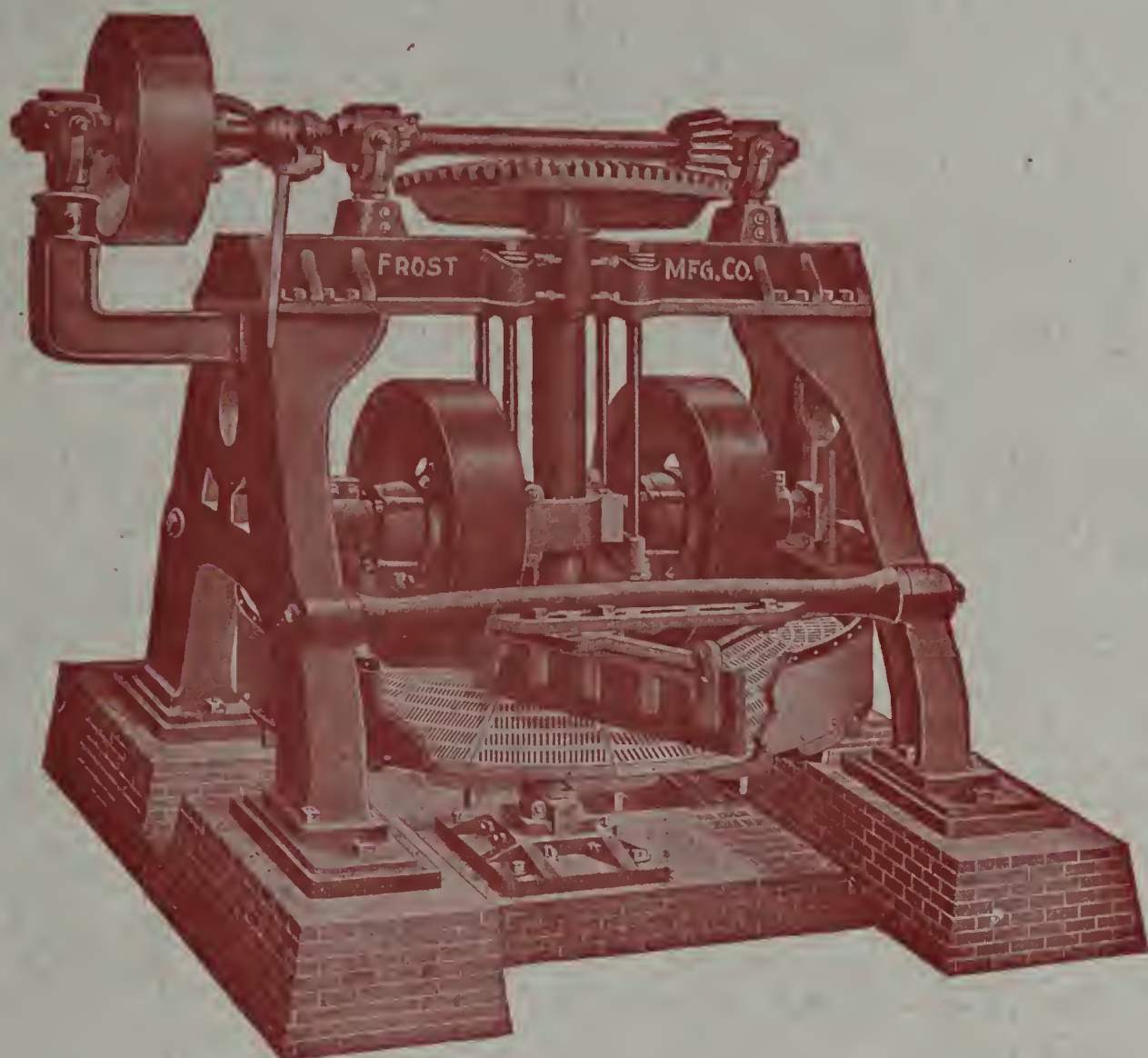
We have a full line of "ELI" Brick, Tile, Hollow Brick and Hollow Block Machines, ranging in capacity from 20,000 to 100,000 brick per day. Write for illustrated Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,

[ESTABLISHED 1856]

MORENCI, MICH., U. S. A.

FROST DRY PAN



When you buy a Pan buy a FROST Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.
SALES DEPARTMENT:
135 Adams St., CHICAGO, ILL.
Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN

After the fires are out, a kiln holding 200,000 bricks will throw off more heat than a 100 h.p. boiler would require for two weeks' operation. Why waste this enormous amount of heat when it can be successfully utilized for drying purposes in an

"A B C" DRYER.

Shall we send you Catalogue No. 159C?

American Blower Co.
Detroit Mich.

The Perfect Clay Screen in a New Dress.



A piano wire plate that fits just the same as our perforated metal plates.

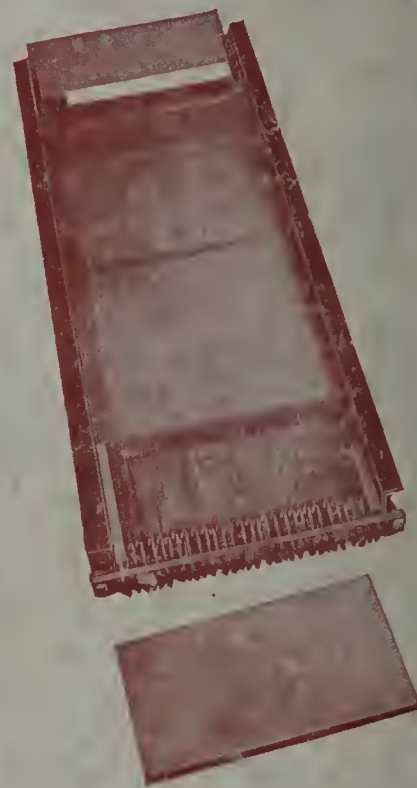
By using every third plate, you get more screening surface than is had with any other screen of this kind.

SPECIAL FEATURES. Short wires do not require high tension and are less liable to break. If a wire does break, take out the plate, put another one in its place. This can be done in an instant. If you want a piano wire screen without the frame and mechanical parts, four of our plates more than equal the area of any screen of this kind now offered. But with the mechanical features THE PERFECT CLAY SCREEN fills all requirements.

DUNLAP MFG. CO.,
Bloomington, Ill.

SCREENS

Do you want a
Screen that you
will not have to
think about?



Write to

The Ohio Ceramic Engineering Co.

Cleveland, Ohio.

DRYER CARS — DRYERS — PRESSES.

50.7
C 66
99

The
CLAY-WORKER

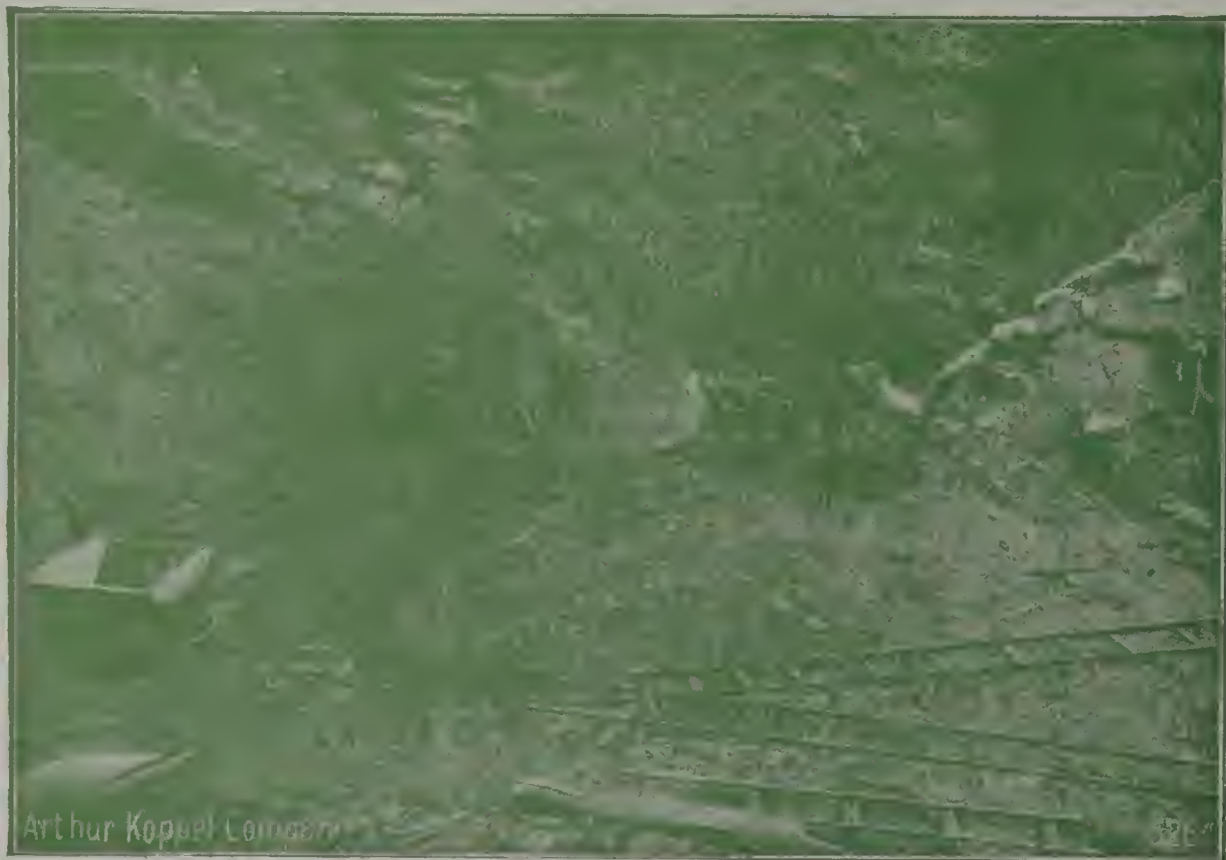
**Merry Xmas
1907**

T.A.RANDALL & CO.
Publishers
INDIANAPOLIS

Table Contents, Page 650. Index to Ads, Page 665.



We Are Manufacturers and Consulting Engineers of
INDUSTRIAL and PORTABLE
— RAILWAYS —



This illustration shows the **CLAY MINES** of the National Fireproofing Co., Pittsburgh, Pa., with **KOPPEL'S COMPLETE INSTALLATION OF INDUSTRIAL AND PORTABLE RAILWAYS**, Portable Track and Switches, Turntables and Steel Dump Cars.

WRITE FOR CATALOG NO. 41

ARTHUR KOPPEL COMPANY

PITTSBURG
1607 Machesney Bldg.

NEW YORK
136 Morris Bldg.

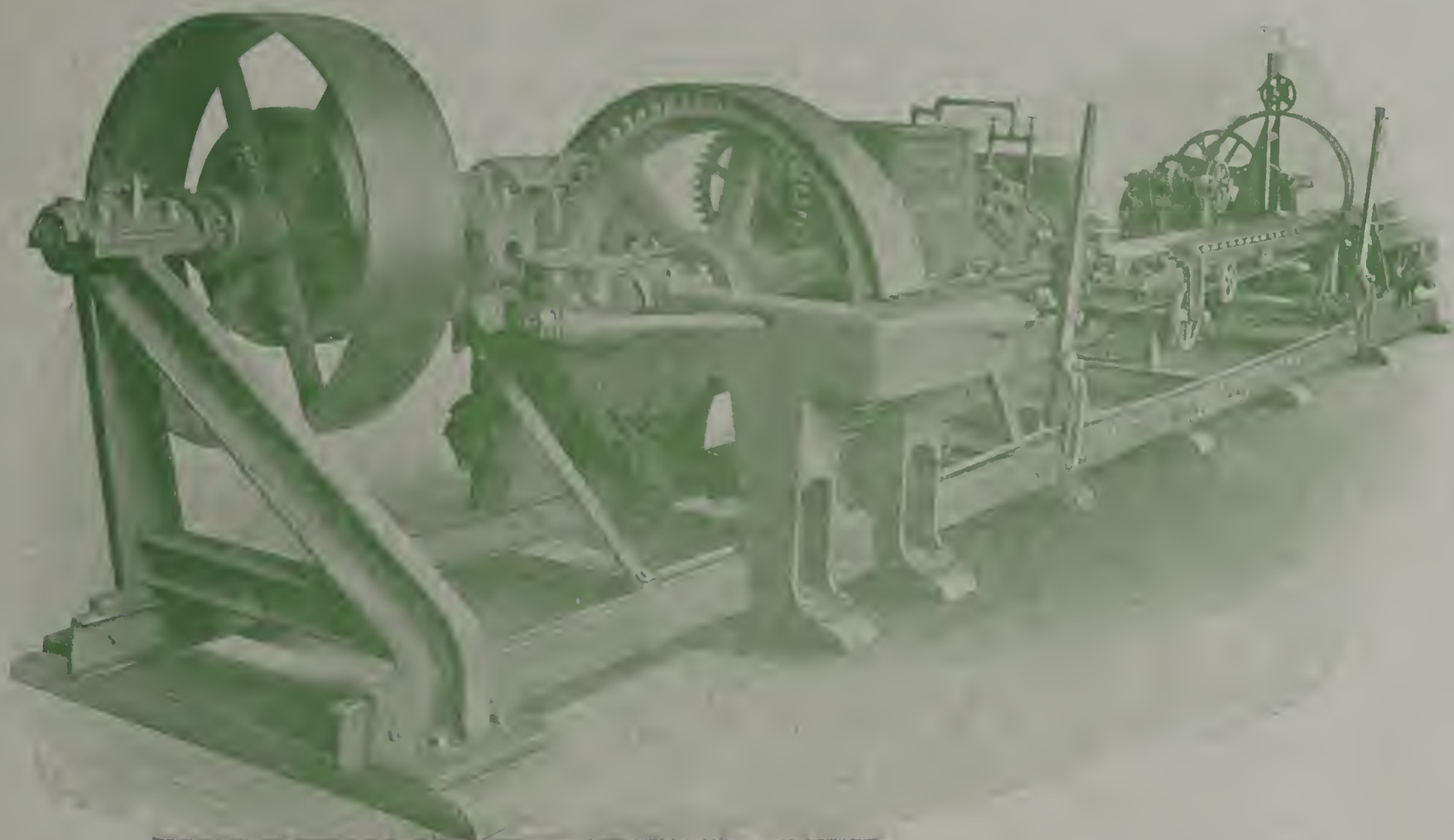
CHICAGO
1639c Monadnock Bldg.

BOSTON
53 Oliver St.

SAN FRANCISCO
1515 Chronicle Bldg.

THE NO. 10 CHAMBERS BRICK MACHINE

With No. 6 Automatic Side Cutter.



This is a new machine and embodies a number of novel and interesting features. The No. 6 Side Cutter has been tested to as many as 110 brick per minute, and is confidently guaranteed for a capacity of 40,000 bricks daily. It is a single wire rotary cutter with a down shear cut, cutting but one brick at a time and cutting them absolutely square and smooth. Provision is made for the escape of stones, should they come in the path of the cutting wire, and the flexibility of the wire does not affect the squareness of the cut.

Note the new gear frame and large diameter heavy gear of broad face. Observe how the end thrust is provided for, as well as the position of driving shaft and clutch pulley. No trouble to get at the journal bearings when necessary to rebabbit. Clutch pulley 44 inches diameter by 12 inches face. Driving Shaft $3\frac{7}{8}$ inches diameter. For hard work and a daily capacity of 20,000 to 40,000 bricks this machine is in a class of its own.

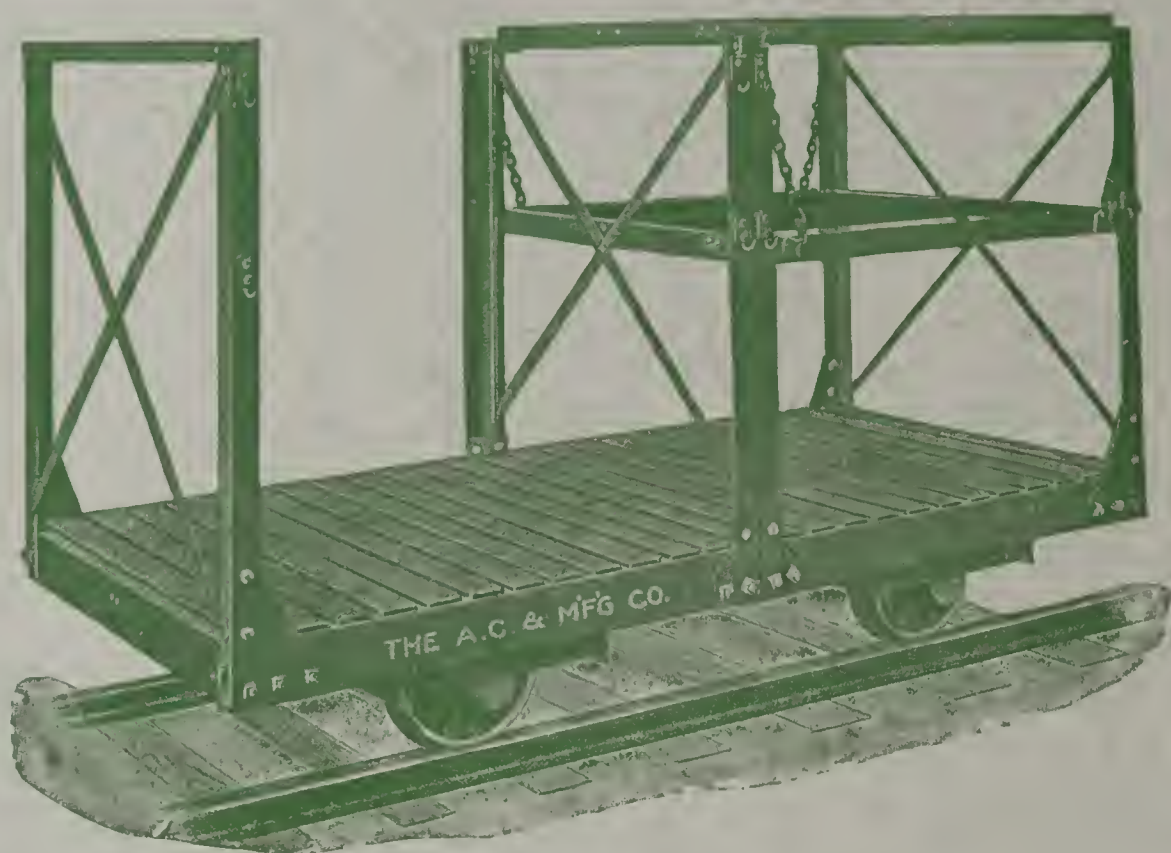
CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets, PHILADELPHIA, PA., U. S. A.

59 West Jackson Boulevard, CHICAGO.

SEE AD ON PAGE 661.

DRYER CARS



We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars, as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

(See Ad on Page 659.)

A Tile and Brick Plant without chimney, constructed by

JACOB BUHRER

which produces yearly, in two Kilns and two Dryers, 20 to 23 million pieces of all kinds of goods, also glazed tiles. Two ventilators furnish the draught for the Kilns and Dryer.



~~~~~ Jacob Buhrer's Technical Bureau, ~~~~~ CONSTANCE, GERMANY.

Buhrer commenced to work in his father's brickyard in April 1838, when he was 10 years old, and established in 1860 his Technical Bureau.

Buhrer undertakes the construction of Kilns, and of kilns with dryers, in which brick and tiles are dried with the waste heat of the kilns. The kilns, which are provided with heat collectors, utilize the waste heat to the utmost extent.

In Buhrer's Shortened Kiln (miscalled the Zig-Zag Kiln) there can be burned very fine tiles, glazed and unglazed.

Buhrer's Kilns and Dryers are also very suitable for burning ordinary bricks and face bricks. Bricks and tiles, made by the plastic process, of clays of normal qualities, may be dried in 1½ to 4 days, and can be drawn from the kiln, well burned, in 4 days more.

Buhrer shows by his new burning process how the production of kilns of other systems may be increased from 50 to 100% by means of his ventilator, the output being of first-class quality, with a small consumption of fuel. With the waste heat thus produced in the kiln, up to 50% and more of the required goods may be dried in Buhrer's dryer.

Buhrer also puts up lime kilns. Fat lime, containing 98 to 99% pure lime, is burned with 14% coal. These kilns can also be used for burning Portland cement.

Buhrer's methods of construction have a bearing upon all the work done in the yard, and the works, mostly large, he has built, are working with great economy.

Buhrer's largest works, without chimney, are used by the most successful men in the ceramic industry.

THE HARRINGTON AND KING PERFORATING CO.



PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.

For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.

For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,
CHICAGO, ILL., U. S. A.



DON'T MAKE THE MISTAKE

of putting off, until the busy season, the making of needed improvements. When business is rushing you can't afford to shut down for that purpose.

NOW is the time to make such alterations as will put your plant in good running condition for next season's business.

Our Mr. L. E. Rodgers, the Waste Heat Dryer Specialist, will give his personal attention to your requirements.

DON'T MAKE THE MISTAKE
of neglecting to consult the

L. E. RODGERS ENGINEERING CO.

NOW.

Waste Heat Dryer Specialists,
Brick Works Engineers.

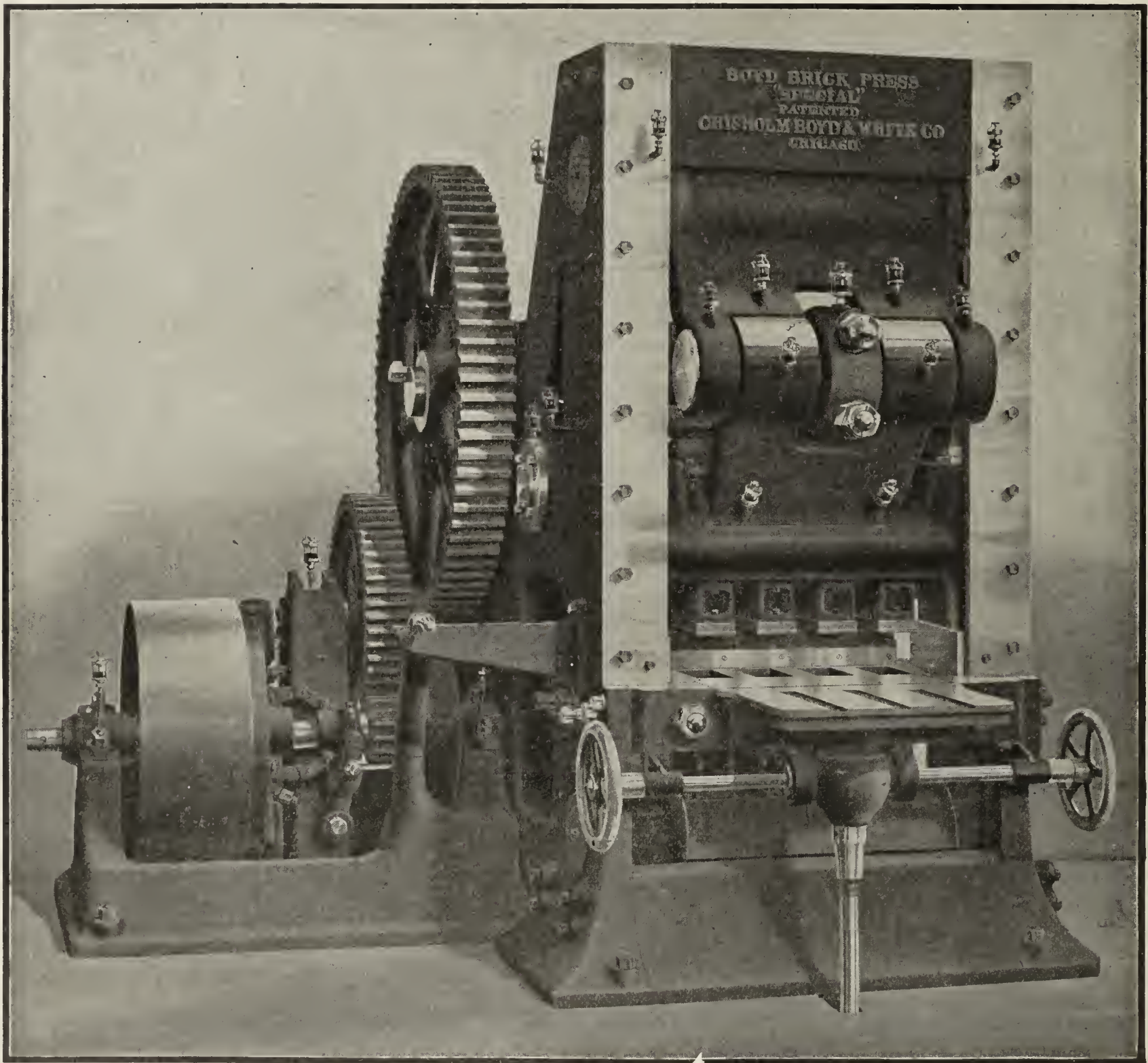
108 LA SALLE ST.

CHICAGO.



The Boyd Brick Press

Built in Two, Four and Six-Mold Sizes.



FOUR-MOLD SPECIAL.

BRICK PLANTS designed and complete machinery equipment furnished. Machinery and product guaranteed.

More Boyd Presses in use than all other Press Brick Machines combined.

The Boyd Press has great strength and endurance, great pressure and long dwell. Boyd Presses built 18 years ago are still in use and doing good work. Brick presses that last are the cheapest in the end.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts.

CHICAGO, ILL.

N. C. POTTER, PRESIDENT

JOSEPH WELTE, GEN'L MANAGER

THE SUMMIT PRESSED BRICK & TILE CO.

MANUFACTURERS OF

HIGH GRADE PRESSED BRICK.

OFFICE AND YARDS,
FOURTEENTH AND WATER STREETS

TELEPHONE, MAIN 795.

PUEBLO, COLO. October 10, 1907.

Chisholm, Boyd, & White Co.,
57th & Wallace Sts.,
Chicago, Ill.

Gentlemen:

We have recently noticed in the Clay-Worker several letters from your customers giving their experience with the Boyd Brick Press, and as we are using one you may be interested to hear from us also.

It is now over five years since we installed our Four-Mold Boyd press, which has been in constant operation since that time. It shows practically no wear for the five years' use, and it is in first-class condition, running every day and doing as good work as when first started, and has given us entire satisfaction.

As you doubtless know, we are working shale, which requires heavy pressure, and with your press we never have any trouble to get all the pressure we want to make a good, hard, solid brick.

Before buying the Boyd we made a thorough investigation of all other dry press machines, and we are pleased to state that we have never had cause to regret the selection of your press. We desire to thank you for your prompt and courteous treatment.

We are, Yours very truly,

SUMMIT PRESSED BRICK & TILE CO.

Joseph Welte
mgm

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

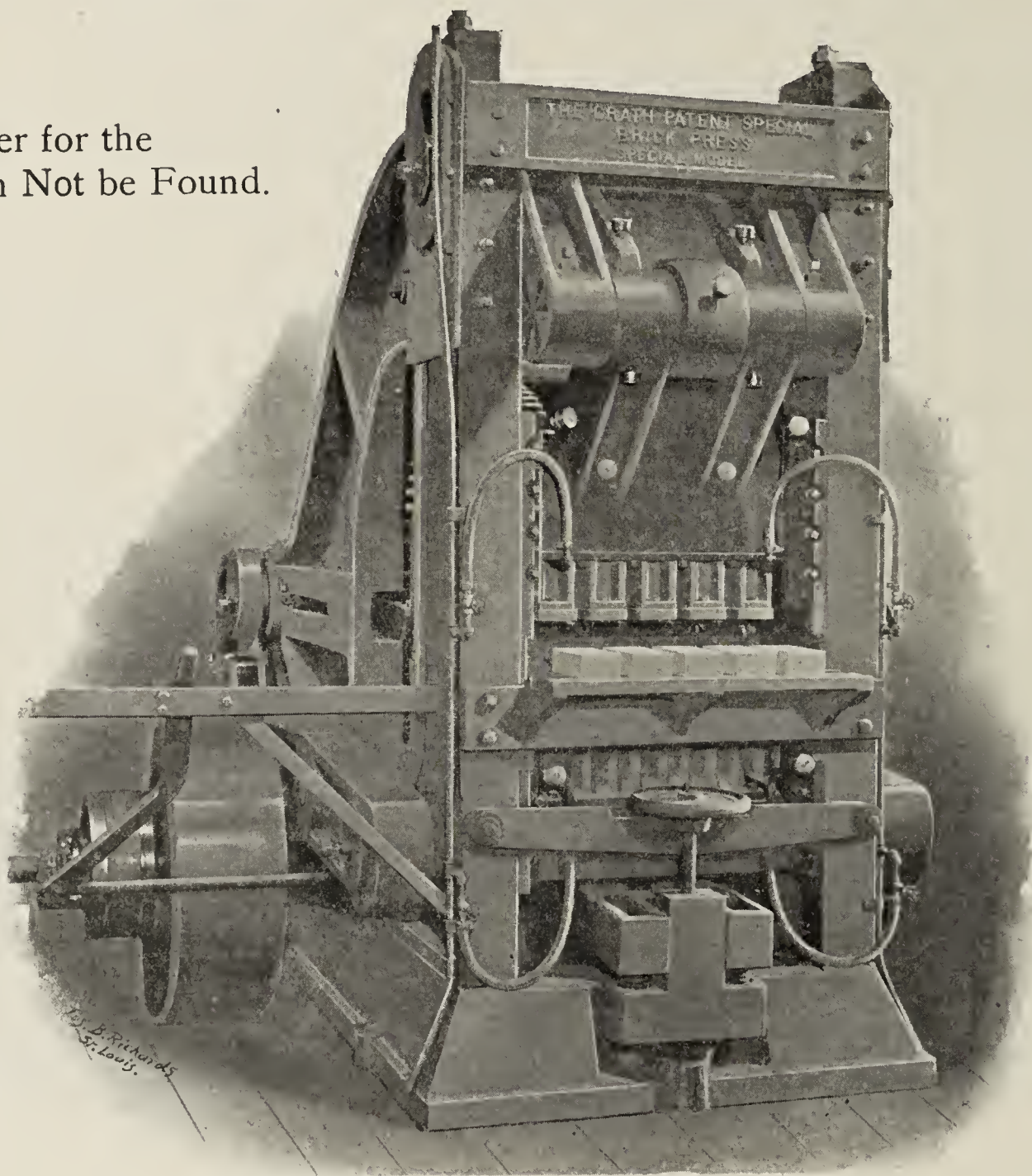
THE ONLY PERFECT BRICK PRESS

For SAND=LIME and DRY CLAY BRICK of Unequaled Quality.

FIVE MOULD MODEL.

Seek No Further for the
Equal Can Not be Found.

The Best
is the
Cheapest
for the
Manufac-
turer.
Do Not Buy
an
Out of Date
Press,
Same as
Built
Twenty
Years Ago.
Buy a
Modern
Press
And
Keep up
With
the
Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.
Adjustable at all Wearing Parts.

THE PRESS OF TODAY.

THE ALBERTA PORTLAND CEMENT CO.

W. P. Grath, St. Louis, Mo.:

[Copy]

Sandstone, Alta., Sept. 26, 1907.

Dear Sir—Replying to your favor of recent date regarding Grath Special press purchased from you, would say that after working your press alongside another well-known make, your press has proved itself vastly superior in every way; it is stronger, simpler, easier of adjustment, makes more brick, and of much better quality.

After a long experience with presses, having operated five (5) different presses each of different makes, I consider yours "THE BEST YET," in short, "AN IDEAL PRESS."

Wishing you the success your press merits

Yours truly, G. W. DELLER, SUPT.
Alberta Portland Cement Co., Limited.

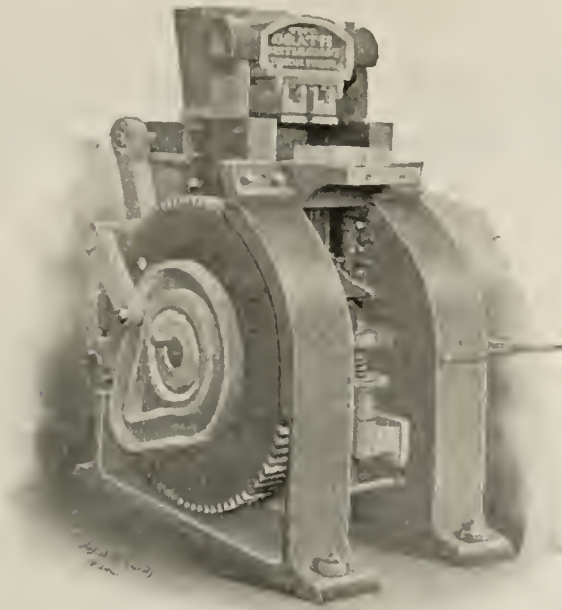
Illinois Supply & Construction Co.,

Suite 512 and 513 Holland Bldg.

St. Louis, Mo., U. S. A.



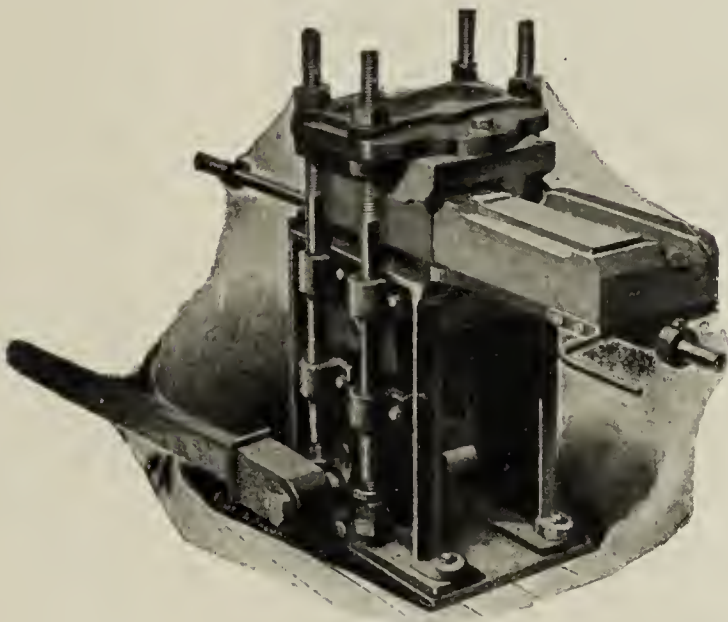
The Grath Little Giant
Sand Lime Brick Press
Capacity-5000 per day



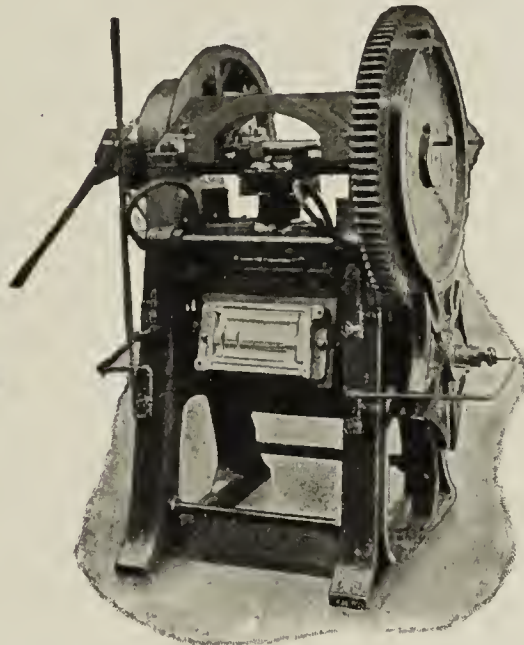
THE GRATH LITTLE GIANT TWO
MOLD BRICK PRESS
For Fine Dry Press Brick.



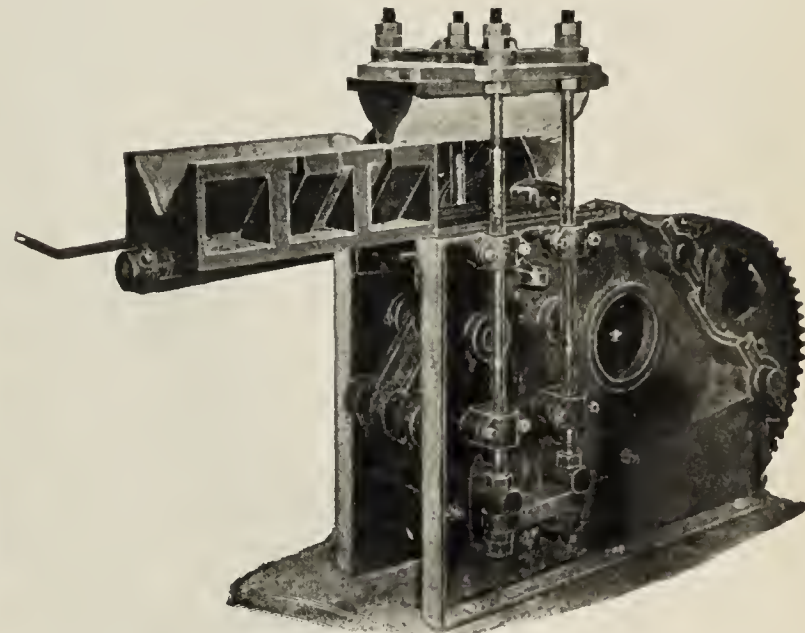
The Grath Special Hand-Power Brick
Press, for Plain and Ornamental
Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.



The Grath Special
Hand-Power Roofing Tile and
Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.



The Grath Revolving Roofing
Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.



The Grath Roofing Tile and Trimming Press
No Roofing Tile Plant
Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

GUARANTEED AGAINST BREAKAGE.

The New Grath Down=Draft Continuous Kiln.

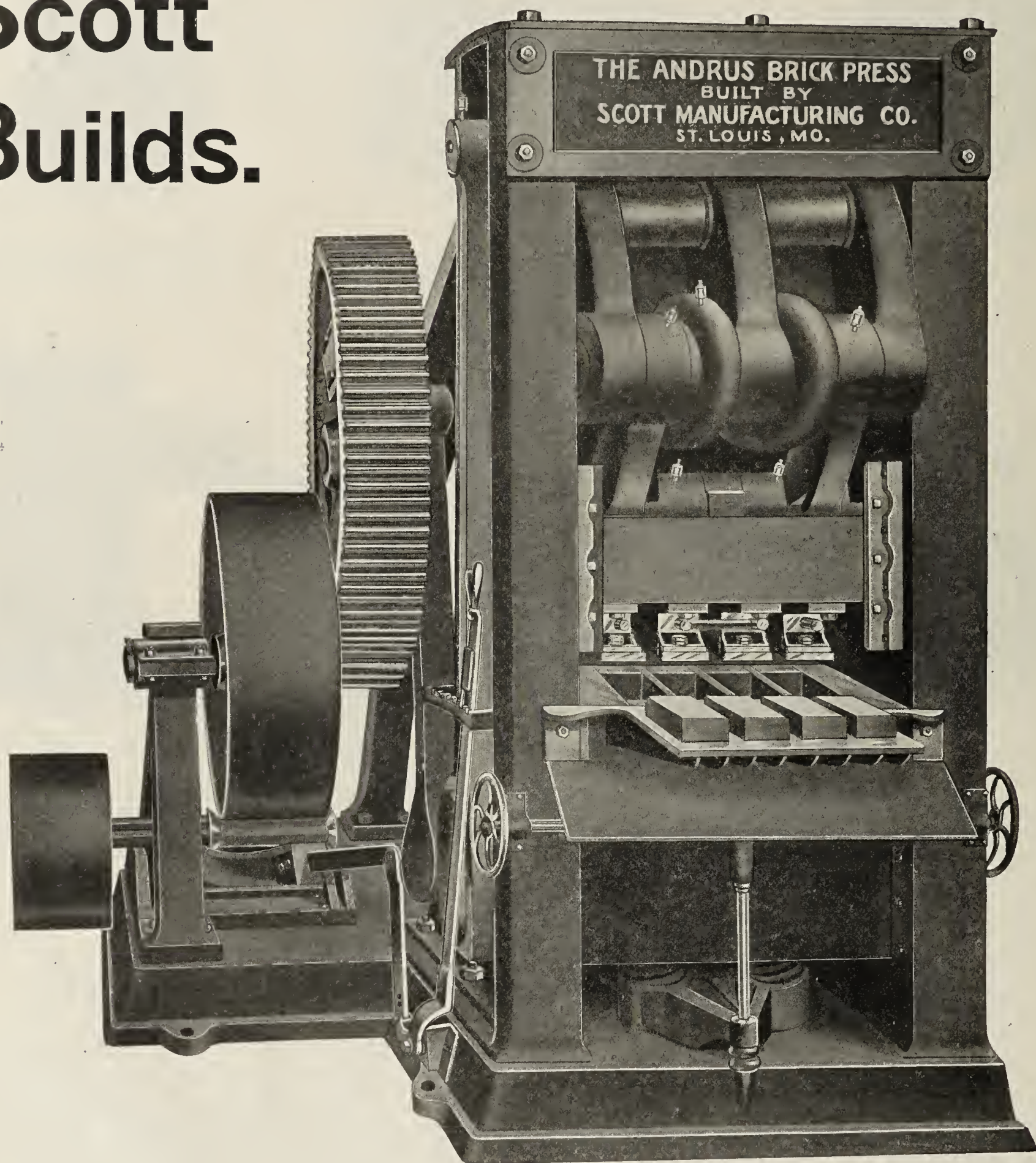
Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. *The Kiln of the Future.* This kiln works and is operated like the **ordinary single** down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get **advantage** of all **waste** heat from your burning chamber, which you **lose** and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in **same** manner as the direct, through the furnaces up the bag and down through the ware. **Simple** and **sure** in operation. GUARANTEED.

Lieber's Code.
Cable Address,
GRATH, St. Louis.

Illinois Supply & Construction Co.
HOLLAND BLDG.. ST. LOUIS, MO.

Long Distance
Phone
Bell, Main 235.

This is the Press that Scott Builds.



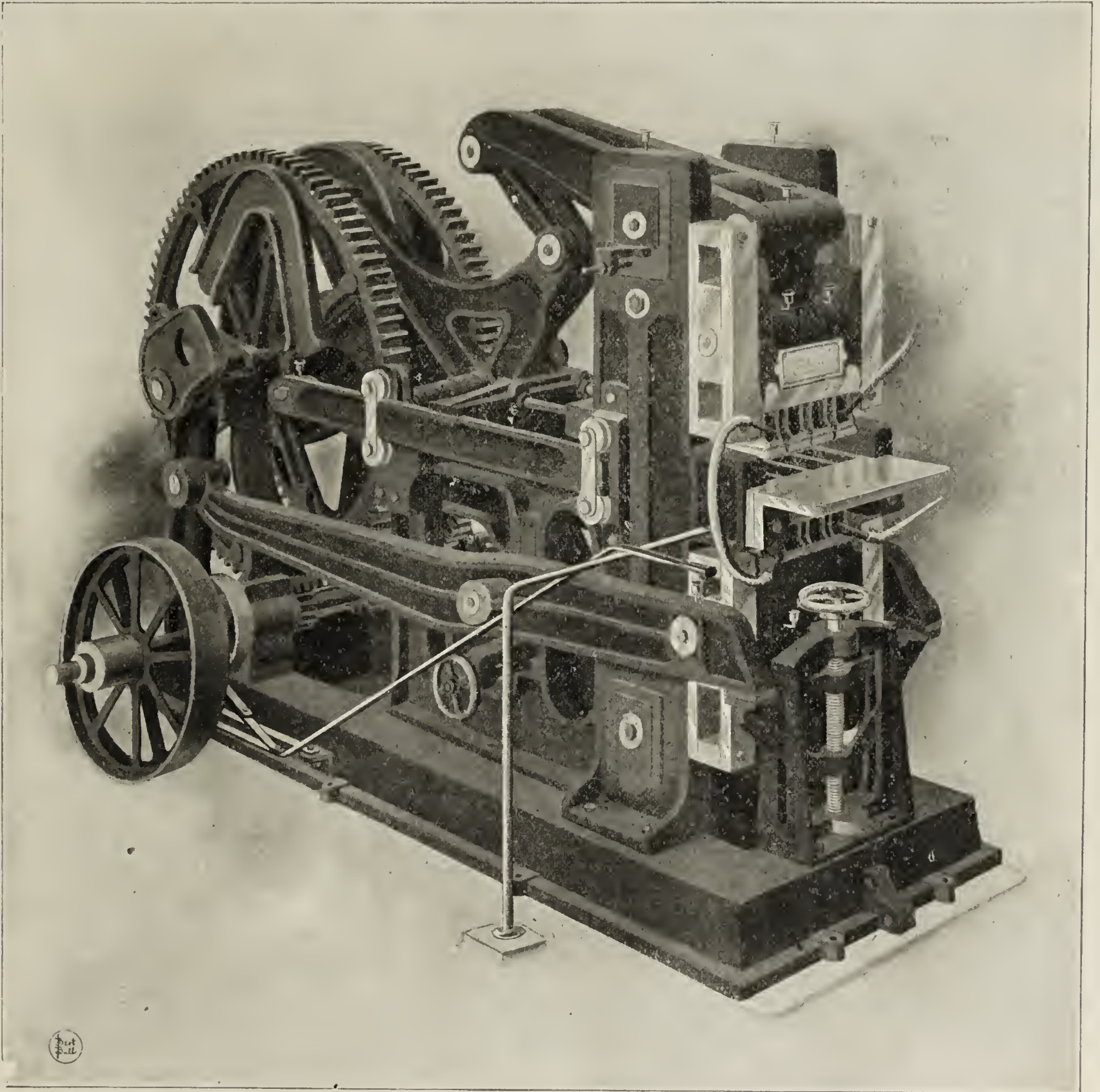
Our Latest Model.

A postal will bring
you its description
and price.

Scott Manufacturing Company,
421 Olive Street, St. Louis.

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.

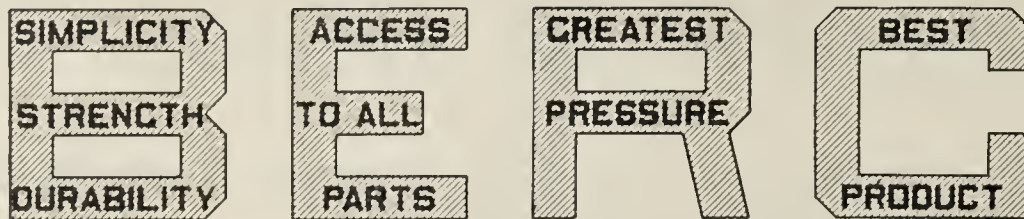


If you want an up-to-date Dry Press, one that will give you
RESULTS—See this machine in action.

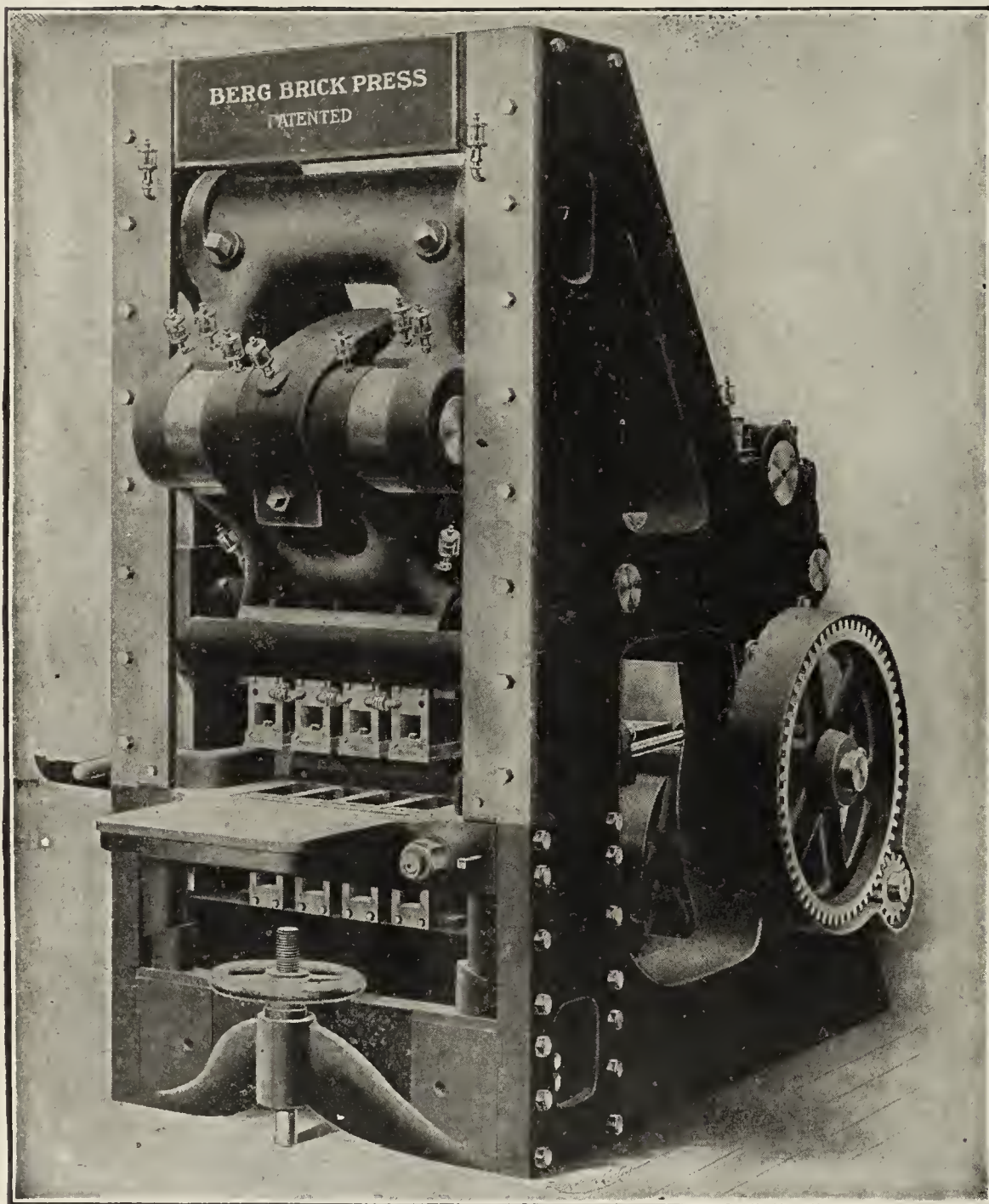
The Fernholtz Brick Machinery Co.,

Boyle Avenue and Old Manchester Road, St. Louis, Mo.

WHAT'S IN A NAME?



The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS

for

Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives THREE Distinct PRESSURES:
Result is,
No Granulated Centers.

THE BERG PRESS
HAS ALL WORKING PARTS ABOVE
Clay Line.

THE BERG PRESS
is fitted with "THE BERG PATENTED
MOLD BOX"—the DELIGHT of brick-
makers, and which many OTHERS
have tried to IMITATE.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
SIMPLE MECHANICAL
CONSTRUCTION.

Cut Gearing, and many other steps forward in *Improvements*, and built of the *Highest Grade of Material and Workmanship. Fully Guaranteed* as to its *Success*.

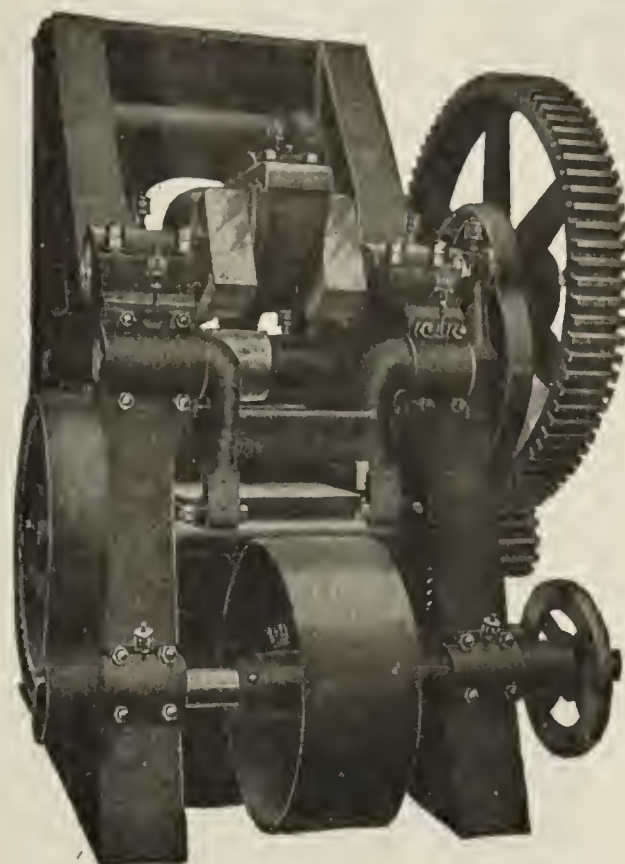
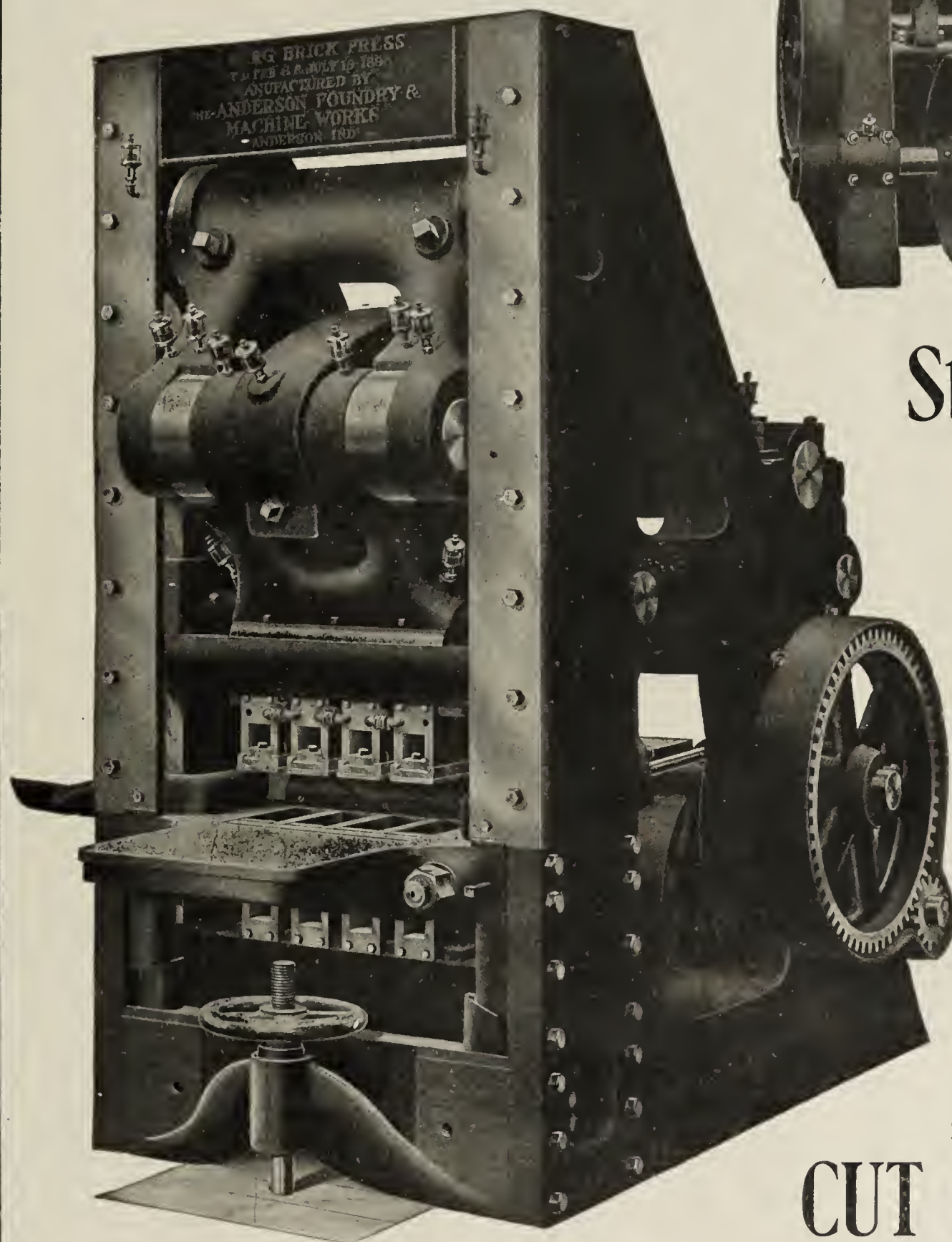
Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make *Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick* and *Fire Brick*. Correspondence solicited.

A. BERG & SONS,

Mention The Clay-Worker.

Manning Chambers, TORONTO, ONT., CAN.

New Model Berg Brick Press



Back View.

Still in the
Lead
and
One Step
Further
Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE
PIECE.

Provided with

CUT GEARING

of either iron or steel, if desired.

Sold by

CHICAGO BRICK MACHINERY CO.,
Great Northern Bldg.
77 Jackson Blvd.
CHICAGO.

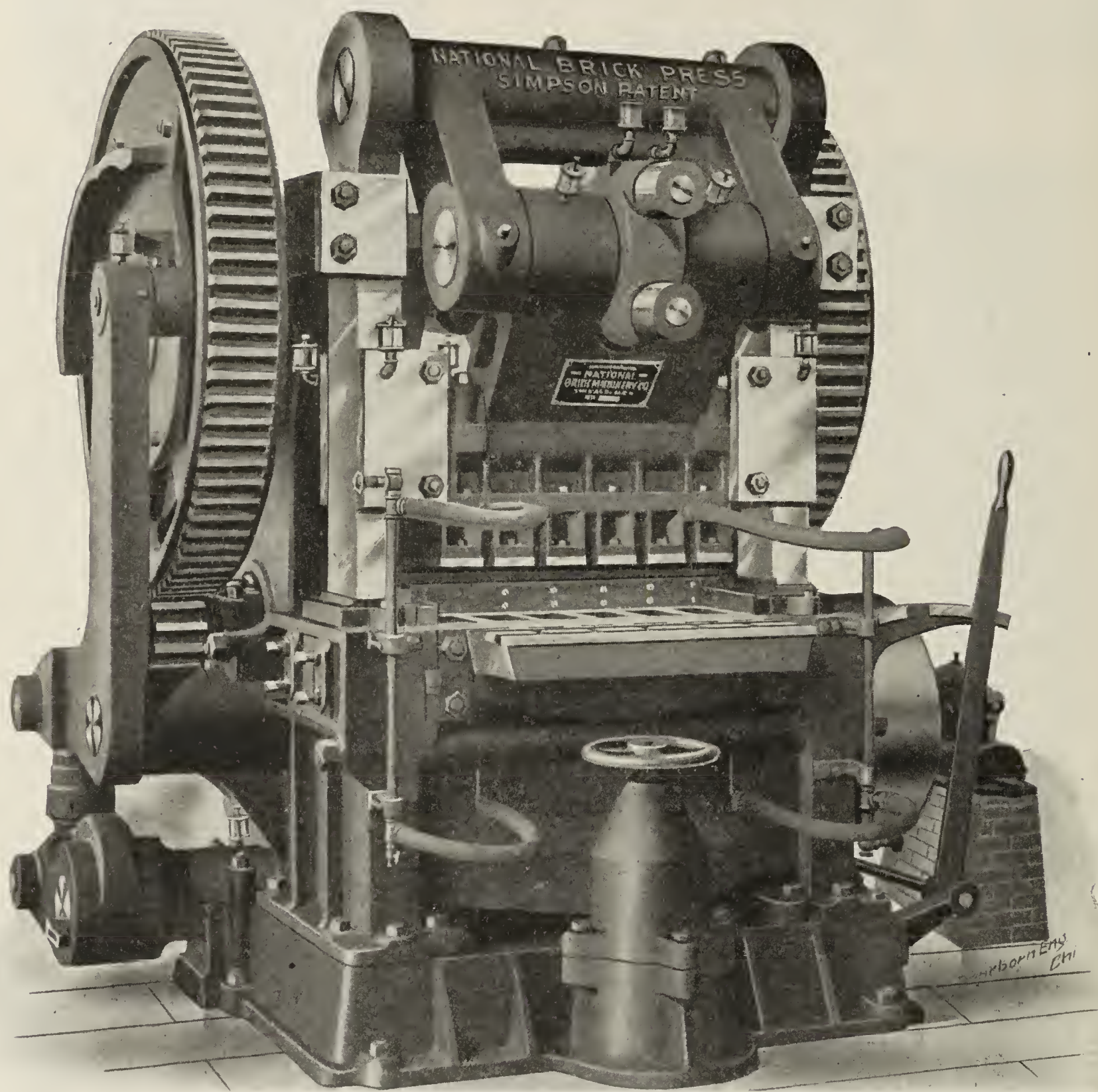
Manufactured and Sold by

Anderson Foundry & Machine Works,
New York Office, No. 39 Cortlandt St. ANDERSON, IND.

The National Brick Press

Simpson Patent

SIX MOLD



Read What Our Customers Think of It.

National Brick Machinery Company, Chicago, Ill.:

Rochester, N. Y., July 6, 1907.

Gentlemen—We beg to inform you that the new Six Mold Brick Press, Simpson Patent, which we recently purchased from your company, is turning out a very high grade of brick at the rate of 27,000 per ten hours. We find the press to be smooth running, strong and compact with its parts easily accessible, and in every way it is equal to all of our expectations. It has been installed beside our four Mold Model C Press which we understand was designed by the same inventor and which has been doing very satisfactory work for the past two years. It gives us pleasure to state that we are glad that we decided on a Simpson Press for the increased equipment of our factory.

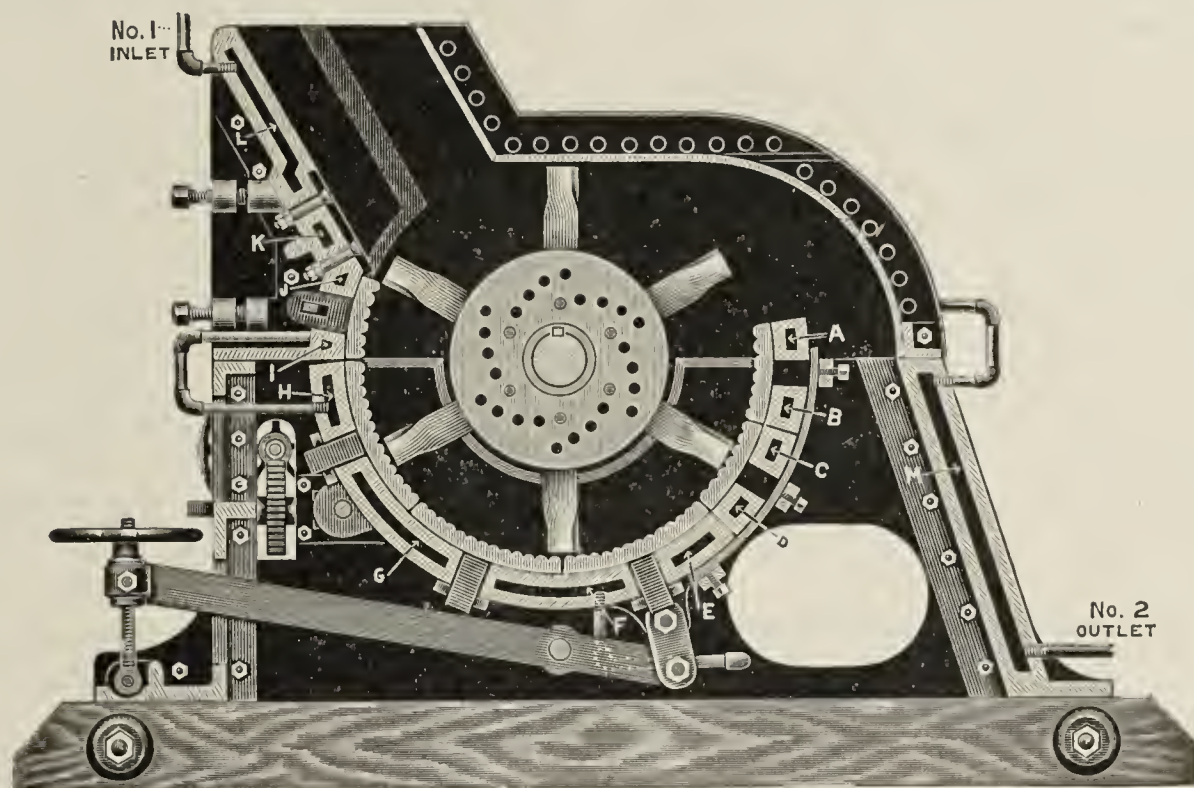
Very truly yours,
ROCHESTER COMPOSITE BRICK COMPANY.
R. W. Holden, Treasurer.

Built in Four, Five and Six Mold Sizes.

National Brick Machinery Co.,

General Office, Chamber of Commerce Bldg., CHICAGO, ILL.

JUST OUT! DECK SWEEPER.



We will guarantee this machine to reduce any clay or shale from the dry shed, from the shale bed or from the bank, in a satisfactory condition for making burned goods of any description at one operation.

For further information write to the

Williams Patent Crusher and Pulverizer Co.
St. Louis, Mo., U. S. A.

Write for Bulletin 21.

Over 1200 of the Williams Hinged Hammer Crushers and Pulverizers in daily operation.

The National Paving Brick Manufacturers' Association

Will send you free, upon request, any or all of the following booklets:

"Directions for Laying Brick Street Pavements."

"Why Vittrified Brick Street Pavements Are the Best."

"Why Should You Pave at All?"

"A Directory of Manufacturers of Vittrified Brick."

Address **WILL P. BLAIR**, Corresponding Secretary, Terre Haute, Ind.

PRESTON BRICK COMPANY,

Manufacturer of

Vitrified Shale Paving Brick,

SEWER AND HARD BUILDING BRICK.

Hornellsville, N. Y.

JOHNSONBURG VITRIFIED BRICK CO.

Johnsonburg, Penn.

Street
Paving

Brick and Block.

Samples on Application.

SHAWMUT VITRIFIED PAVING BRICK WORKS,

Shawmut, Pa.

Alfred Yates, Gen. Mgr.

Vitrified Shale and Fire Clay Paving Bricks and Blocks.

Burned in Yates' Patent Kiln.

Samples and Prices on Application.

**Kushequa Shale
VITRIFIED PAVING BLOCKS, CHOCOLATE-RED
BUILDING BRICK.**

KUSHEQUA BRICK CO., Kushequa, Pa.

PAVING BUILDING • **BRICK AND BLOCK** • SIDEWALK FOUNDATION

The Barr Clay Co.

C. C. Barr, Pres. • Streator, Ill.

**POSTON BLOCK and
ORIENTAL BUILDING BRICK.
Poston Paving Brick Co.,
Crawfordsville, Ind.**

THE COLLINWOOD-DECKMAN-DUTY COMPANY,

Manufacturers of

High Grade Paving Brick.

Factories at Collinwood, Malvern and Carrollton, Ohio.

Main Office, Rose Building.

CLEVELAND, OHIO.

**Thurber Vitrified Paving Brick
and Pressed Building Brick of Superior Quality.**

Made of the finest shale, absolutely free from lime.

Arthur S. Goetz, Agent,

Factory at Thurber, Texas.

Ft. Worth, Texas.

T. B. McAvoy, Pres. and Treas. John C. McAvoy, Sec. & Gen. Man.

McAVOY VITRIFIED BRICK CO., Philadelphia, Pa.

Is the largest and best equipped plant in the East for the manufacture of Paving Brick. All brick sold under a guarantee. Correspondence solicited.

Office, 1345 Arch St., Philadelphia. Works, Perkiomen Junction, Pa.

**The Danville Brick Company,
Manufacturers of the Unsurpassed
Danville Paving Block.
Danville, Ill.
LET US QUOTE YOU PRICES.**



**The Best
Paving Block
Made**

**SIX FACTORIES
DAILY OUTPUT
400,000**

**The Metropolitan Paving
Brick Company
CANTON, - - OHIO**

How to Properly Construct Brick Streets.

Drop us a postal and we will send you free of charge
a complete set of

DIRECTIONS.

TERRE HAUTE VITRIFIED BRICK CO.

Successors to
TERRE HAUTE BRICK AND PIPE CO.,
Terre Haute, Ind.

New York Brick & Paving Co.,

Manufacturers of

VITRIFIED PAVING BRICK,

Sewer and Hard Building Brick,

... ALSO ...

Berlin Vitrified Brick that Withstands all Acids.

OFFICE:
204 S., A. & K. BUILDING.

SYRACUSE, N. Y.

R. D. CULVER,
Pres. and Gen'l Manager.

L. A. CULVER, JR.,
Sec. and Treas.

The Wabash Clay Company,

MANUFACTURERS OF ALL SHALE

PAVING BLOCKS and PIONEER BUILDING BRICK.

Our leading brands are CULVER BLOCKS, WABASH STANDARDS,
"SPECIALS," for crossings on macadam streets, GUTTER BLOCKS,
COLUMBIAN SIDEWALK BRICK and PIONEER BUILDING BRICK.

Our material has for nearly fifteen years successfully stood the
heaviest traffic of Indianapolis, Terre Haute, East St. Louis and
dozens of other large cities of Indiana and Illinois. We ask inves-
tigation and comparison by those seeking the best paving material.
Samples furnished on application.

Office and Works at VEEDERSBURG, IND.

Clinton Paving Brick Company,

Manufacturers of the Highest Quality of

Paving Brick

Which are offered to the municipalities of the Cen-
tral States under positive guarantee as to wearing
quality. None better.

Prices and samples sent on application.

Correspondence solicited.

Office and Works: Clinton, Ind.

Do You Want Clay?

WE OWN AND OPERATE EXTENSIVE DE-
POSITS OF THE VERY BEST GRADES.

Fire Clays, Terra Cotta Clays, Kao-
lin, and Fire and Moulding Sands.

Have been in the business for TWENTY-FOUR
years, and are prepared to meet every reasonable demand.
Unsurpassed shipping facilities. Prices and samples free.

The BLOOMFIELD CLAY CO.,

(C. A. Bloomfield, Treas. and Manager)

P. O. Box 413.

METUCHEN, N. J.

J. G. BUTLER, JR.,
President.

CHAS. M. CROOK,
Gen'l Manager.

Bessemer Limestone Co.

Youngstown, Ohio,

MANUFACTURERS OF

BESSEMER BLOCK,

An unexcelled repressed shale paver.

Correspondence solicited.

The Purington Paving Brick Co.,

of GALESBURG, ILLINOIS,

HAS the largest and best equipped plant in the United States for the manufacture
of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation
second to none, and this Company points with pride to its record for quality of
material and its methods of conducting its business.

Correspondence respectfully solicited.

They Say They Would Not Exchange "The Standard" Drier for Any Other!

WE HAVE been using an eight-track "Standard" Drier for five years, and three years ago we put in a ten-track "Standard." We would not exchange this Drier for any we have ever seen. The Drier Cars are substantial and rarely ever need repairs, while the steam pipes have given us very little trouble with leakage, etc. It affords us pleasure to recommend "The Standard" Drier to those who contemplate installing a drying system, as we find it first-class in every respect.

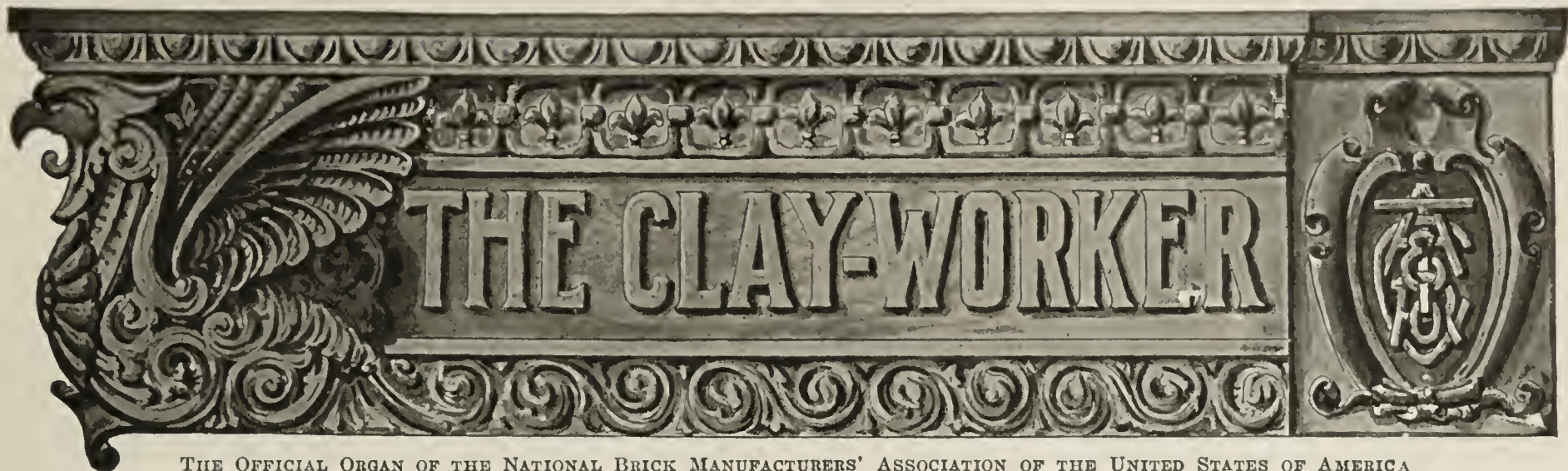
—Letter from Columbus Brick Co.,
Columbus, Miss.

WE CLAIM and are prepared to prove that the New Standard Heating System, for drying all varieties of clays, is more effective in the utilization of *exhaust steam* than any other heating system on the market. Write for the booklet "Money-Saving Drying" and complete illustrated catalogue containing letters from many satisfied users.

THE STANDARD DRY KILN COMPANY

647 South Pennsylvania St., = INDIANAPOLIS, INDIANA





THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA

Vol. XLVIII.

INDIANAPOLIS, IND., DECEMBER, 1907.

No. 6.

Written for THE CLAY-WORKER.

BRICK FOR INTERIOR FINISH.

PROBABLY NOWHERE else in Chicago, and perhaps no where else in the world, is the all around use and effectiveness of clay products in building materials better illustrated than in the storage and office rooms of the new warehouse recently completed for the Hebard Company, the largest storage and van concern on the West Side.

Outside and inside, from the point of view of practicability and from the point of view of decoration, this building bears mute but impressive testimony of the value of the burned product of clay to the skilled architect, the man of lofty dreams and ingenious ideas, in whose hand it is as plastic as the original clay to be molded to his plans, and durable and beautiful as the sculptor's work.

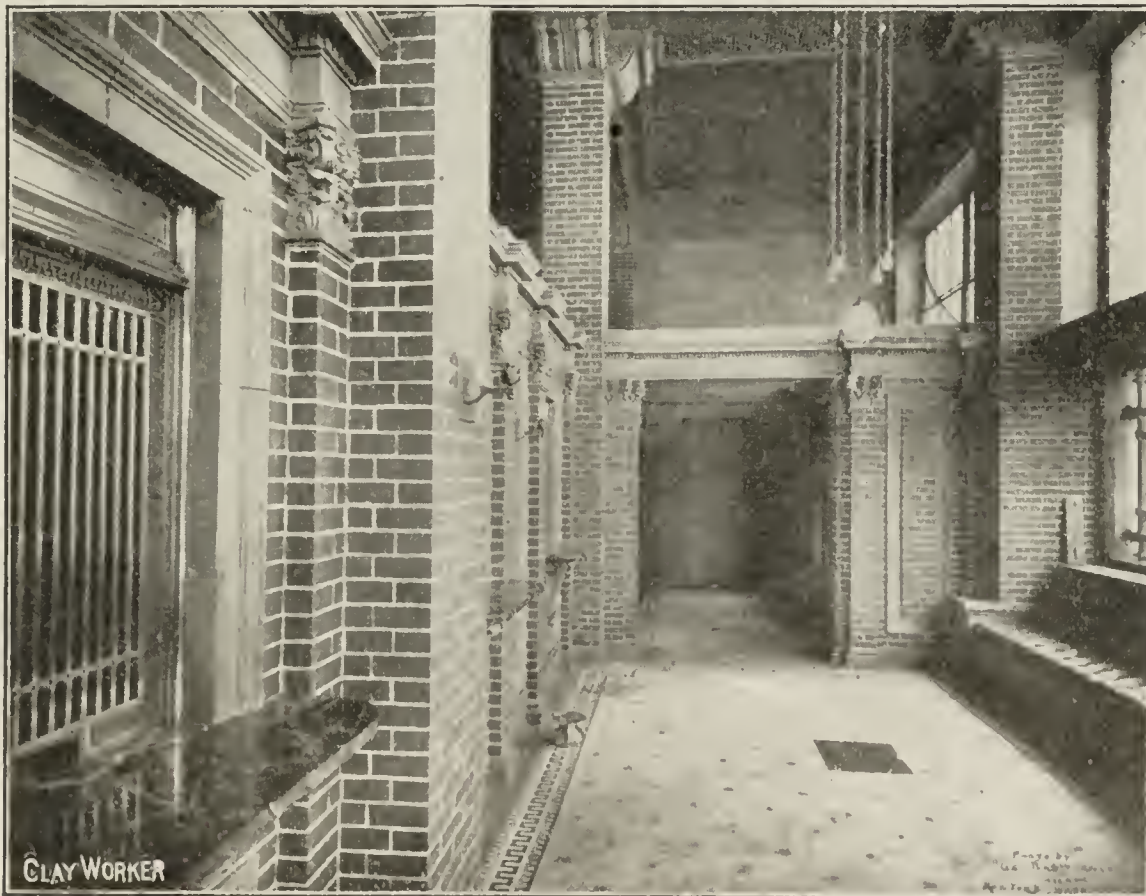
This warehouse stands on the east side of South Winchester street, just south of the old one. The exterior is all in brick, the front walls rising dark brown, and sturdy from the sidewalk's edge. The exterior is simple, attractive and pleasing, but with nothing much of itself to distinguish it from many other buildings of the same general character, the same general lines and same general appearance of rough, dark front brick being much affected for this type of work nowadays.

A step through the doorway, however, reveals a pleasing surprise. No bank in the heart of a great city can show a more attractive, cleaner or more beautiful outer office to its patrons than does this warehouse, where Mr. Oak Park or Austin may call to have his goods stored while his family goes to Europe for a year, or Tom Hooligan may step in to

order an express wagon load of furniture moved 'round the corner. A step in from the doorway and two broad corridors, meeting at right angles, lead away from the visitor. The corridor leading east, straight in from the door, runs back to a wall of red front brick rising to half the height of the room and separating the public from the clerks in the office. This wall making a sharp right angle runs to the west, flanking this corridor, and turns at right angles to the north to flank on the east, the corridor leading north from the main entrance.

Simple columns of brick rise at intervals to the ceiling

beams. These ceiling beams are finished in terra cotta, verde-bronze effect, and this characterizes the color scheme of the whole office. Terra cotta caps in the same finish come in between column head and beam. The solidity of the brick wall is broken by windows for the transaction of business, and here Argyle E. Robinson, the architect, has achieved an artistic effect in keeping with the whole piece of work. On either side of each window the wall is relieved by a pilaster of brick. It should be stated that a terra cotta



Outer Office of Hebard Warehouse Co., Chicago.

coping surmounts the entire wall, following the outline perfectly, and an ornamental terra cotta cap marks the juncture of each of these pilasters with this coping.

Between each pair of windows a panel of the brick wall is set off within a frame of the terra cotta—all in the bronze-verde finish, and an electric light bracket stands out from this frame which covers the bulk of the wall space between the two pilasters. The windows themselves are framed in the terra cotta, and the same finish is given to the metal window grating. Smaller panels in terra cotta frames, running horizontal instead of perpendicular, are beneath the windows, and

the shelf counter, in greenish marble or composition, is supported by a terra cotta bracket.

The floors of the outer corridors are done in mosaic, light and pleasing and in perfect harmony with the general scheme of color and design. Outside windows pour in light from three sides, and the fittings of the outside windows are also in the green terra cotta, with the brick with the wide joints to give the needed touch of warmth and brightness. The lighting attachments hanging from the ceiling are also finished in the bronze-verde, and this tone is carried even into the leather cushions of the window seats.

The same idea is carried out in the inner office. The metal counter, with its many drawers running all around the inner room, is finished in green, and terra cotta has been employed wherever practicable. The pilasters and other ornamental work is, of course, omitted on the inner side of the half-wall. The solid walls—i. e., those which rise to the ceiling and surround the entire office space, are finished in golden green burlap.

While the extent to which the clay products have been used in this structure to produce interior decorative effects is unusual, the warehouse also exhibits all the practical uses of burned clay as well. It is fireproof throughout, and the photograph of the piano store room, showing the character of the construction with its walls of brick, ceiling of fireproofing and pillars of fireproofing, indicates more than a long lecture on the values of these products could tell.

Next to St. Paul's Roman Catholic Church, which is built of brick and terra cotta alone, this is probably the most remarkable brick-built structure in Chicago. The fact, how-



Interior of Hebard Warehouse.

ever, that it uses more varieties of the clay products gives it an interest of its own.

SCRIP.

KEEPING THE CLAY MOIST.

Much less labor will be required in tempering and better results secured in the manufacture of tile, if the clay can be kept moist in bulk or at the bank. Where the clay is taken from the top of the bank down, it is a practice with some to plow and thoroughly pulverize the surface and thus prevent to a considerable extent the evaporation of the moisture, which serves to keep the clay bank uniformly moist to the bottom.

To effect the same result sawdust is spread over the surface five or six inches in depth, which prevents the evaporation of the moisture at the surface and the clay can be tempered evenly with less difficulty. If the clay is taken out of the bank from top to bottom the saw dust may be worked into the clay evenly in the digging without damaging the tile.

Some clays work better by having a mixture of saw dust worked in—the tile dry and burn with less liability to crack.

The failure of machines to work satisfactorily in many cases is due to uneven mixture and tempering of the clay. A little observation will soon indicate to a man of good sense the amount and best application of the water to secure the desired consistency of the clay to work best from the machine.

OUR NATIONAL WASTEFULNESS.

THE GEOLOGICAL SURVEY is sending out some timely bulletins. It recently issued a warning to the people in regard to the indiscriminate and unscientific use of reinforced concrete in building; one of its latest bulletins calls attention to our wastefulness in deforestation, it shows that we allow more timber to be destroyed every year by preventable forest fires than is used in all the lumbering industries; it reiterates the fact that there is more coal left



Piano Store Room, Hebard Warehouse.

and lost in the ground, by reckless processes of mining, than is taken out, and that at the very most we and our descendants have only coal enough left for less than 100 years.

The size of our country and its enormous natural resources have led us to believe that many things were inexhaustible that on the contrary are being utterly and ruthlessly wasted at a most extravagant and foolish rate, and our people have developed habits of prodigality that spell ultimate national bankruptcy. In fires, for instance, we have gotten so that we really expect and plan for terrific losses. As an example, Washington's record has just been completed and there were 470 alarms of fire in the year, resulting in damage of ONLY \$250,000. It is one of the lowest and most satisfactory records attained by any city in the land, yet our fires have inflicted a damage, small as we believe it to be, just 350 per cent greater than that suffered by the average of sixteen European cities of equal size.

Incidentally, all the fire adjustments and other accompaniments of the San Francisco disaster have been tabulated and arranged and it now transpires that what was supposed to be a total damage of about \$350,000,000 amounts to much nearer \$600,000,000. Only \$200,000,000 can be properly charged up to insurance and, therefore, the country has suffered a total wiping out of existence, an obliteration of property, to the amount of \$400,000,000 by that one fire. A matter worthy of our most serious consideration and firm resolve to build so as to make impossible the recurrence of such an awful conflagration, a recurrence that is imminently possible now in several cities, notably New Orleans, Boston and Philadelphia.

Written for THE CLAY-WORKER.

PUGET SOUND CLAY NOTES.

SINCE the financial crisis got hold of the Northwest, building has fallen off. At Portland nearly all improvements have been stopped, and several of the large buildings which were partially completed have been stopped also. In Tacoma all buildings are at a standstill, while in Seattle only such building is going on which should be completed before the winter sets in. On the large Trustee building work was stopped for two weeks, but since the first of the week the masons are setting terra cotta again.

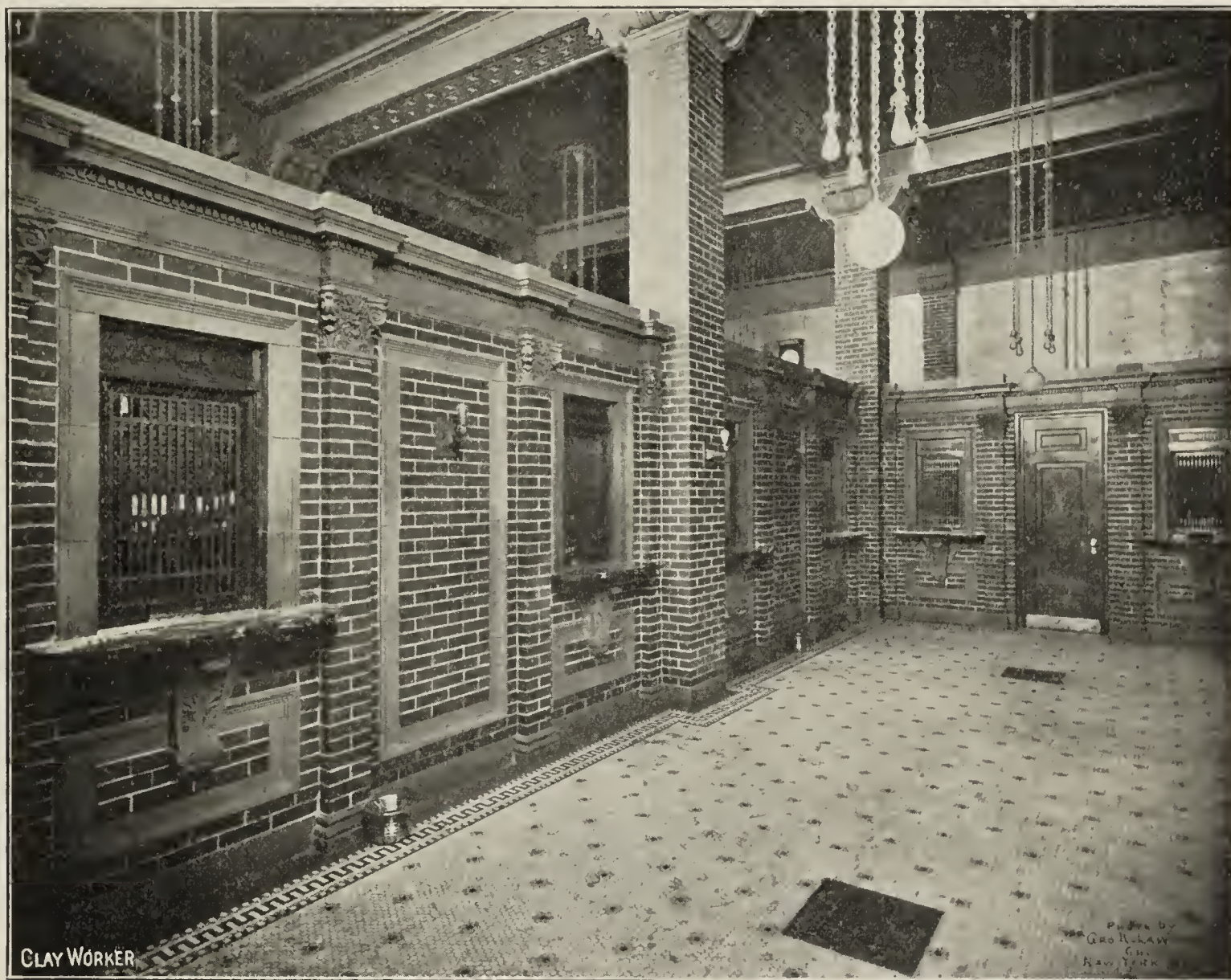
The greatest interest among the contractors this month was the opening of the bids for the Alaska-Yukon-Pacific Exposition buildings, which are going to be erected by the University of Washington. The money for these buildings was

chinery has arrived for the new plant of the Builders' Brick Company, and Engineer W. C. Mitchell is busy installing the new machinery. The new plant should be in operation by the first of the year.

The three plants of the Denny-Renton Clay and Coal Co. are going to be shut down temporarily by the first of December for repairs. D. T. Farnham, superintendent of their sewer pipe plant, will take a four weeks' vacation by going back East to visit his home in New York State.

Edward Morris, of Ruabon, North Wales, has been in Spokane for some weeks, investigating the possibilities of starting a new terra cotta plant in that city. He has found some excellent clay near Palouse. Mr. Morris was formerly connected with the J. C. Edwards Terra Cotta Company.

The large fire clay beds near Suma on the international border with British Columbia, will be opened up next spring.



Outer Office of Hebard Warehouse, Looking Away from Entrance.

allowed last spring by the Legislature. The exposition will have the use of them for exposition purposes, and after that they are turned over to the State University. Four firms submitted bids in conformity with the requirements of the board of regents. The Westlake Construction Company of St. Louis was the lowest bidder on all three buildings, chemistry, auditorium and engineering, for \$408,210. This firm was finally awarded the contract. The contract by the exposition management proper was also let for the construction of the Manufacturers' building, which will have to be completed in six months. Strehlow, Freese & Peterson got the contract for \$80,000. It will be a building 400x145 feet, with a front of pergolas and Ionic columns.

Brick prices have taken a drop, and common brick sell today in Seattle for \$6.50. The demand is very light, and several of the plants have shut down for repairs. The ma-

A company is now organized under the name of the Sumas Firebrick Company, to erect a plant. The capitalization is \$150,000. R. S. Lambert is the most interested party.

The Little Falls Fire Clay Company are still very busy filling their large sewer contracts. The demand for sewer pipe has been enormous this year, and it has kept the factory busy to supply all orders.

S. Geijsbeek, the clay expert, has been investigating large kaolin deposits, located near Idaho Falls, Idaho.

The Vancouver Fire Clay Company, whose plant is located near Clayburn, B. C., has nearly finished all their improvements, and are making excellent pressed brick.

Seattle, Wash., Nov. 30, 1907.

SIWASH.

The fake advertisers are getting religious journalism into more or less trouble. The faker is generally a shrewd man and religious papers, like others, frequently need the money.

Written for THE CLAY-WORKER.

THE EFFECT OF HEAT UPON CLAYS.

FOURTH PAPER.

BY A. V. BLEININGER.

Dehydration and Oxidation.



IN THE LAST article we discussed the complete drying or water-smoking of the ware. We are now ready to raise the heat and proceed to the next stages of the burning, dehydration and oxidation. The primary object after expelling the hygroscopic water must be the expulsion of other volatile matter contained in the clay, namely the chemical water, the carbonic acid of the carbonates, the sulphur, and finally we must get rid of the carbon which would, as we have learned, cause us trouble by continuing to burn all through the balance of the process. These two functions must be kept in mind, decomposition of the clay substance and carbonates, and oxidation of the carbon, the sulphides and the ferrous iron.

Decomposition requires the expenditure of heat, oxidation gives out heat. In order to carry on the former, nothing but a sufficiently high temperature is required, while for the latter the temperature must be high enough to start combustion and at the same time sufficient air must be introduced to cause the carbon to burn. In the nature of the case these two processes overlap each other and are carried on simultaneously, although as a rule the chemical water and the carbonic acid are expelled before all of the carbon is burnt out. In this connection it also becomes important to ask how fast this can be done, for it is evident that for reasons of economy we are desirous of doing this as rapidly as possible.

The expulsion of the chemical water and of the carbonic acid usually can be carried on fairly rapidly unless the ware is extremely dense, owing to the fact that heat is consumed in these reactions. This may be observed quite well when we dehydrate a clay containing but little carbon. On placing a pyrometer in the kiln we will find that during this stage the temperature rises very slowly in spite of the fact that we fire considerably heavier than we did during the water-smoking. The heat we are putting into the kiln is evidently used up in releasing the chemical water and converting it into steam as well as in breaking up the carbonates. The utilization of heat in this chemical work has, hence, a tendency to keep down the temperature automatically. Yet, though this is so, we must remember that time must be given the steam and carbonic acid to escape without causing too great a pressure within the ware, especially when the latter is dense and close-grained. Plastic clays, especially in the shape of end cut brick, require more time for this purpose than do sandy clays. In the writer's observation of brick kilns he has found that in some cases shale brick were satisfactorily dehydrated in thirty-six hours, and in others in forty-eight hours after the water-smoking was finished. It is not advisable to linger longer than this in doing this work. From the standpoint of economy it is better to advance as soon as possible to the temperature at which oxidation takes place most rapidly. Just after dehydration is finished we observe that the ware is far more porous than at any other stage, and this is easily explained by the fact that the loss of the chemical water and of at least part of the carbonic acid gas is bound to result in additional pore-space. It is at this stage that a brick when soaked in water will absorb the greatest weight. Naturally, the strength of the clay at this stage is still very low, and if exposed to freezing weather it could

not stand without crumbling. The color also has not yet begun to be developed, and the ordinary red burning clay shows a pale pinkish shade.

The progress of dehydration could best be followed by removing a brick from the kiln from time to time, weighing and replacing it. We would note a decrease in weight as long as any chemical water remained in the brick. Therefore, as soon as the brick would no longer lose water the dehydration could be considered as having been completed, provided, of course, that the kiln temperature is sufficiently high, not lower than 650 C., which is the proper practical dehydration temperature. It has even been suggested to attach a heavy piece of the ware to a stout wire carried out through the arch of the kiln and attached to one end of a counter-balanced beam. At the other end of the beam a scale pan is to be connected, so that the piece of ware can be weighed without taking it out of the kiln. In this manner an excellent record of the dehydration process could be obtained and we would know exactly when this process is finished. If, at the same time, pyrometer readings were taken we could establish the proper rate of dehydration with accuracy, and subsequently, of course, the experiment would not need to be repeated. It is this kind of simple and practical experimenting which lends interest to the prosaic subjects of clayworking and at the same time replaces the old rule of thumb methods by accurate knowledge. One does not need to be a college graduate to do this kind of work and a modicum of common sense is all that is required.

The decomposition of the carbonates stretches over a longer period and since, with the exception of limy clays, the amount of carbonic acid in clays is not very great, this part is not followed so readily and is also not of such great importance. Just as soon as the carbonate of lime has been decomposed, leaving caustic lime, the reaction between the lime and the clay begins, a reaction not tending to immediate fusion, but one involving the union of some of the silica with the lime that is forming a silicate of lime and probably also of alumina. In other words, the lime is getting ready for its final fluxing effect, though showing no signs of fusion. It is rather a kind of dry chemical consolidation, if one might use this term. Parallel with the decomposition of the carbonate of lime the ferrous carbonate loses its carbonic acid, leaving the iron as ferrous oxide which, however, in the presence of the large volume of air (oxygen), is being oxidized to ferric oxide, providing there is but little carbon in the clay. If it contains much carbon the oxygen will be used to oxidize the latter and the iron will remain in the ferrous state.

The chemical water having been gotten rid of we can now proceed to the oxidation stage proper. It must be clearly realized, however, that there is no sharp division line between dehydration and oxidation, but that oxidation is taking place to some extent parallel with dehydration. If it were not that the carbon must be burnt out of the clay and all the iron changed to ferric oxide, we could at once proceed to the vitrification stage and would not be compelled to spend time and fuel for this purpose. But this can not be helped; we are compelled to oxidize. There are two main questions to be answered in this respect: First, what is the best temperature for oxidation? Second, how much time must we devote to it? In answering them there are involved several self-evident propositions. Up to a certain limitation we can say that the higher the temperature the more rapidly will the carbon be eliminated, just as a hot fire burns more coal per minute than a smouldering one. The more air, that is, oxygen, we pass through the kiln the more carbon will be burnt, for without oxygen there can be no combustion. We can not expect to do much burning if we fill the kiln with the combustion gases, that is, carbonic acid gas. In fire extinguishers we produce this gas for the purpose of stopping com-

bustion. Again, the longer we burn the more carbon is naturally consumed. The length of time necessary for oxidation thus depends upon the amount and kind of carbon in the clay, the temperature, the amount of air passing through the kiln, and the size and the density of the ware.

Surface clay contains on the average about 0.5 per cent. of carbon, usually in the form of organic matter which burns out readily; fire clay contains perhaps 1 per cent., and shales from no carbon to as high as 10 per cent. More than this amount causes the shale to be unworkable. Many shales containing about 5 per cent. can be worked, but cause constant trouble and increase the cost of manufacture considerably. The quantity and kind of carbon obviously is of great importance, as naturally we should expect to find greater difficulty in burning out 6 per cent. of carbon than 1 per cent. The kind of carbon is likewise of particular significance with regard to the temperature of oxidation. If the clay contains bituminous carbon oxidation must proceed at a far lower temperature than when the carbon is similar to anthracite. If a bituminous clay is burnt at too high temperature we have not only the burning of the hydrocarbons to consider, but also their distillation, for the higher the temperature the more of these hydrocarbons will be evolved and the large volume of gas will result in a pressure which weakens or bursts the structure of the ware. At the same time, naturally, the gas distilled off will flash into flame and raise the heat very rapidly, so that the temperature will reach the vitrification or even fusion point, in which case the ware is ruined. Where the hydrocarbons are very high it is advisable to stop firing entirely for some time, the heat of the kiln being kept up by the burning of the carbon of the clay and, in some places, it is even necessary to close up the kiln tight in order that the combustion may proceed slow enough and do no harm. A case of this kind has been mentioned in the second report of the N. B. M. A. committee on technical investigation, in which 88 hours were required to remove the carbon. That the use of such a clay will materially lessen the annual capacity of a kiln is self-evident. In another instance the oxidation of paving brick from bituminous shale required seven days.

As to the best temperature for carrying on oxidation most efficiently Orton and Griffin have found that 800° C. is the most economical heat to carry, as it involves the expenditure of the least amount of time. The writer favors a somewhat lower temperature, about 750° C.

In regard to the amount of air in the fire gases the statement can be made that the more air they contain the more rapidly will oxidation proceed. It has been shown that a certain clay, when oxidized under ordinary conditions by the fire gases and admixed air required 88 hours, while only 30 hours were needed when the brick were kept surrounded by pure air in a muffle. Though the conditions of a muffle kiln can not be produced in a brick kiln, yet the fact remains that we can imitate them to a certain extent and this is done by allowing the kiln to cool down from, say, 800° to 650° C., during which time no firing is done. The place of the fire gases is then taken by the pure air and oxidation will proceed far more rapidly than it would if a steady stream of fire gases were allowed to pass through the kiln. The fires are then started again and the heat is pushed up to the starting point, and the procedure repeated.

The density and size of the ware obviously influences greatly the rate at which oxidation must take place. While a soft mud brick can be readily oxidized, owing to its great porosity which allows air to penetrate into the interior; this is not true of the stiff mud product, especially if made by the end-cut process. Much more time is required and the oxidation must proceed far more slowly. Similarly, dry pressed brick are also oxidized more easily than stiff mud brick, but not as readily as the soft mud.

The question as to the temperature and the kiln conditions

has been sufficiently answered. There remains only to determine how long oxidation must proceed. This must be worked out for each clay and, fortunately, it is a very easy matter. By cutting a number of green brick into halves and arranging them in the kiln in a row, close to the door, so that they can be drawn out readily by means of a hook, at intervals of six or twelve hours, we have a means of telling exactly when the process of oxidation is finished. As long as there is some carbon left in the clay there will be found, on breaking the half brick, a dark or black spot in the middle which disappears only after all of the carbon has burnt out. This, hence, furnishes an absolute means of determining the finishing point of oxidation, which is as simple and practical as anything can be. The progress of oxidation can be traced down by observing the decrease in the sizes of the dark spots which gradually become smaller and smaller.

The penalty for not carrying oxidation to its finish has already been discussed. As long as there is carbon left in the clay the iron will remain in the ferrous state. This means that as soon as the temperature is high enough it will combine with the silica to form ferrous silicate, which vitrifies or fuses suddenly, thus enclosing that portion of the brick still containing carbon. Any carbonic acid or carbon monoxide forming will cause a pressure which bloats the brick or at least causes the structure of the clay to become vesicular and weak. This formation of ferrous silicate takes place, it must be remembered, far below the proper vitrification temperature, where the iron is present as ferric oxide.

(To be continued).

THE SAND-LIME BRICK INDUSTRY.

The sand-lime brick industry in the United States increased 20 per cent during the year 1906, the total value of the product for that year being \$1,170,005. In a recent press bulletin issued by the United States Geological Survey, special attention is given to the subject of the binding material of sand-lime brick, of which it is said:

"The constitution of the binding material of sand-lime brick has been a mooted question. Some of the advocates of the new product have not only claimed that a definite lime silicate was formed during the process of manufacture, but they have also claimed, by implication at least, that the silicate was the same as that which exists in Portland cement. An investigation made during the past year by Frederick E. Wright in the geophysical laboratory of the Carnegie Institution of Washington affords conclusive evidence on the subject. At the request of E. C. Eckel, Mr. Wright, who is one of the very few investigators intimately acquainted with the lime-silicate series, examined with the microscope several specimens of commercial sand-lime brick. Mr. Wright states that the binding material in the specimens submitted to him is a hydrous lime silicate, formed by simple and well-known reactions from lime and sand in the presence of steam. The reactions are, however, in no way comparable to those that take place during the process of Portland cement manufacture, and the binding material is very different in composition and relationship from Portland cement clinker.

"As a result of this investigation Mr. Eckel, who has prepared for the United States Geological Survey the statistics of sand-lime brick manufacture in 1906, makes the following statement:

"It may safely be assumed, then, that a sand-lime brick as marketed consists of (1) sand grains held together by a network of (2) hydrous lime silicate, with probably, if a magnesian limestone were used, some allied magnesian silicate, and (3) lime hydrate or a mixture of lime and magnesia hydrates. These three elements will always be present, and the structural value of the brick will depend in large part on the relative percentages in which the sand, the silicates, and the hydrates occur."

TERRA COTTA FIREPROOFING.

Increasing Use of Terra Cotta Fireproofing—Its Wide Application in Building Construction—Strength and Lightness Important Factors—Some Statistics of Fireproof Construction in New York.

By A. S. Atkinson.



MANUFACTURE OF terra cotta blocks for building purposes has rapidly assumed great proportions in the past dozen years, and the trade is practically assuming two distinct lines. One is the making of suitable blocks for fireproof walls, floors, partitions and ceilings, and the other for distinct ornamental effects for exteriors.

Both of these lines have developed rather phenomenally recently through a better appreciation of their fireproof quali-

factor on skeleton steel work to a minimum, and it is this fact which gives a new direction to the use of the material.

The use of terra cotta for exterior walls was never of much importance until the last few years, except for certain ornamental effects in the facade of buildings. Today, however, the blocks are used quite extensively for exterior walls. Two very impressive sights in New York City today are the new West Street Building and the new United States Express Company's structure. Both of these buildings run some twenty-five and more stories up in the air, and are conspicuous landmarks in lower New York. But what strikes the beholder most is their dazzlingly white, creamy outlines. They resemble marble structures, and until one gets close to them he is not sure whether it is marble or some very fine white stone. The walls of the two structures are supported by the usual skeleton steel work, but inside and outside are anchored terra cotta blocks. Inside, the usual porous and semi-porous terra cotta blocks are anchored to the metal framework to protect it from interior fire; and outside, the



Interior View of Sixth Story, Wanamaker Store, New York City, Showing Terra Cotta Fireproofing in Floor Construction and Protection of Columns.

ties and a more general demand for them by reputable architects of the country.

Terra cotta, of all building materials, possesses in an ideal way the qualities most desirable for fireproofing modern high structures. Our modern skyscrapers owe their success and development as much to terra cotta as to the invention of the iron and steel skeleton work for such buildings. The latter would be of little real value without the terra cotta blocks for protecting them from warping and collapsing in hot fires, and few of our city building laws would permit a ten or twenty-story structure to go up without some such adequate protection.

In the last few years concrete has assumed to take the place to some extent of terra cotta block protection for steel, but it is not likely that it will ever supplant terra cotta in the modern tall buildings. The difference in the weight is an important item in favor of terra cotta. The extremely light weight of this material makes it possible to reduce the load

square blocks of creamy white take the place of stone, marble, bricks or similar material. The blocks are made in much larger units than bricks, and resemble cut stone to an unusual degree. Ornamental terra cotta breaks the outlines of the walls every third or fourth story, and the cornices and upper windows are finished off in the same material.

Several other new buildings are now being projected which call for the same kind of exterior walls. The advantages of the terra cotta blocks for this purpose are several. In the first place, the effect is unusually artistic, fully as effective as cut stone or white marble, but costs about half. In addition to this, the terra cotta is more durable than either of those older materials and retains its appearance without cleaning three or four times as long. Another advantage is the much lighter load added to the framework of the structure. Terra cotta blocks are one-third, and more, lighter than almost any other building material of equal bulk, and when this is taken into consideration it will be seen that much

lighter steel frames are needed to carry the wall load. In building a thirty or forty-story structure, this weight of material becomes such an important item that architects are being led to adopt terra cotta for all the stories above the tenth floor. The lightness of the terra cotta, and the larger units, make it much easier for workmen to lay the blocks—a single mason can do nearly one-fifth more work with these blocks in the wall than with any other material.

There is of course the final advantage which terra cotta possesses which needs no emphasizing here. The fireproof quality of terra cotta is well established. It is without a peer in this field. When properly burnt to a degree of some 2,500 degrees Fahr. it will resist the hottest fire and amply protect the steel columns and girders. Some unusually hard burnt terra cotta tiles used for the construction of fireproof domes and stairways will withstand a temperature of upwards of 3,000 degrees Fahr. without in any way disintegrating. Their strength is, moreover, not injured by such hot fires.

The building of fireproof domes and stairways in the new Custom House at New York, in the new Tiffany and Gorham buildings in Fifth avenue and the new chapel and library of Columbia University, in New York City, as well as of many churches, has marked a new era in the use of terra cotta tiles. These tiles are hard burnt, about one inch thick, and four by six inches in width and length. Some are larger, and all of them are made so that they will resist an enormous pressure. These flat tiles are laid up in cement in the domes, and without any metal support they yield sufficient strength to hold enormous weights. In the case of the new Custom House at New York, the tile dome carries a 140-ton skylight of glass without any support other than the flat tiles laid up in cement.

The manufacture of these terra cotta tiles is a special industry that has been developed in recent years through the demand for better fireproof building material. The tiles are so hard and perfect that decorations can be applied direct to them. In the new Tiffany and Gorham stores, and in the dome of the new Madison Avenue Church, New York City, decorations of an expensive nature have been made directly to the inside of the flat tiles. There is no danger of the decorations being ruined by cracking or warping of the flat surface, for the tiles once set are permanent and unaffected by heat, cold or water. The hard burnt flat tiles used for these purposes are baked in a temperature exceeding 2,500 degrees Fahr., and their strength is greater than concrete, stone and bricks. Under tests they have resisted pressures that would seem sufficient to crush almost any kind of building material made of clay. Their great fire-resisting qualities make them of special value for structures where all wood and exposed metal are eliminated.

The adaptation of hollow terra cotta blocks for walls and ceilings in modern fireproof buildings is a subject of profound interest to all clayworkers. It is well accepted in the building trades that no material quite equals terra cotta blocks for fireproofing, and if the cost of using them can be brought

down to that of other materials their use will be greatly increased.

One way to secure this desired end in New York City is to revise the Building Code, which imposes an absurd and illogical requirement, viz., that "the minimum depth of the floor arch blocks shall not be less than one and three-quarter inches for each foot of span, not including any portion of the depth of the tile projecting below the underside of the beams."

That this depth is excessive is proved by the fact that New York is the only city which requires it and no failures occur where a less depth is used. Chicago requires one and one-half inches for the total depth, which is equivalent to one and one-quarter inches plus one inch of tile below the under-

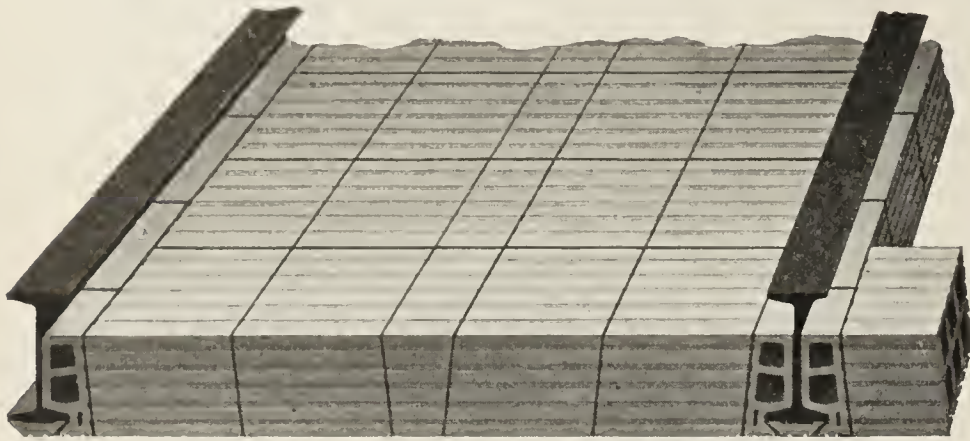


Terra Cotta Fireproofing—Key blocks, lengtheners, skewbacks and slabs for floor construction. Square and round column covering. Semi-porous and partition blocks. Porous and dense roofing and ceiling blocks. Wall furring and hollow brick.

side of the beams. Philadelphia, Boston, Pittsburg, Washington, Baltimore and other cities have a building code that does not specify the minimum depth.

That the one and three-quarters inches thickness fixed arbitrarily is illogical for all loads is readily seen when the facts are considered. Tenements, hotels and dwellings are estimated for floor load of 60 pounds per square foot, stables 75 pounds, places of amusement 90 pounds, office buildings above the first floor 75 pounds, stores, factories and warehouses at 120 to 150 pounds. Therefore, either the requirement is excessive for 150 pounds (which experience disproves) or a less depth is perfectly safe for lighter loads.

Judging by numberless tests and over thirty years' experience under all conditions, it seems that a perfectly safe and reasonable requirement for a minimum depth would be one and one-quarter inches per foot of span, not including the portion



Terra Cotta Flat Fireproof Floor Arch.

of the tile projecting below the beams for loads up to 100 pounds per square foot, one and one-half inches (not including the projection) for loads from 100 pounds to 150 pounds per square foot, and one and three-quarters inches (not including the projection) for loads over 150 pounds. These depths will give a factor of safety of 7 when tiles are set with moderate care.

The work has further been improved by inserting porous blocks in various courses, to which anything can be nailed. The softness of the blocks does not in any degree lessen their fireproofing qualities, but simply affects their strength. This latter is not a serious matter, for the blocks in the walls and partitions do not carry any heavy loads. A further development of this work is the manufacture of terra cotta partition and wall blocks with one side finely polished and finished off. Some of these have enameled surfaces, burnt on them so that they present a perfect fireproof and sanitary surface for interior finish. Others are left with a simple smooth surface to which paint can be applied for ornamental decoration. In this way the cost of finishing off the interior is reduced by saving the double work of masons.

From this simple achievement there has been developed an entirely new line of constructive work which may have a great effect upon the future of our building operations. The need of fireproof houses is apparent, and, with the increasing cost of lumber, it is only a short time before bricks, terra cotta, concrete and iron and steel must be used almost exclusively for building purposes. Hollow terra cotta blocks, until recently, have never been manufactured to any appreciable extent for private residences. They have been used almost exclusively for large structures for ornament and for the protection of the metal framework. Now the blocks are being adapted to private residences in city and country. The hollow blocks form not only perfect fireproof walls and partitions, but they make the interior impervious to dampness and violent changes in the weather. Houses built of these blocks are warmer in winter and colder in summer. The rough blocks are put in the walls, and either finished off with stucco work or by a brick veneer. A veneer of some

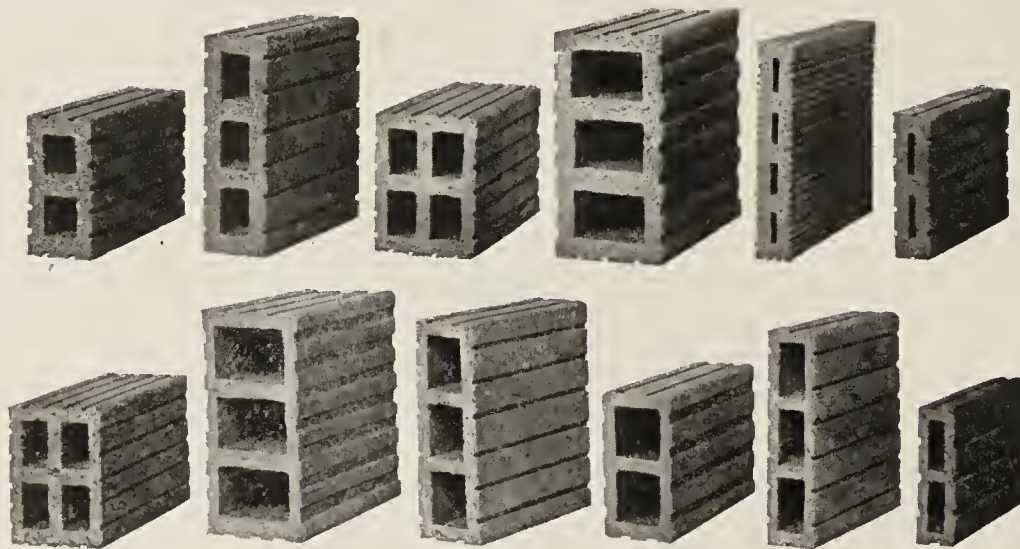
fancy bricks gives additional strength to the walls and makes the exterior of the house as effective in design as an all-brick or all-stone house.

With lumber at the present prices, the difference between the cost of such a fireproof home and one built of wood is very slight. In some sections of the country where lumber is high and clay products cheap, it is possible to build houses just as cheaply out of clay products as of lumber, and the immeasurable advantages of the terra cotta and brick house go without question. It is fireproof, which means lower insurance rates; it is far more durable, lasting for centuries with very little care; is cheaper to maintain in good condition, as no paint is required; it is far more comfortable summer and winter, cooler in the former and warmer in the latter, and, finally, it is sound-proof and vermin-proof. Neither dampness nor vermin find lodgment within the hollow walls, and the home is thus rendered far more sanitary and comfortable.

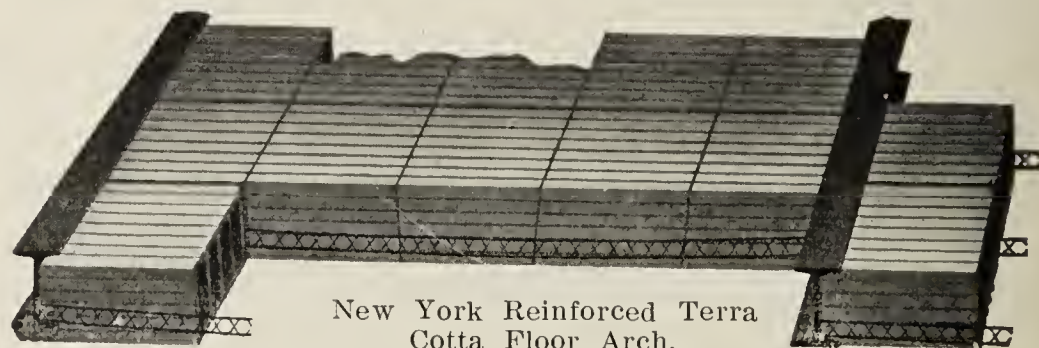
Manufacturers of clay products fully recognize these conditions of today in the building trades, and they are adapting their products to the increasing demand. Terra cotta houses for city and country must enter freely into the building movements of the future. Most of the manufacturers are extending the list of their blocks and bricks so as to make their use in different kinds of houses simpler. Architects have been slower in recommending terra cotta to clients than the conditions warranted through ignorance of the improvements made in the products in the last few years. The present extensive use of concrete

for building purposes is due almost entirely to a concerted effort on the part of the makers of block machines to advertise their new building material. The popularity of concrete blocks has grown amazingly in the last few years, showing that the public stands ready to accept a fireproof material for their homes if it can be produced at a reasonable price.

Terra cotta blocks surpass concrete for building purposes, and their general use in ordinary house building is simply a matter of time. The unit size of the terra cotta block must become standardized, and new shapes and forms manufactured must be adhered to so that architects can make plans and specifications accordingly. The standardization of bricks has for decades made it possible for architects and builders to make specific plans without danger of failing to get good



Terra Cotta Partition Blocks.



New York Reinforced Terra Cotta Floor Arch.

stock bricks as needed. Terra cotta hollow blocks must also be produced in sufficient variety of forms to give buildings beauty and attractiveness. One of the disadvantages of concrete blocks has been the uniformity of the blocks, which

when placed in a wall presented a monotonous appearance. In trying to imitate cut or rough dressed stone in the walls, manufacturers have sought variety of effect. In this work considerable progress has been made. Good terra cotta blocks are made today with rough and finished surfaces, with tooled and buff exteriors, and with an increase in the list of sizes and shapes for general stock there will be available better building materials than heretofore.

So far as terra cotta ornamentation goes it has made remarkable strides in the last few years. There is no better material manufactured than this for producing rich and simple ornamental effects for architecture. Both on a large and small scale ornamental terra cotta is used today. In the construction of the new group of buildings which constitute the College of the City of New York, we have an example of ornamental terra cotta carried to an extreme point. Thousands of cornices, head pieces, scrolls and friezes have been designed by the architects and executed by the terra cotta manufacturers. The structures are built of stone excavated on the site, with terra cotta trimmings on every floor. The contrast between the cream-white terra cotta and the gray of the stone is strikingly beautiful. The tons of terra cotta used on these buildings cost less than half what cut or rough dressed stone would, and the effect is more pleasing. Stone of such light hue would soon get discolored, while the terra cotta will hold its whiteness indefinitely. Only in a slightly lesser degree have the ornamental decorations of the new West Street Building been carried to perfection. All the upper stories of this structure are elaborately ornamented with specially designed terra cotta pieces, and viewed at a short distance, or from the street, they resemble marble or white stone.

The designing and making of terra cotta ornaments occupies the attention of most of the large concerns devoted to the manufacture of architectural and building clay products. With well equipped factories these concerns place their experience and skill at the service of the architect and builder. Either stock designs or specially executed ones can be made in a short time at much less expense than in stone or marble. The terra cotta factories, moreover, offer a great variety in the coloring of their products, which ten years ago was impossible. In buffs, reds, grays and whites, the terra cotta ornaments can be made to suit almost any kind of a building. The variety of shades is constantly being extended, and most of the factories are experimenting with new clays obtained from various parts of the country. Already, however, the color list of terra cotta exceeds that of either stone or marble. It is possible today to match colors for exterior or interior ornament far better with terra cotta than with ordinary cut stone or marbles of any of our domestic quarries.

With further developments in this direction the use of terra cotta cannot fail to command an increasing amount of attention from home builders and architects, and when all the advantages of the clay products are considered it is not remarkable that terra cotta and bricks should be accepted as the standard building materials of the future.—"Insurance Engineering," New York, September, 1907.

WANTED ELIZA "EDUCATED."

"Deer jents," wrote an ambitious Arkansas father to the president of an institute rivaling Vassar College, "I rite to ast in regard to turms for admission to yure institoot. I want to send my Elizy to you to bee educated fit to adorn an ornymint the sirkle she is destined to shine in as sole airiss of the wealthiest man in this neck of the woods. I am a man of hi edgucation myself altho yu mite not suspicion it, and I desire Elizy shall have an education ekel if not superior to that which gives me the honor of bein the most lerned man here and so i rite to ast when i shall send her on and how much it will be, her bein turned of ateen an knowin all

her letters an bein able to spell words of one syllable an natcherally smart like me. Pleees rite back by return male." —Drake's Magazine.

Written for THE CLAY-WORKER.

HERE AND THERE IN NEW JERSEY.

ALONG THE Hackensack River brickmakers have closed their yards for the winter. Trade is over for this season and conditions are not entirely satisfactory at the close. The business depression in New York was near enough to New Jersey to create a good deal of disturbance, and makers are thanking their good angels that the difficulties were no worse. Fortunately for them, the crash came so late in the season that not much damage was done, excepting on the later orders, and practically all think that the trouble will not make any material difference in the end. There was an agreement to close the yards on October 15, anyway, and this was done in nearly all instances, the only work done after that date being the cleaning up, which must always follow a busy season. Not all the sheds are cleared, but the open weather so far has enabled shipments to continue, and movement has gone on regardless of the cataclysm and financial depression which followed. But building operations have been curtailed somewhat, and the demand for brick has been somewhat reduced in consequence. Until there is a change in the money market, which will enable builders to go forward with their work unrestricted, brickmakers will feel the effects of the stringency.

Building operations about Newark have been the heaviest in years and, while there was a slight reduction in the number of permits granted after the crash came, this has been overcome, and since the middle of November no one has noticed any change. The operations planned for next year exceed anything hitherto attempted, even in this city of big growths. The prospects, so far as this city is concerned, have scarcely ever been brighter.

From the Perth Amboy section only good reports are heard. The year has been as good as usual, and the financial depression came too late to be a factor in this year's business. Perhaps some of the effects of it will extend into next year, but for the present manufacturers are not worrying, though perhaps if the business outlook was a shade better they would feel more like making important plans for the future. The situation has nothing of menace in it, but on the other hand it has nothing particularly encouraging as this is written.

About Trenton the brickmakers and the pottery men have all been busy right up to the limit. Not much development has been attempted, nor will anything particular be done this coming year, unless conditions change materially in time for making plans during the winter. Some manufacturers in both departments are under the impression that development has gone about far enough for the present, and capitalists do not appear to be anxious to put so much money into this class of property as they have in years past. This doesn't affect the general situation in the least. All these enterprises are running along as usual. It is the look forward to the future and the fact that the market may be a shade weaker next spring than it was last which is breeding conservatism and creating a disposition to be a little careful about developments which are made as experiments.

Schedules in the bankruptcy proceedings of the Kingsland Brick Company, at Kingsland, show liabilities of \$101,008 and assets of \$5,840, of which \$5,834 are accounts and \$6.00 cash in bank. There are other assets upon which no value has been placed, consisting of the plant in Kingsland, stock of brick on hand, and machinery. Among the creditors are Rachel Tannenbaum, whose claim is \$84,932 on notes and the Peoples' Bank and Trust Company, Passaic, N. J., \$5,000, secured.

A. L. B.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



HERE HAS BEEN quite a scramble to sell brick the past month, especially by the Kansas gas belt factories. It would seem that they must have allowed a good many brick to accumulate throughout the season in the yards, rather than ship them to Kansas City at the prices offered, and just as soon as it became apparent that money was going to be tight out this way for a while, each yard decided that it would cut the profit off and clear up the stock before the other fellows woke up. As a result, they all made their offers about the same time, and the market for brick having dropped off considerably, on account of builder's waiting to see which way things were going, their market became weaker each day. This scramble to sell brick was not confined to building brick, but pavers were also offered at a very low figure here.

Local yards are all reporting a slack demand, except the Lyle Brick Company, and they seem to have all the business they can take care of, just the same as when things were rushing.

There has not been nearly as great a falling off in build-



Brick Plant of the Guthrie Mountain Portland Cement Co.

ing operations as was expected a month ago, but still the volume of business has made a considerable decrease. All buildings depending upon borrowed capital, on which the loan was not already arranged for, have been allowed to rest easy until things settled down again, and probably will not be started before spring, but quite a number of new buildings have been started within the last month by parties who had capital enough of their own to swing the entire project.

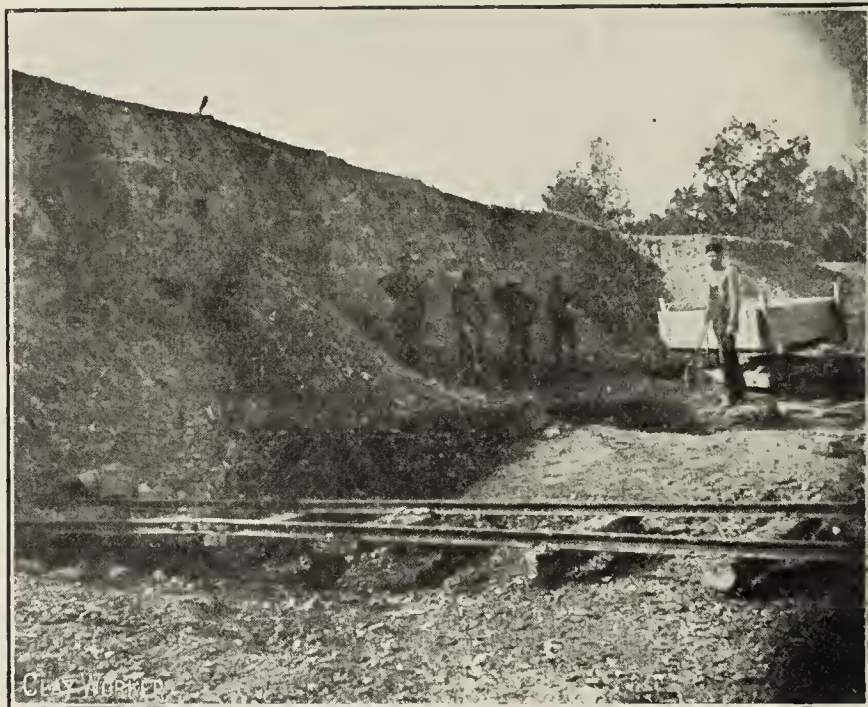
The drop in the prices of building material is bound to have a good effect upon building operations in this city the coming year. All kinds of building material, with the single exception of brick, has been gradually working up in price until builders were unable to pay the prices and figure out a profit on their money in rents. With lower prices, and the lower cost of the completed building, there will be a good deal more building, for investors can see greater possibilities for profit.

The only strike in Kansas City, in the building line, is on the new Bank of Commerce building, and the present strike is the second one on that structure. The indications are that the workmen will soon realize that they can not force things their own way, for this is a season when capital feels that it can better lay idle than the workman can. Workmen

have not generally been losing their position, but in the building lines such things are very likely to happen before spring, and it is inclined to make the workmen a little less independent.

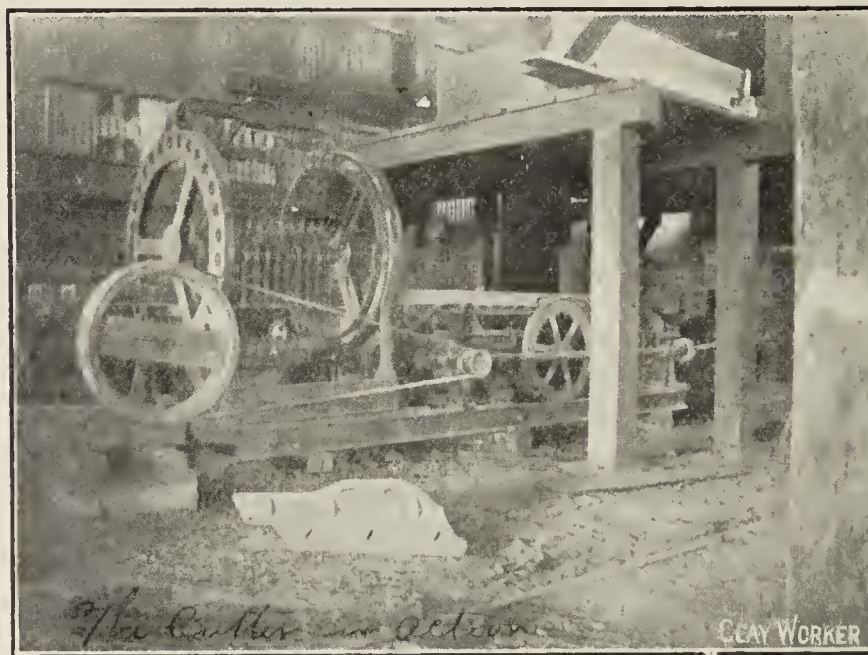
"There has been no let up in building, at least in the down town district," D. J. Dean, of the Dean Bros. Realty Company, said. "My observation does not extend outside of the down town district. With the exception of the suspension of work on the Commerce building—caused by a strike—work has not been stopped on any down town construction since the so-called financial flurry.

"We are rushing the work on the twelve-story addition



Shale Pit of the Guthrie Mountain Portland Cement Co.

to the Hotel Baltimore, and have completed two of the six buildings we are erecting on McGee street. We are preparing to add two stories to the three-story building next to



The Raymond Automatic Rotary Cutter.

the Robert Keith Furniture and Carpet Company's building at Eleventh street and Grand avenue.

"The Lillis building, at the southwest corner of Eleventh and Walnut streets, practically is completed. The new home for the New England National Bank at the southeast corner of Tenth street and Baltimore avenue is inclosed and the work of completing it is going on rapidly. The office building at the northwest corner of Tenth street and Baltimore avenue, built by the United States & Mexican Trust Company, is completed and occupied."

J. A. Rose has begun the erection of a building on Grand

avenue, between the Century building and the Kansas City Life building. Rapid work is being done on the big building for the Jones Dry Goods Company on the west side of Walnut street, between Twelfth and Thirteenth streets. Excavation has begun for a new business block at 1616-1618 Grand avenue. C. A. Braley is completing a three-story office building at the northeast corner of Eleventh and McGee streets and Dr. W. E. Minor is building an office building on the opposite corner. A new building is going up at the southwest corner of Missouri avenue and Walnut street.

According to the report of the superintendent of buildings of this city, the month of November shows an improvement



Taking Brick From the Berg Press.

in the way of new buildings started, over the same month of last year. The value of all permits taken out last month was \$591,280, as compared with \$496,810, the corresponding month



Setting Press Brick in Up-Draft Kiln.

of last year, or an increase of \$94,470. Considerably over half the permits issued for the month were for brick structures.

The largest proportional gain in building operations in the United States in 1906 over 1905 was 209.07 per cent., in Kansas City, Kas.

The figures are contained in a report soon to be issued by the United States Geological Survey. This report is to follow the department's researches regarding the use of clay and brick in building construction and also with reference to quarrying.

The Victor building, on which the brick work is just com-

pleted, is the first building in Kansas City to be faced with the New Straitsville, Ohio, impervious gray speckled face brick, they having been secured through the Eadie Building Supply Company, of this city. K. A. W.

Written for THE CLAY-WORKER.

GUTHRIE MT. PORTLAND CEMENT CO.'S BRICK PLANT, MAPLETON, KANSAS.

ONE OF THE largest and most modern brick plants in Eastern Kansas is the plant of the above named company, located two and one-half miles southeast of Mapleton, Kans., on the main line of the Missouri Pacific Railway.

The shale is taken from a 60-foot ledge near the plant, and is loaded into side dumped cars, by hand, and hauled and dumped into a hopper from which it is fed into the dry pans, and passed over a Raymond patent piano wire screen, and fed into the machine.

The dry press has a capacity of 20,000 bricks per day, and the mud brick machinery 75,000. The bricks are dried in a Raymond direct heat dryer, and burned in five 200,000-capacity down draft kilns, made from plans furnished by the Raymond Company, and two 300,000-capacity up draft kilns.

The machinery consists of two Raymond 9-foot dry pans,



A Temporary Up-Draft Kiln, Plant of the Guthrie Mountain Portland Cement Co.

pug mill, Raymond stiff mud machine, automatic rotary cutter, two Victor represses, a four-mold Berg dry press, and a 300 horse-power compound condensing Allis engine, with three large Atlas boilers.

The brick is marketed throughout Eastern Kansas and Western Missouri, being loaded mostly on cars. The Mathews gravity system is used in loading.

While as stated, this plant is one of the largest in Eastern Kansas, it is a mere side issue with the Guthrie Mt. Portland Cement Co., and was built principally to furnish bricks for their mammoth Portland cement plant, which when finished will have a capacity of 3,000 barrels of Portland cement per day.

The officers of the company are: Dr. Charles B. Gwinn, of Carthage, Mo., president and general manager; D. M. Colbern, of Belton, Mo., vice-president; R. L. Twyman, of Harrisonville, Mo., secretary and treasurer; and I. R. Lampert, general superintendent, Mapleton, Kansas.

The directors are: J. B. Thomas, Albany, Mo.; D. M. Colbern, Belton, Mo.; George T. Fielding, Manhattan, Kansas; J. W. Johnson, Hamilton, Kansas; L. C. Lohman, Jefferson City, Mo.; G. E. Geissinger, Joplin, Mo.; E. C. Packard, Cameron, Mo.; Dr. Charles B. Gwinn, Carthage, Mo.; and Charles Schifferdecker, Joplin, Mo.

BRICK VS. BITUMINOUS PAVEMENTS.

RULES AND RESTRICTIONS TO PROTECT BITULITHIC PAVEMENTS PROVE IT TO BE NOT LASTING BUT SHORT-LIVED.

Vitrified Brick Are Indestructible and Everlasting.

The public streets of a city are used for two purposes: First, as a means of locomotion for the general public, the transportation of its traffic; and, secondly, for the laying of public service utilities underneath the surface.

As traffic and travel become heavy, it is necessary for economical reasons at least, to adopt a pavement; sanitary reasons and facility of travel are also important.

Pavement on business streets, to be of value, must possess at least three qualities: First, it must be durable; second, it must be readily removable and easily restored, to accommodate the utility pipes that are laid in the streets; and third, the price must be within the reasonable limits of the property owners and the city.

Vitrified brick is the only pavement that fulfills these requirements, as is demonstrated now by its large and continuous use for over fifty years.

Bituminous products do not measure up to these requirements in any respect. They look well for a time, but soon wear into holes and become a nuisance to traffic, besides needing constant care and attention.

El Paso has been experimenting with a certain class of bituminous pavement. We are reliably informed that the company laying the pavement, with a view of protecting it (which largely restricts the usefulness of the street) caused the following ordinances to be passed, which we clip from the El Paso Times-Herald of July 2, 1907:

BE IT ORDAINED by the City Council of the city of El Paso.

Section 1. It shall be unlawful for any person to pour, spill or to drip on any bitulithic pavement or sidewalk laid upon any street, alley or public place in the city of El Paso any oil, petroleum, kerosene, gasoline, benzine, or other similar oil or oily substance or liquid.

Sec. 2. All oil delivery wagons or tanks shall have securely fastened under the tap or faucet thereto attached, an absolutely tight zinc-lined box or tray; and in filling any measure or other vessel from said tap or faucet such measure must be held so that any drip or overflow shall flow into said box or tray; and in carrying or removing such vessel or measure over or across any bitulithic pavement or sidewalk no drip or overflow from such measure or vessel shall be permitted to fall upon said pavement or sidewalk. No measure or other receptacle or vessel for holding oil shall be placed upon any bitulithic pavement or sidewalk.

Sec. 3. Any person who shall violate any of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than five (\$5.00) dollars nor more than fifty (\$50.00) dollars.

This ordinance to take effect and be in force from and after its passage and publication.

Passed this 20th day of June, 1907.

Attest: JOS. U. SWEENEY, Mayor.

PERCY MCGHEE, City Clerk.

Public Notices.

BE IT ENACTED by the City Council of the city of El Paso.

Section 1. That it shall be unlawful for any person, firm or corporation to wash any wagon, carriage or other vehicle upon any street, square or alley of the city of El Paso now paved or hereafter to be paved with bitulithic.

Sec. 2. It shall be unlawful for any person to mix any

lime, mortar or cement upon any of the said streets, square or alleys so paved or hereafter to be paved.

Sec. 3. Any person, firm or corporation who shall violate any of the provisions hereof shall be fined upon conviction in any sum not less than five (\$5.00) dollars nor more than one hundred (\$100.00) dollars.

This ordinance shall become effective from and after its passage and approval.

Passed this 27th day of June, 1907.

Attest: JOS. U. SWEENEY, Mayor.

PERCY MCGHEE, City Clerk.

BE IT ORDAINED by the City Council of the city of El Paso.

Section 1. That no person shall use or cause to be used any wagon, cart or any other vehicle of heavy draft upon any bitulithic street, alley or highways or any other paved public place of the city of El Paso for the purpose of drawing or hauling brick, sand, stone, oats, wheat, corn, flour, logs, lumber, coal, wood, iron, copper, machinery or any other heavy material, unless the tires of such cart, wagon or any other vehicle when drawn by one or two horses or other animals be at least three inches in width; and by more than two horses or other animals at least four inches in width.

Sec. 2. Any person, company or corporation violating or failing to comply with the provisions hereof shall be punished by a fine not less than one (\$1.00) dollar nor more than fifty (\$50.00) dollars.

Sec. 3. The provisions hereof shall not become effective until the expiration of ninety days from date of passage hereof.

To take effect and be in force from and after its passage and publication.

Passed this 20th day of June, 1907.

Attest: JOS. U. SWEENEY, Mayor.

PERCY MCGHEE, City Clerk.

These ordinances disclose on their face that the company putting down the pavement was not willing that the streets should be used for all of their usual and ordinary purposes. Vitrified brick places no restrictions. It meets every issue that can be raised against it. The thoughtful property owner who expects a good street when he spends his money for paving, should carefully consider this question.

We respectfully suggest to the property owners of East Front, South Main and other streets contemplating pavements, that they carefully read the ordinances passed by El Paso, and give greater consideration to what is expected from the pavement they propose to put down, and deeply consider the qualities and lasting properties of vitrified brick.

Vitrified brick places no embargo on the width of the tires. The farmer and the teamster may use wagons whose tires are one inch wide, or six feet wide. They may load the wagons to the extent of one ton, or one hundred. There is no limit on the load nor the tire. It places no obstruction on the man who wants to make an improvement, about mixing his mortar. He can sweep off the street, and mix any quality of mortar he wishes, without detriment to the pavement, and if they want to lay the dust, as many roads in California are laid, they may do it by sprinkling oil all over it, without hindrance. It can not be hurt by anything short of an earthquake.—Fort Worth Star.

NOTHING NEW UNDER THE SUN.

Testimony to the durability of terra cotta which enters so extensively into the construction of the twentieth century skyscrapers, comes in an official report from W. H. Michael, Consul General at Calcutta, in which he states that that material was known and used in ancient Burma almost a thousand years ago.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.



BRICK SITUATION in San Francisco continues satisfactory, though prices are gradually sinking to the point at which they were at the time of the fire in April, 1906. The financial stringency has not had any immediate effect on the situation. New business, however, is a very small factor and the call for brick later on will be light. Architects are quite as busy as before the money trouble and brick men are still engaged in making deliveries on old contracts. Deliveries in the main may be said to be somewhat slow. Some of the larger plants are not accepting any new business, but are filling orders standing for the past half year. These companies have been particularly fortunate in obtaining contracts at high prices. Orders taken six months ago for common brick carry a price of \$12.50, while the present price delivered on the job is from \$9.00 to \$9.50. Pressed brick, however, remains steady at about \$43.75.

Building is picking up again now, after a temporary setback, due to panic conditions and to the prolonged legal holidays. Extensive alterations are also being carried out, last week's alteration permits reaching a value of \$607,000. The fine structure of the Alaska Commercial Company will probably be completed by March of next year. Plans have been completed for the Tower building, at Grant avenue and Sutter street, San Francisco. This will be a twelve-story, class A structure, on a lot 40x40 feet. It will cost \$150,000 and will be finished in white stone and pressed brick, for which the contract will be let within the month. The ten-story Mills building at the corner of Bush and Montgomery streets, which was badly damaged two years ago, is being refitted and finished. Gladding, McBean & Co. are furnishing the hollow partition tiling and face brick which are being used in its reconstruction.

The soft mud plants have, for the most part, shut down for the season. It is the custom of these brick plants to mold during the summer months and burn during the rainy season. Many of the concerns, however, have already completed their burning and have shut down all departments except the shipping branch.

Mr. Lipp, manager of the Sacramento Brick Company, reports that his company has shut down and the entire output is sold out. Mr. Lipp made contracts two years ago on which the works have been engaged ever since, and no new business has been accepted beyond small jobs, which were filled as a side issue. The Sacramento Brick Company is now making deliveries on a large contract calling for common brick to be used in the construction of the Hotel St. Francis Annex, work on which is now being rushed. The structure is an imposing one, connecting with the present hotel and facing Union Square. The steel frame has been finished and contractors are now starting the stone work.

The Patent Brick Company has stopped burning and is preparing for winter shipments. The yard of this plant is blocked high with freshly burned brick awaiting cars. The shortage of cars is everywhere complained of, and this is now the principal hindrance to prompt delivery.

The San Jose Brick Company has also completed its run for 1907, and has closed down its plant after a very successful season. Both these plants have been working on old contracts and have had an especially prosperous year, as the brick were sold in a high market.

The stiff mud plants will probably continue operations through the rainy season, as the rains do not materially affect their operation. The Carnegie Brick and Pottery Company will run throughout the year, and M. A. Murphy, manager of the company, is very well satisfied with the outlook. Mr. Murphy says deliveries are somewhat slow now, but he looks

for improvement in this respect as soon as the railroads take steps to overcome the car shortage.

Under the name of "Terra Cotta Lumber" the California Brick and Clay Manufacturing Company, of San Francisco, is turning out a new material to be used as partition tiling in place of hollow brick and similar materials. Terra cotta lumber is a new thing in local construction circles. It is made by mixing sawdust liberally with the clay. On burning, the saw dust is consumed leaving a light porous tile. The United States Government has made arrangements with the company to furnish 100,000 feet of this "lumber" for the new Custom House in this city, which is now well under way at the northwest corner of Battery and Washington streets.

The Diamond Brick Company, of Black Diamond, Cal., has just completed burning the first kiln of brick, the output being 250,000. These brick will be used in the construction of a dryer, equipped for handling 100,000 brick a day. The new plant will be completed and ready to turn out brick by the time building is actively resumed in the spring. Since the commencement of work on the plant, additional clay deposits have been found on the property of C. A. Hopper, president of the company. This clay is said to be especially adaptable to the manufacture of clay sewer pipe, fire brick, vitrified paving brick, and fireproofing. J. H. Hornsby, manager of the company, plans to make a specialty of vitrified brick and predicts that the company will soon excel in this line.

The Simons Brick Company, of Los Angeles, which recently furnished 9,000,000 brick for use in the construction of a new outfall sewer in Los Angeles, Cal., is congratulating itself on the way its product showed up in the city engineer's test. An absorption test of one hundred and eighty-seven cars from the Laguna yards of the company, certified to by the inspector, showed an average of 3.8 per cent. less than the requirements of the specifications. The company is now furnishing 4,000,000 of the same brick to be used in the construction of a lateral sewer system now being laid on Slanson avenue.

Joseph Simons, of the Simons Brick Company, is continuing his preparations to go into the paving brick business. This will be turned out at Elsinore, in San Diego County, south of Los Angeles. Until now, the Los Angeles Pressed Brick Company, of Los Angeles, was the only company in the south which has been making paving brick.

It now looks as if the rebuilding of the plant of the Ogden Sewer and Clay Company, of Ogden, Utah, would be commenced at an early day. Several of the insurance companies against which the company has had suits pending, ever since the destruction of the plant about a year ago, have intimated that they are anxious to have the matter settled. The management of the company believes that settlement will be made shortly, and has announced its intention of rebuilding the plant on a larger scale, and with more modern equipment, just as soon as the money is paid over.

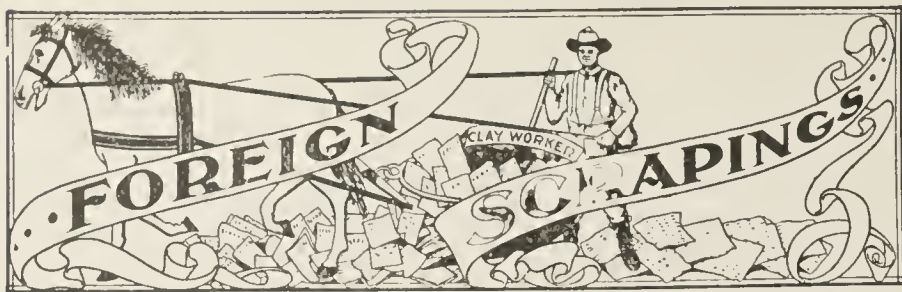
Articles of incorporation were filed last week by the Sumas Fire Brick Company, at Bellingham, Wash. As soon as possible the company plans to begin the work of manufacturing fire brick at Sumas, near which a large deposit of excellent clay has been found. The capital stock of the company is placed at \$150,000. The directors are: R. L. Lambert, Horace A. Wilson, L. Brown, Christina Brown, Leonard Keinig and Margaret Keinig.

The first kiln of brick from the new dry pan of the San Luis Brick Company, of San Luis, Cal., was turned out last week. It contained 180,000 brick.

The Humboldt Brick, Stone and Powder Company, of Eureka, Cal., has applied to the city authorities of that place for a permit for a railroad through that city in order to get its product to tide water.

SUNSET.

San Francisco, Dec. 5, 1907.



New Kaolin Beds.—Near Libin, in the Ardennes Mountains, in Luxembourg, large deposits of porcelain clays and sand have been discovered. Geologists who have examined the deposits declare that they are very extensive and of a very pure character. Tests are now being made to determine their commercial value.—*Moniteur de la Ceramique*, No. 21, 1907.

Continuous Kiln for Burning Porcelain.—Dr. Loesser gives in *Keramische Rundschau* a very interesting report of his investigation of the Faugeron Canal kiln, which has been in continuous operation at the porcelain factory of C. Tielsch & Co., in Altwasser, Silesia, for over one year. A new factory was built there, principally to test this new kiln system, and it has proven to be a success in every respect.

Continuous Kiln Notes.—In connection with a question of the height of a chimney of a continuous kiln, in proportion with the kiln flues, we find the following data: For a continuous kiln with 18 chambers, which measures 12 by 14 feet by 9 feet high, a stack which measures 108 feet is not sufficient. The square of the flue measurement multiplied by 5.3 gives the height of the stack, which would be in this case about 156 feet high. The top diameter of the present stack is 4 feet, and should be 5 feet, while the diameter of stack at the bottom should be about 6 feet. The diameter of the stack at the top should be .16 times the square of the flue. There are, of course, other causes why the kiln does not have proper draft, but the only remedy would be the adding of height to the present stack.—*Tonind. Z.* No. 91, 1907.

Transparent Glaze for Enameled Bodies.—A good transparent glaze, which can be used for enameled ware, is made as follows:

Frit.

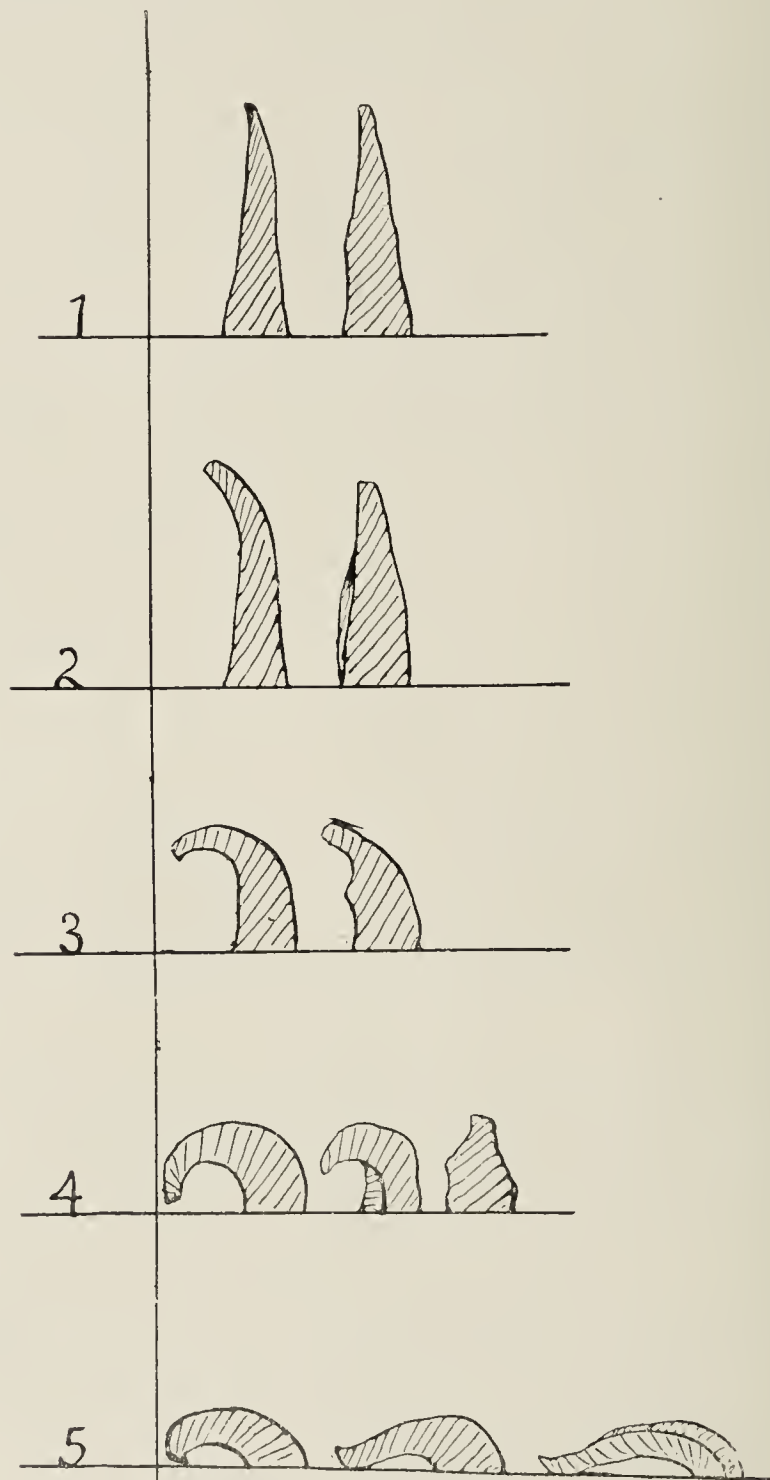
Borax	35 parts
Flint	27 parts
Feldspar	21 parts
Carbonate of soda.....	9 parts
Fluorspar	6 parts
Salpetre	2 parts

The materials are mixed well, and are melted together, best in frit kilns and otherwise in saggers. After fritting they are ground fine and to every 95 parts of frit there is added 5 parts of white burning plastic clay.—*Keram. Rundschau*, No. 39, 1907.

Casting Slips for Fireclay Bodies.—Dr. Emil Weber, who is the patentee of the Weber process for casting fire clay retorts, reported in the meeting of the Refractory Association that his process will not serve all clays alike. It is more or less known that fire clays differ greatly and that they do not all adapt themselves to the addition of soda for making casting slips. He states that in his six years' practice with his process he has tested many clays from all parts of Germany, France, Belgium and England. While he did not care to go into detail in regard to the foreign clays, he would say that he found only two German clays which would act on the soda process without any further experimenting. He pointed also to the fact that only the clay itself plays an important

part, but also the grog has many difficulties which must be overcome. Mr. Henneberg reported that he had used the process with variant success in making fire clay tiles of 16x20x4 inches. The body showed a good strong slab, but he also states that he has had quite a lot of trouble in getting the casting process to work right.—*Deut. Topf & Z. Z.*, No. 77, 1907.

Tests Regarding the Melting Stages of Seger Cones.—Dr. Engineer Loesser, in a paper before the German Association of Refractory Clayware Manufacturers, gives the results of his investigation of the melting stages of seger cones. He has used a small kiln, fired by gas, and finds that there is considerable difference as far as the temperature is con-



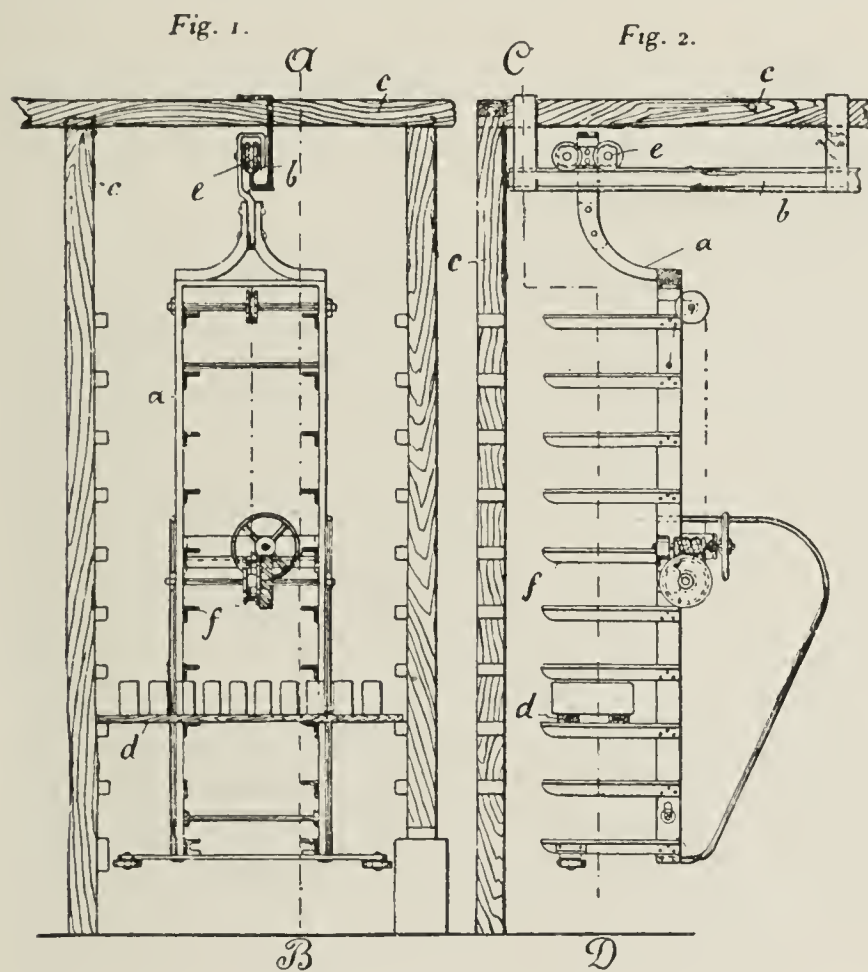
Melting Stages of Cones.

cerned, at which we are accustomed to call the cones to be fused down. In the accompanying cut we find five stages at which the cones show the effect of melting. At stage 1 the cones are just bending the points, at stage 2 the points are somewhat more bent, at stage 3 the cones are nearly half bent, while at stage 4 the tops are so far bent that they nearly touch the slab on which they stand. At stage 5 they are melted clear down. Dr. Loesser found that stages 1 and 5 are unreliable as to the exact point of fusing, and that we should only consider in practice stages 2, 3 and 4 for the determination of the melting point of cones. He also found that there was some irregularity between cones 018 and 012, further between cones 1 to 7 and between 11 and 12. He further pointed out that, while it was impossible for the cone

manufacturer to test each cone made, they should be very careful in properly selecting the material for making them, and to devise systems by which they could test the cones before they were put on the market.—*Deut. Topf & Z. Z.*, No. 76, 1907.

Building of Stolen Brick.—A concern dealing in building material in Vienna had observed for a long period that their cars of brick ran short as far as the quantity of brick was concerned, according to invoice. Upon investigation it was found that the brick were systematically stolen from the side-tracked cars. Not only were the brick stolen, but it was found, also, that a three-story building had been built from these stolen brick. In all, about 31,000 brick were stolen. Three parties were found guilty of the misdeeds and properly locked up.—*Baukeramik*, No. 40, 1907.

NEW PALLET CAR SYSTEM.—H. Callies, of Straszburg, Germany, has been granted a German patent on a pallet brick rack car, which can be easily installed in existing drysheds. The car moves along an overhead track to any place in the



dryshed. The car is provided with arms which hold the pallets. After the car comes to its destination by a simple lifting attachment, it lifts clear from the pallets, and they rest on the support provided on the racks.—*Deut. Topf. & Z. Z.*, No. 69, 1907.

The Temperature Measurements of Gases.—In the measurements of temperatures of gases, Von de Grahl has made use of the Le Chatelier pyrometer, in which the two porcelain tubes are protected by an iron pipe. In the tests he found that this protection detracts much heat from the couple, and that the temperatures in reality are much higher. How great this difference can be is shown in the following table, which gives the heat of a Bunsen burner:

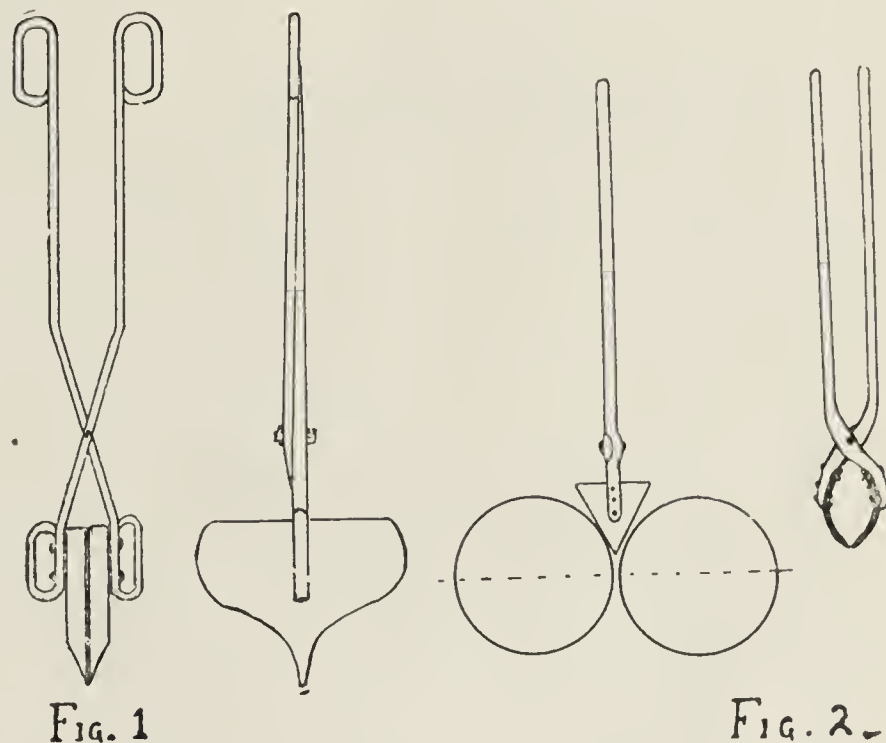
- | | |
|--|--------------|
| 1. Protected with iron and porcelain tubes | 715 degrees |
| 2. Protected with iron and porcelain tube, | |
| however, iron tubes perforated with holes.. | 730 degrees |
| 3. Without iron tube, and one porcelain tube.... | 1080 degrees |
| 4. Unprotected element for three-inch..... | 1305 degrees |

The same investigator also found that there is a large difference between the thickness of the wire, and that the thinner the wire the greater will be the heat which is registered. He

also states that he obtained more accurate results with a tube which was suspended in the heat than one which lays horizontal in the test place.—*Keram. Rundschau*, No. 39, 1907.

The Financial Panic in Germany in Connection with the Ceramic Industry.—In regard to the value on the exchanges which have fallen the most in the last year are those stocks which belong to the clayworking industries. Their losses ranges from 21 to 65 per cent. The Kahla Porcelain Company lost 64 per cent., The Konigszelt Porcelain Company lost 65 per cent., The Dux Porcelain Company lost 21 per cent., The Sitzendorf Porcelain Company lost 28 per cent., and The Porcelain Factory, Rosenthal, lost 43 per cent. It is, of course, natural that the dividends will not be as large this year as last year. The main reasons for these losses are the higher prices of coal and raw materials. The wages are also much higher than last year. In many factories it became necessary to raise the potters from 4 to 5 marks per week. The exports have not been as brisk as they ought to be, and the outlook is not as good as it should be about this time of the year.—*Keram. Rundschau*, No. 39, 1907.

Stone Tongs for Rolls.—Several tongs have proven successful for the cleaning of the stones and gravel from the rolls



for crushing clay. Fig. 1 shows the Ekerdt tongs in general use in Germany, while Fig. 2 has been successfully used in several clay plants.—*Tonind. Z.*, No. 110, 1907.

Soluble Iron Salts in Clays.—A red burning clay which had been giving satisfaction for several years has showed in the last few months a very bad trouble. When the brick are nearly leather hard in the dryer, they show a dark brown and some times violet color where they are exposed to the air. When such brick are burned they will show nearly all black or mottled black. The sides of the brick which are not exposed to the air will show the regular red color, and also the brick will show red inside when being broken. When the brick which show this dark brown deposit after drying are washed before burning, they will show a good red color, same as the other brick. In determining the cause of the trouble it was found that the phenomenon could be traced to the weathering of the iron pyrites, which was decomposed into ferrous sulphate and iron oxide. The soluble ferrous sulphate is brought to the surface by drying, and forms the deposit which burns dark brown or black on the surface of the brick. In order to obviate this trouble the addition of some slacked lime will be found effective. About one per cent. of lime-water will be sufficient, and should be added to the clay before mixing.—*Tonind. Z.* No. 103, 1907.

Written for THE CLAY-WORKER.

BRICK NEWS OF THE TWIN CITIES AND THE NORTH-WEST.

THE

CURRENT FINANCIAL stringency has naturally had a greater effect on building operations than on most other lines of business, and the month of November has been a comparatively dull one in the twin cities, and in fact throughout the Northwest. The approach of winter always sees a slump in the volume of building work, and in that regard this year has been no worse than is usual, but it is in the matter of new work being projected for the ensuing year where the heavy decline is to be noted, and it will be in the building permits of 1908 that the results will be seen rather than those of November and December, which are generally for work which was planned and largely contracted for before the banks shut off the payments and shipment of currency. While an early resumption by the banks

just been issued are the brick addition to the "Soo Line," which will cost \$55,000, and will be of brick. Other buildings are a four-story apartment house, to cost \$50,000, which Thos. F. Curtis will erect at 1016 Fourth Avenue; a five-story brick warehouse for Jas. Roddy, 319 First Avenue N.; and a brick church for the Bethlehem Swedish Baptist congregation, to cost \$18,000. C. E. Bell, architect, is preparing plans for a brick and cut-stone church, to be erected at the corner of Pleasant Avenue and Twenty-sixth Street, for the Bethlehem Presbyterian congregation, at a cost of \$40,000. Edwin H. Hewitt, architect, has prepared plans for a suburban residence at Lake Minnetonka for Chas. S. Pillsbury, which will be of brick and stone, 100x125, and will cost \$75,000.

In St. Paul the leading permit for the month was for the new First Methodist Church building at Victoria and Portland Avenues, which will cost \$80,000. L. L. May & Co. will erect a two-story brick warehouse at a cost of \$50,000, and the Illinois Glass Co. a four-story brick warehouse, which will cost about \$40,000. The St. Paul Universalist



General View Arrel Limestone Company's Plant, Located at Lowellville, Ohio, Operated by Bessemer Limestone Co. Capacity 3,000 Tons per Day.

would probably result in a good deal of new work being planned for the new year, the matter has already worked enough trouble to prevent the full volume of construction work being carried on which would otherwise have been. The Northwest is really in very prosperous shape, and 1908 gave promise of being a big year in construction annals, but a spirit of conservatism and retrenchment seems to have taken hold of everybody, and it is hardly likely that next year will show so good a record as 1907. Whether the money stringency will have much effect on the smaller building operations remains to be seen, but there can be no doubt but that the larger work has suffered a heavy set-back, and it does not seem possible that it will be able to recover completely from it.

In spite of the tendency to curtail along the line of heavy construction work, there have been a number of fair-sized buildings started, and others are about to be started, so that the close of the year will not be entirely without some redeeming features. Among the larger buildings in Minneapolis which have been started or for which permits have

Church will also erect a \$15,000 church on Ashland Avenue near Arundel.

The largest work reported projected for next year in St. Paul is a large brick fireproof building, which is to be erected on Robert Street, between Seventh and Eighth, by the Emporium Department Store. It will be about 75x120, and will cost approximately \$250,000. The Board of Education will have four new high schools for which to provide the erection, as well as for additions to four grade schools, the total cost of the latter work amounting to \$75,000.

It is thought that John E. Andrus may order operations started on the proposed Arlington building, adjoining the First National Bank of Minneapolis, early in the spring. Plans were prepared by Long & Long early in the present year, but the matter was postponed to a more opportune time. It is to be fifteen stories high.

Louis Lockwood, one of the best known architects of St. Paul, died November 28th after an illness of only a few days. Mr. Lockwood has been a sufferer for some time with pernicious anemia, but it was only shortly before his demise

that he was compelled to give up his work. Mr. Lockwood had designed a number of large buildings in St. Paul, and undoubtedly had a great future before him, as he was only 42 years old at the time of his death.

While the price of all kinds of building material has slumped during the month considerably, brick have held up better than most other lines, as they had already gone off somewhat before the financial stringency compelled a reduction, and they consequently displayed a degree of strength under the adverse influences which was not possessed by other articles in the building line.

Both Minneapolis and St. Paul will show comfortable gains in the building record for the year over 1906, as the permits of each city have already passed the totals of the full year last season and a gain of about 10 or 12 per cent is anticipated. Minneapolis' total for the eleven months is \$9,602,095, which is only \$321,000 short of the record year of 1888, and it seems that this figure will be surpassed. That record is hardly to be taken as a basis, however, for the two largest buildings in Minneapolis, the City Hall and the Guaranty Loan buildings, were erected that year, and aside from them the total was

Written for THE CLAY-WORKER.

THE BRICK PLANT THAT IS MAKING YOUNGSTOWN, OHIO, FAMOUS.



NEVER WAS A brick plant placed in operation under more favorable circumstances than the new factory of the Bessemer Limestone Company, at Bessemer, Pa., some distance east of Youngstown, Ohio. The firm has been engaged in the manufacture of brick for several years, and in addition operates extensively in the stone business, as the firm title indicates, but the business of brickmaking has advanced at such a rapid rate that the original plant was overtaxed and an additional works was required.

When consideration was given a new plant by the company, the proposition was, so to speak, put in the hands of Fred R. Kanengeiser, a young man of sterling quality, and a graduate of Case of the class of '03. The company wanted the plant erected as early as possible, and within six weeks



Taking Limestone From the Quarries to Crusher of Arrel Limestone Company's Works.

not a startling one; and so, whatever December brings forth in permits, the past year can undoubtedly be called the best in the history of either city, so far as construction work is concerned.

A new brick yard will be started at Oakdale, N. D., by Mr. Vassar, of Dayton, Minn.

John Harris, of Barron, proposes to establish a brick yard at Ladysmith, Wis., and has made tests of the clay in that vicinity.

The Luverne (Minn.) Brick and Tile Co. will place its new plant in operation early in January.

A new pressed brick plant will probably be started at the new town of Scranton, N. D., by A. P. Peake, of Valley City, and J. F. Brodie, of Dickinson.

Tests at the Minneapolis City Workhouse have disclosed that there is a bed of brick clay there, and a plant will be asked for.

Three new plants have been constructed at Mason City, Iowa, recently, one each by the Mason City Brick and Tile Co., the American Brick and Tile Co., and the Mason City Clay Products Co.

T. WIN.

after the order for the plans were given the plant was complete, a feat of which the General Manager, Mr. Charles M. Crook, is quite proud.

Construction of this new plant commenced May last, and the first brick were made November 9, which, considering the size of the plant, and its remarkable construction, is a record seldom equaled. Building was always under the direct supervision of General Superintendent Kanengeiser, who is also the mechanical engineer for the Bessemer interests. While the new plant was being built, the making of brick continued at the first works under the direction of A. J. Aubrey, a graduate of the Ceramic School of the Ohio State University of the class of '04. Everything worked in favor of the company, and shipments were continued daily, until at present the concern is sending over fifty cars of freight out from its properties to all parts of the country over a small branch road of the Pennsylvania Lines, west of Pittsburgh, to the main line at Youngstown.

The engine room of the new Bessemer plant is a model of simplicity. A Corliss engine of 500 horse power is sufficient to operate the works. Instead of a belt, 25 strands, one

and one-quarter inch manila rope is used. This scheme is following the old English idea of driving, which in this instance has proved successful. The engine room measures 75 by 30 feet, and on a lower level, west of the engine room, is located the boiler house, containing two Sterling boilers of 60 horsepower each. A steam water heater is also located in this part of the building. Soft water is obtained from driven wells, and as the water is free from chemicals and mud, it is asserted that the saving to the boilers in wear from this proposition will be large. High and low water alarms are attached to each boiler.

In a building to the south of the boiler room the dry pans are built. It is here where Mr. Kanengeiser worked out an idea to a successful end. Concrete hoppers were constructed into which the ground shale falls. All dust, so common about the pans in other brick yards, is done away with. While the pans are elevated six feet above the ground, the hoppers are deep enough so that no clogging will result. The shale falls

storage shed, capable of holding 20,000 cubic yards of raw shale, has been started. The outer walls will be of concrete and thirty feet in height. Between each wall will be a conveyor which will take the raw product to the pans. Over and between the walls is being built a series of tracks upon which the small cars will be operated to bring the shale from the hills. The conveyor belts will be 300 feet in length, and the capacity of the storage bins will be sufficient to operate the plant for three months.

In order to hurry the construction of these large walls, the company placed a day and night shift of men at work. It required about six weeks to complete them.

A Bonnot type pug mill and their spiral brick machine has been installed in the machine room. Provision has been made for doubling the brickmaking capacity, and a sister equipment will be installed at an early date. A reel cutter is attached to the brick machine, and this the first large plant to install this new invention. The reel cutter, cutting 21



Immense Limestone Quarries at Bessemer, Pa., Operated by the Bessemer Limestone Company.

into that part of the hopper into which the elevators revolve and it is then carried to bins above.

From this first bin the ground shale is permitted to fall, in needed quantity, onto a twenty-inch conveyor belt which carries the shale to two storage bins erected on top of the main building or machine room, immediately over the pug mills. Although provisions has been made for four nine-foot dry pans, and concrete hoppers built for all, only two pans are being operated at present.

Care has been exercised to obtain the best clay possible before it is taken to the last bins, and to accomplish this all clay is screened through "piano wire" screens. While it was said that the storage bins would not prove a success, and, indeed, some brick manufacturers smiled when the plans of the Bessemer plant were scanned, however, in this instance it has worked to the satisfaction of all interested, and the proposition has never given a moment's trouble.

So that raw shale will be allowed to weather, a mammoth

bricks a turn, and making 10 cuts a minute, has been found to be a success. It will be no trouble for the firm to turn out 150,000 brick daily with the one machine. The machine room measures 79 by 110 feet, and ample space remains to install additional machinery.

Tracks to the dryers are built close to the machines. The firm has ordered 500 double deck dryer cars of the Ohio Ceramic Engineering Company, of Cleveland, Ohio, and many have been delivered. It is but a short distance from the machines to the dryers, which are after the plans of L. E. Rogers Engineering Company, of Chicago, Ill. This dryer contains 28 tunnels with a capacity of 392 cars, or about 200,000. There is a storage floor in the rear of the dryer for 28,000 brick, and in the rear of it is another storage floor for brick which have been taken from the dryer, the capacity of which is 100,000 brick.

At the rear end of the dryer is an underground flue, and at the end of which has been placed large disk fans, throw-



The Machinery Room, Bonnot Cutter in Foreground.

ing out immense volumes of steam. It is planned to tap the dryer, and heat the brick machine during the cool seasons.

plant. By this method it is possible to "bone-dry" in about eighteen hours. Running full, the works has a capacity of 85,000 to 90,000 brick daily.

With all this capacity, the company has not done. More kiln capacity will be required at their new plant. While the kilns will turn out about 100,000 brick daily, the plant is designed to make 250,000 daily. In all its enterprises the company is giving employment to about 500 men.

Every brick which is sold by this company is inspected before it is allowed to be placed in a car. It is for this reason that the firm is noted for the quality of its product, and the first complaint relative to a flaw in product is yet to be received. This is conceded to be a record seldom obtained in any line of manufacture.

Only paving and common brick are being made at present, although other grades may be taken up later. It is reported that the firm is in a position to land a contract for the delivery of 17,000,000 brick during the coming season, which is one of the largest brick contracts ever placed with a firm in the Mahoning or Ohio valleys.

Limestone forms no small part of the business of the company. In its 15,000 acres or more of territory the firm has immense deposits of limestone. The shale is taken to the brick plants, and the limestone beneath is readily mar-

The Haigh Continuous Kiln



The Foundation Walls, Interior of Kiln



In Course of Construction.



and the "Court" Between the Chambers.

Haigh's kiln, of the continuous tunnel type, has been built, and while over 5,000,000 brick was used in the construction of the new Bessemer plant, the bulk was laid in the construction of this immense kiln. The kiln has 67 chambers. Cars will be loaded on the off sides of the kiln. An entrance to the inner court is built in the center of the kiln. The tracks will be so built that either gondola or box cars can be loaded with the utmost ease, and with a view of saving time and labor. All setting is done from the inside court.

On the top of the kiln are feed holes for slack, and all waste heat from the kiln is conveyed back to the dryer. An overhead trolley will carry the coal buckets to any part of the kiln.

While this works will be known as "No. 2," yet the first plant built by the Bessemer company is none the less interesting. Three dry pans are in use at the original works, while Bonnot-Dewey machines and Bonnot rigid cutting tables have been installed. The dryer contains fourteen tunnels and has a capacity of 100,000 brick. There are eleven Wilson down-draft kilns, each having a capacity of 145,000 brick.

Power is obtained from two 300 horsepower Erie boilers and one 250 horsepower Buckeye engine. A waste heat system has been installed in connection with the dryer at this

keted. It is crushed to any size. Flux stones are also a specialty with the firm.

The officers of the Bessemer Limestone Company live in



Engine Room of No. 1 Plant.

Youngstown, Ohio, and are: President, J. G. Butler; secretary, C. C. Blair; general manager and treasurer, Charles M. Crook. The Arrel Limestone Company is also operated in connection with the Bessemer's interests, and has been doing a successful business since it was established. O. MEGA.

Written for THE CLAY-WORKER.

HEARD IN NEW ENGLAND.



BUSINESS THROUGHOUT New England has come to a somewhat abrupt end because of the sudden change of weather from a temperature closely resembling spring to that of winter with considerable snow and cold. Fortunately, nearly all manufacturers had their work well cleared up and comparatively little damage was done when the cold weather came. Now there is only a little cleaning up and picking up about the yards going on, getting them snug for the winter, which, in this section of the country, is severe. Of course every manufacturer knows what this means and he knows, too, that if the winter held off indefinitely there would still be more to do.

Now that the season is over some complaints are heard from this section concerning the actual business of the season just passed. It is said that in some yards operations had to cease because of the fact that the sheds were full and it was impossible to find space for more, so operations ceased. Apparently this is not a general complaint, since there are manufacturers, and many of them, who assert that their trade was never better, and that they are completely closed out. Much depended upon location, apparently, and those who were in position to satisfy almost any demand at a moment's notice have been enjoying a good business.

New England lost its New York trade this season by reason of the reduction in prices made by the New York manufacturers. So long as the prices were held up it was possible for New England makers to reach New York profitably at as low, or even lower prices, than New York manufacturers could afford. When this fact became known, New York manufacturers reduced their price so the New England makers made no profits out of their shipments. Then they ceased. Undoubtedly this move had its effect upon the New England market.

Some of the Connecticut manufacturers, who formed the Central New England Brick Exchange, made a contract with the Federal Brick Company, of Rhode Island, which agreed to market all the brick they made. The Federal company pledged itself to ship sufficient brick to enable the plants to continue operations. Toward the close of the season this portion of the contract rubbed hard. It was practically impossible to secure sufficient orders to keep this part of the contract. The result was the closing of some plants in the New Britain district earlier than would have been the case had the contract been fulfilled to the letter. The company also pledged itself to pay for the brick within sixty days of the burning.

It is not charged that the payments for the brick shipped were not made, but it is charged that in some instances the shipments were not made as promptly as might be wished. If this is the only grievance, there is little cause for complaint. The season has been fair. Perhaps it hasn't quite reached the totals of the two previous fat years, but, however that may be, it has far exceeded the average for the past ten years. When all the competition and misunderstanding are taken into consideration, the present year has made a showing for which all manufacturers can well be thankful. It could have been so much worse, and had the financial disturbances come on before the season was virtually over, unquestionably the brick men would have seen trouble. As it

was, they were virtually out of it. Their work for the year was done and in many instances their hands were paid off, and the necessity of ready cash sat lightly upon them. Consequently, they ought to mingle some degrees of thankfulness with their more or less bitter denunciations of the existing conditions.

The New England mills which were closed because of stringency early in the panic period have reopened on full time. The additions and extensions which were under discussion before the difficulty occurred will be continued and the many improvements planned for the New Year will go forward unabated. For these reasons it would be well for the brick man to consider the outlook and forget the unpleasantness of the present, if any there be, and go forward with no uncertainty respecting the future.

From Boston come reports that there is practically no difference in the situation. The tendency among manufacturers is to accept lower prices under certain conditions, but this has not led to any open reduction in quotations. The money stringency has caused some difference. Some who intended to erect brick buildings have postponed their operations pending some change in the situation. Some who are already at work have been compelled to stop because of the fact that it has been hard to obtain money.

But, notwithstanding the truth of these assertions, it must be stated that these important operations, which are in line with progressive development, can not be long delayed. Prices are: Up and down s. s. brick, f. o. b. yards in Massachusetts or New Hampshire, \$7.25@7.75; up and down w. s., \$9.00@9.25; New Hampshire selected w. s., f. o. b. cars New Hampshire, \$11.00@12.00; Massachusetts face brick, \$20.00@21.00, and fire brick, \$28.00@35.00.

All through Northern New England rigorous weather has stopped all operations. Not even cleaning up about the yards can be done. The business will remain more or less dormant until next spring, after the snow disappears. Then there will be more doing and manufacturers will have another favorable opportunity to benefit themselves. HIRAM.

WALL STREET A CURSE TO INDUSTRY.

We should never get nervous over what the speculators of Wall street are doing. Let the animals tear themselves to pieces. Every intelligent American citizen should know that gambling in stocks is anything but a healthy condition, as certain erratic ones become panic-stricken and it often reverts to disaster. Furthermore, the intelligent investing public should have nothing to do with the Wall street rabble.

Let us say, however, that those who really desire to make an investment in the sound stocks that have been rent by the rabid crowd, should have nothing to do with the gang of vultures that hover over Wall street. The small investor should keep out of the speculative market, especially where the conditions are controlled by gamblers.

Good securities are possibly at their lowest ebb, although, foolishly, presidential year usually creates a bear market and following the general rule stocks may go lower than at the present time, but nevertheless many of them are a good purchase.

The recent rough-house condition of Wall street emanates from two-fifths pure cussedness, one-fifth jealousy and two-fifths greed.

As above stated, speculation should never enter into one's mind when making an investment, but if it must, it should be with the honest promoter who is endeavoring to finance industries in unlisted stocks and not with professional gamblers. Then when the industry is carried to a successful issue, the profit in the rise of the stocks based upon a legitimate income will have proven not only a good investment, but a good speculation. Indeed, the promoter should see to it that speculators and gamblers, who constitute the dishonest investors, do not creep into his list of partners.

In conclusion we wish to say that it would be to the interest of American industry if Wall street would sink into the lowest depths of sheol or the great eastern pond.—Exchange.

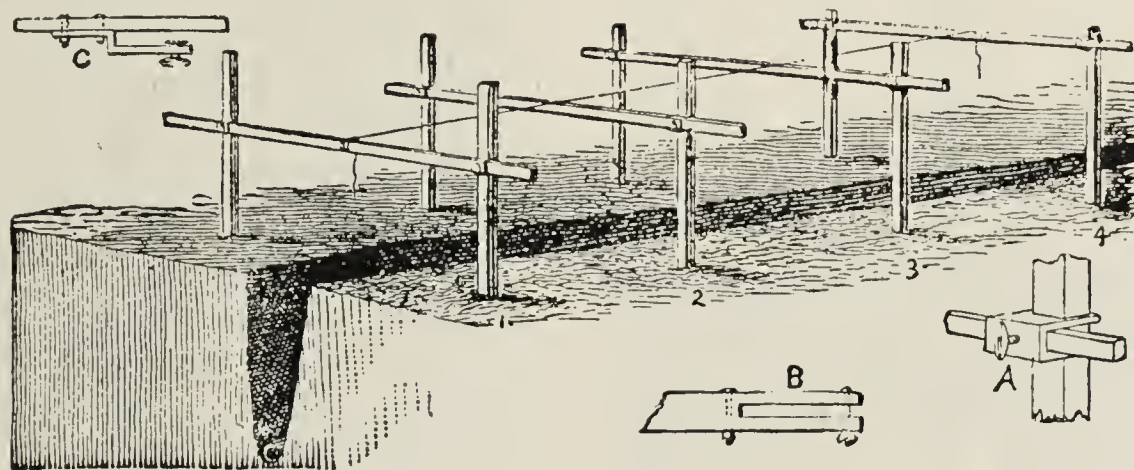


THE OUTLOOK.

THE INLAND WATERWAYS Commission has a large contract on its hands in developing a plan to make the Mississippi River an ocean highway, with a nine-foot channel up the Ohio to Pittsburg, a six-foot channel in the upper Mississippi up to Minneapolis and another up the Missouri to Sioux City.

President Roosevelt, in his speech at Memphis to the Waterways Convention, said.. "The Inland Waterways Commission has a task broader than the consideration of waterways alone. There is an intimate relation between our streams and the development and conservation of all other great permanent sources of wealth. It is not possible rightly to consider one without the other."

To quote further from the Memphis speech, he said, "Citizens of all portions of the country are coming to realize that however important the improvement of navigation may be,



it is only one of many ends to be kept in view.

"The demand for navigation is hardly more pressing than the demands for reclaiming lands by irrigation in the arid regions and by drainage in the humid lowlands, or for utilizing the water power now running to waste, or for purifying the waters so as to reduce or remove the tax of soil waste, to promote manufactures and safeguard life. It is the part of wisdom to adopt not a jumble of unrelated plans, but a single comprehensive scheme for meeting all the demands as far as possible at the same time and by the same means."

With the foregoing comprehensive view of the great scheme or undertaking as thus outlined by the Waterways Commission and President Roosevelt, there arises before us the magnificent possibilities of the future of this vast area of country through which these waterways run. The millions of acres of as rich soil as is known in the world is to be reclaimed by drainage, and made habitable and dotted here and there with villages, towns and cities, and the one vast area covered with homes for the people and fields of golden grain ripening to the harvest to feed the millions of people on the earth, with the means of transportation at hand.

The Panama Canal is an important link in this connection, making it possible for the commerce of our country to avail itself of the most direct routes to all parts of the commercial world.

The reclamation of swamp lands and overflow lands is an important link in this vast chain of future developments.

The under-drainage of the higher lands to prevent the waste of soil fertility will add another link to the chain in the better development of our agricultural lands and the conservation of soil fertility.

There are other links in the chain to which we might refer, but the want of space forbids. But the above brief outline of this vast scheme for future development is enough to startle the imagination and quicken the blood of any true American.

METHODS OF LAYING TILE TO GRADE.

If the grade of the drain is known, so that the size of the tile can be selected, or if you can ascertain that there is a fall and decide on the size of tile some other way, the following method may be used as a substitute for any method of leveling.

I would also advise its use for construction whether the drain has been previously leveled or not. At the outlet of the drain drive a stake each side and fasten from stake to stake a horizontal cross bar any convenient height above the bottom of the ditch. This cross bar may be nailed to the stakes held by clamps, but it should be leveled. At the point where the grade is to change (even though it may be at the upper end of the drain), fix another cross bar in the same manner and at the same height above the bottom of the ditch. Now sight from one cross bar to the other and have a series of similar cross bars set. They can be

got in line with the first two by sighting. Permanent ones should be as close as once in twenty rods, while temporary ones should be set in advance of tile laying as close as once in three rods. Stretch a line from stake to stake, and it is evident at once that such a line is parallel to the required bottom of the ditch, and by having a pole the proper length the ditch can be dug as accurately as wanted.

This is shown clearly in the illustration. This method may be thought cumbrous and worrisome to carry out. As a matter of fact there is very little work to it. Two men can lay out in half a day all the work that can be done in two weeks, and lay it out with such certainty that no question will ever arise as to which end is higher.

The method of leveling with running water is no method at all, although if the ditch can be opened its whole length and will stand the wash without injury it is a comparatively safe method. You can not in that way secure a uniform grade. The cross bar system is so systematic that the drain may be opened and tile laid and drain filled in any part irrespective of the rest of the drain, and yet be absolutely certain of securing a perfect grade.

If you will only try it I will guarantee that no matter who may do your digging you will look out for the laying of your own tile.

Be sure that the work of under-drainage is being well done, then "go ahead." Well burned drain tile well laid makes the improvement of soil conditions permanent.

Written for the CLAY-WORKER.

DES MOINES, THE IOWA CONVENTION CITY.

THE MANY ADVANTAGES of Des Moines as a convention city appealed so strongly to the Executive Committee of the Iowa Brick and Tile Association that that city was again selected as a place of meeting for the 27th Annual Convention, to be held January 22d and 23d next.

It goes without saying that the selection meets with the approval of a great majority of Iowa clayworkers because of its central location, and because of its enterprising and sociable brickmakers, who so royally entertained the 25th Annual Convention in 1905. The pleasant taste remains and, while it can not be expected that the Des Moines brick men will repeat, there is a feeling that the "glad hand" will be extended, and that counts more than anything else.

Des Moines, always a charming city, has changed greatly since the Association convened there last, two years ago. Many fine business buildings have been erected and established trading places remodeled and beautified; new and attractive places of amusement added; hotels modernized and better fitted to entertain their guests, so, taking it all together, Des Moines presents an attractive, entertaining and

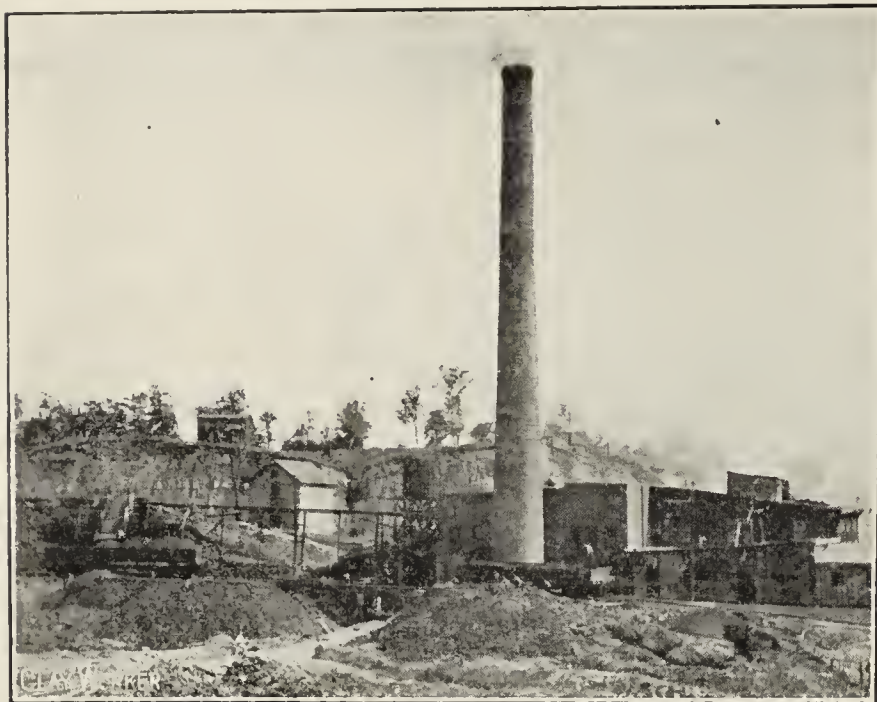
much heavy teaming is done, has just been repaved with brick block. These block were made by the Barber Asphalt Paving Brick Plant.

East Walnut, another heavy teaming street, has been repaved with brick block made by the Flint Brick and Coal Company. Both Court avenue and East Walnut streets compare very favorably in beauty with the asphalted and creosoted block streets, and it is a fully established fact that the teamsters and drivers prefer the brick block.

Visiting brickmakers can see much of interest in Des Moines plants, covering as they do a wide range of product, including soft mud, pressed and paving brick, drain tile, hollow block, sewer pipe, side-cut face brick and cement enamel brick.

The production of paving brick in Des Moines has narrowed down to two plants of large capacity. These are the Flint Brick and Coal Company, and the Barber Asphalt Paving Company.

James Maine & Son operate a nicely equipped soft mud plant on the East Side; The Iowa Brick and Tile Manufacturing Company operate the old "Iowa" plant, under lease, making building brick and block; J. B. McGorrick operates the old Merrill yard; The Goodwin Brick and Tile Company operate two plants in south Des Moines, making chiefly drain



Plant of the Flint Brick and Coal Company.

desirable front to visitors and is consequently a convention city par excellence. Des Moines enjoys the distinction of having one of the finest vaudeville theaters west of Chicago. This theater, the "Majestic," has just been completed and is certainly a fine building, and, as it has a bill supplied by the best vaudeville circuit in the country, it will no doubt prove an attractive card to visiting clayworkers. It's always safe to say that entertainment can be found in Des Moines at any time and in most any desirable shape.

It does not seem to matter what branch of the trade clayworkers may be interested in particularly, they are always interested in paving and feel an interest in seeing the results of paving experiments with the various paving materials. Just previous to the convention held in Des Moines two years ago, Walnut street was paved with asphalt, replacing brick paving which had been down about twelve years, and had been torn up over its full length on an average of once or twice a year for various kinds of under-street work.

This year visiting brick men will observe the paving on Locust street, which is creosoted block. Both of these streets are as yet in good condition and, as all the under work has been completed for some years to come, it is probable that they will retain their good appearance for another year or two.

Court avenue, the principal wholesale street, over which



W. H. and Eugene Brecht and the Boss Machinist.

tile and block; The Shackelford Brick Company, The Iowa Pipe and Tile Company, The Des Moines Brick and Tile Company, The Flint Brick and Coal Company, The Barber Paving Company, the Des Moines Clay Manufacturing Company, and the Younker Pressed Brick Plant are the principal plants of Des Moines, and are the kind of ventures which are interesting to the clayworker. The product of these plants represent all of the common clay products and give examples of the result of careful study of local clayworking problems and the business problems common to all plants. Two of these plants are at present without shipping facilities and are consequently depending on local trade.

The Shackelford Company, with a yearly production of 9,000,000 building brick, is a modern plant, wholly devoted to the production of building brick. This plant is the result of the efforts of practical men and may be said to have built itself from the capital of good hard sense and the strict attention of its founders. It is the intention of this company to install a waste heat dryer, replacing the steam radiating tunnel dryers now in use, and to otherwise modernize the plant and equip for the large building brick business which it is establishing.

The Des Moines Brick and Tile Company, which is owned by the Rawson interest, as is also the Iowa Pipe and Tile

Company, are making extensive additions to their plant in North Des Moines. A four-story brick building has been erected and piped for drying large sized tile and sewer pipe, and several round kilns are being erected. This, in addition to their tunnel steam dryer, will give them a large capacity and one of the most complete tile plants in Iowa.

The Des Moines Clay Manufacturing Company has recently opened a new clay deposit on the line of the Wabash Railway, a few miles east of Des Moines. The deposit is about thirty feet in thickness, extending over about 160 acres. A complete mining outfit is installed and the clay loaded into railway cars for shipment to their plant in Des Moines, which is on Ninth street, about five blocks from the Union station. The output of the plant is hollow block and face brick. A specialty is made of side cut repressed face brick, particular attention being given to the production of flashed and salt glazed face brick.

The Convention Program.

We regret that we are unable to secure a copy of the program for the convention. The subjects to be taken up are substantially as follows: "The Ceramic School, Its Advantages to the State and the Clayworking Trade;" "Compara-



Shale Pit of Flint Brick Company.

tive Value of Large Tile Over the Smaller Sizes in Drainage Operations;" "Producer's Gas for Power Purposes;" "Comparative Costs and Economy of Operation in Power Plants of Seventy-Five to Five Hundred H. P.;" "The Economical Handling of Clays by Means of an Aerial Wire Rope Tramway;" "Electrical Power, Its Generation and Use in Clay Plants as a Means of Power Economy;" "The Life of Cement;" "Residences of Brick and Hollow Block, a Present Day Economy;" "The Dryer, Experience in Practice with The Natural Dryer, The Steam Radiating Tunnel, The Steam Coil and Fans in Tunnel Dryers, The Direct Heat Radiating Tunnel, and The Waste Heat Tunnel." These subjects will be handled in separate short papers. Arrangements have been made for the display of plans for brick and tile plants, kilns, etc. An extra effort will be made to bring out a full discussion of the subjects named and others which may be brought up.

Several prominent engineers will contribute papers, and there is little doubt but what the program will prove interesting and valuable to all. It is expected that the convention will vote to have the proceedings and papers published in book form.

Headquarters will be at the Savery hotel, corner of Fourth



Discharge End of Hot Air Dryer.

and Locust. The committee expects a large attendance and extends a cordial invitation to all clayworkers.

TWO THINGS THAT ARE ESSENTIAL.

There are two things that are essential to make the manufacture of drain tile a success—good clay and a good demand.

The clay should make a well-formed tile from the machine and dry and burn with little loss.

A good demand for drain tile depends much upon the intelligence and push that is put into the business. Every manufacturer of drain tile should have an inwrought conviction that tile drainage is an important factor in the better agriculture of the country, and put their heads into the game of getting the farmers and landowners interested in the use of drain tile and the benefits accruing from their use. Talk more about the success of those who have tried drainage. See to it that a discussion of the effects of drainage on the soil is had at almost every farmers' institute, and through advertising and drainage literature increase the interest in tile drainage. In a word, use the local press and other means to keep the drainage interest prominently before the public. Withal keep those who are using drain tile well informed as to the best methods of drainage—the whys and hows of the business.



Kilns Fronting the Stock Yard.

Written for THE CLAY-WORKER.

CONVENTION OF SAND-LIME BRICK MANUFACTURERS.

A Small, But Enthusiastic Gathering—Interesting Exhibits— Earnest Discussion and Good Fellowship the Chief Characteristics.

"A meeting of the faithful" fitly characterizes the fourth annual convention of the manufacturers of sand-lime products held at Columbus, Ohio, December 4th to 6th. There was a slight falling off in the attendance, compared to previous year, but the enthusiasm of those who did participate was unabated. The meetings were held in the German room of the Chittenden Hotel, and the first session was called to order at 11:30 a. m., Wednesday, by President H. O. Duerr, who introduced Mr. J. Y. Bassell, Secretary of the Columbus Board of Trade, who welcomed the delegates in a clever though brief address, during which he mentioned the fact that the Columbus Bricklayers' Union had made trouble for the local sand-lime plant—the Granite Brick Company—by refusing to lay its product except as pressed brick, declaring that they are harder to lay than clay brick, for which reason the discrimination is made.

President Duerr thanked Mr. Bassell for his cordial welcome, and stated that the local manufacturer would likely be able to overcome the union's objection and be able to have sand-lime brick handled in the same manner as ordinary brick. He then presented his annual address, which is given in full.

PRESIDENT DUERR'S ADDRESS.

It is with pleasure I welcome you to our fourth annual meeting. We are to be congratulated on so good an attendance; it at least indicates that there was some cash to be had from the banks in your several communities. I trust that we, neither as individuals nor as an association, are subject to the suspicion and lack of confidence that has placed so grand and prosperous a country as ours in so conspicuously ridiculous, not to say dangerous, position as to be almost panicky.

How easy it is to forgive ourselves the mistakes made in sand-lime production when we hear of old, tried financiers, men of science and of letters, crying ruin because we have a man at the head of this Nation who knows right from wrong—who can, and does assert it. I can only pray that this association at this meeting, and at all other times, may emulate the great ideals which our esteemed President lives up to.

I do not wish to be understood as being optimistic or pessimistic. I have considered the pros and cons of the sand-lime products industry in all its phases so many times that I am becoming more and more conservative over it. Notwithstanding that conservatism, I believe to-day in the future of the sand-lime products industry just as firmly as I do in the future of our Nation.

As we are leaving behind us a period of frenzied finance, a period of irresponsible, questionable business transactions, and moving into a new era of truth and integrity, so also is the sand-lime products industry bound to pass through a transition period—from the period of irresponsible promotion, a period of unreliable production, to a period of greater intelligence and more thoroughness on the part of the manufacturer of sand-lime products.

As we look back over the last five years in this industry, we can not help but feel that we have been in a very chaotic state. The time seems ripe for us to take stock. Why? Because of the failures, and because of the necessity of the future of the business. We must make the public believe in us; and to make the public believe in us, we must first believe in ourselves. Just so long as we are producing a material indifferently good, when in the depths of our own hearts and consciences we know we can do better, just so long we can not obtain the recognition to which we are entitled.

Gentlemen, you know that there is not one of us who can not make a better article than he is now producing, at no greater cost, if he will make the effort.

If this association is to continue for any good purpose whatsoever, and accomplish anything, it must stand unqualifiedly for truth. And when I say truth, I mean the truth of the good worth of its materials, for which this association stands.

The Lessons of Experience.

Let us briefly glance over the history of the past few years, since the advent of this industry, and note what has been done.

From the consular reports we hear that a great invention has been discovered in Germany which is to revolutionize the building industry in many communities. This discovery has been commercialized and is showing wonderful success. Next we hear of the organization of certain companies being promoted for the purpose of manufacturing this wonderful building material under rights

which have been given by dispensation; and if you wish to reach that great goal of your ambition, it is incumbent upon you to obtain, immediately, a franchise. Unless you grasp the opportunity at once, your neighbor is going to take it away from you; and, consequently, you soon find yourself possessed of the right to manufacture this building material under the special dispensation which no one else in our community can have. Your opportunities are without limit. You have the world at your feet. The result, in cold facts, is that the franchise for which you paid good hard cash is worthless because you found that there were other franchises, equally as good, being given away with a package of machinery, for which you paid good money. You found yourself possessed of a badly designed plant, with machinery wholly inadequate for the purpose intended. On the top of all this you have gone into a business which you were led to believe required no knowledge, and you found yourself entirely out of place, without knowledge or cash. What has been the result? Failures, discouragement, heartaches, backaches, even hardships for many, with but few successes.

The surprise to me is that there have been as many successes as there are. The fault can not be placed upon any one thing, but upon everything.

Can we remedy the situation? I say, yes. What shall we do? First, as individuals; second, as an association, let us firmly make up our minds that we are going to make the best possible materials that can be made. When we have done that, we will have the public with us. Have we the appliances necessary to do this? Again I say, yes. There are a number of good reliable concerns, some who are members of this association, who are capable of producing, and who do produce, good machinery. Do not let us tempt them, however, to neglect our interests by inadequate compensation. Let us demand the best from them and pay the best prices.

Again let me reiterate that there is not one of us who can not make better brick at no additional expense. This may seem like a broad assertion, but I believe that every one of us can prove it to our own satisfaction if we make the effort.

The public is going to demand better results from us. I do not mean to say that they are going to single us out, but the demand is becoming general in all lines, and we can not expect to be overlooked.

Last summer one of our members addressed a letter to the association, stating that he was being discriminated against by the Board of Fire Underwriters in that they were placing the highest rate of insurance upon buildings built with his brick; classing the brick in the same class as concrete block; which meant, practically, in the same class as a frame building.

Sand-Lime Brick Classed With Concrete Block.

And, by the way, I only recently saw an article in one of the cement journals which reads:

"Methods that contribute to success, and some of the causes of failure. Manufacturers beginning to realize that experience is essential to success."

The article under this heading is prefaced by the following remarks of the editor:

"In publishing the following communications on the subject of concrete blocks, it is with the conviction that the time has arrived when the manufacturer must discriminate between good and bad methods if the industry is to prosper. Excellent blocks, answering every structural requirement, have been made in the past and are being manufactured to-day. On the other hand, there have been many failures.

"From time to time Cement Age has published communications from experts, who have explained the secret of making good blocks. Some have been advocates of the so-called dry or hand-tamped mix, and others have had equal success with the hydraulic process. All agree, however, that to achieve success there must be the knowledge or experience required in any other industry.

"It is safe to say that in undertaking the business many block makers were chiefly influenced by the conviction that it required no previous experience and could be intrusted to workmen of ordinary intelligence. Here and there very intelligent and capable men have failed to master the secret of making good blocks, and, being too honest to deal in an inferior product, they have abandoned the enterprise. It is with the hope of assisting block makers of this class that we publish the following letters, one from Mr. J. F. Murray, manager of the Pocatello Pressed Stone Company, Idaho, stating why he regards the concrete block as a failure, and replies thereto by Messrs. H. H. Rice, of Denver, and Noyes F. Palmer, of Brooklyn, both experts on the subject of blocks and among the pioneers of the industry."

The subject is too lengthy for us to go into in detail. It is sufficient for us to try to benefit by their experience, if it is possible.

Fire Tests and Rating.

To get back to the subject in hand. After more or less correspondence, a committee was appointed to take up the matter with the National Board of Fire Underwriters in Chicago. A meeting was arranged by the Secretary and was attended by a committee of your association.

The reply to our statement that we felt we were being discriminated against, was, "We know nothing about your materials; the matter has never been officially before us, and, consequently, we placed the material on a rating where we felt we were safe until such time as it had been demonstrated to us that an injustice had been done."

To which your committee replied, that many tests had been made by laboratories and eminent experts. The question was then

asked, "That may be true in individual cases; but do you mean to tell us that your plants are making uniformly good brick?" I regret to say that your committee was forced to admit that such was not the case. After considerable further discussion and correspondence, it was agreed to adopt a specification which would meet the requirements of a good building material and a good fire resisting material—these specifications to be submitted for joint adoption—and such plants as made a product which came up to these requirements were to be indorsed by the National Board of Fire Underwriters. This indorsement entitled the owner of such buildings as were built of such indorsed brick to receive the minimum rate of insurance. I trust that, after careful consideration, you will see fit to act formally upon them. It behooves every member of this association to make brick which will pass these specifications. In my opinion there can be no higher incentive for every manufacturer to make good brick.

I trust you will forgive me for dwelling at such length upon this particular phase of the situation. My excuse is that I feel the situation keenly, for I can see no longer need of our traveling blindly.

Suggestions for Promoting the Business.

All of our meetings have been delightfully full of enthusiasm, full of good work, but I am afraid that before we go home many of us have lost that enthusiasm. This condition does not help us. I have given much thought to what might be done to keep up the interest and to continue the work throughout the year, and if I may be permitted to make a suggestion, I would like to ask the association, before we adjourn this year, to consider the dividing of the territory which the association covers, into sections; each section having an executive official who shall call meetings of his section quarterly, or at such periods as may be thought best, and if the members of these sections are unable to attend the national meeting, to send one or more representatives to the national meeting who can report the results to the sections at an early day.

Too much work for the individual good of our members can not be done at the present time. We are in a critical period in our national business affairs. We have a right to expect a period of more or less business depression, although we hope to the contrary. It is a time when we must all curtail every possible unnecessary expenditure, when we must enforce economy. And what greater curtailment can we make, what better economy, than capacity? And how can we better accomplish this than by knowing the achievements of our successful neighbor, emulating his results by adopting his methods? Therefore, let us enter into the proper spirit of this meeting and put into practice throughout the year the benefits derived. Let us stand together, and, standing, uphold the best methods.

Secretary De Joannis' report was next heard. It gave in brief the work accomplished during the past year and some timely suggestions for further effort in promoting the use of sand-lime brick.

The report of the Committee on Insurance, presented by Chairman J. L. Jackson, provoked much discussion and resulted in the unanimous adoption of the following:

Suggested Test Specifications for Building Materials in the Form of Bricks.

TESTS REQUIRED.—The product shall be subjected to the following tests: *Absorption, Freezing and Thawing, Fire, Transverse and Compression*, and the weight per cubic foot and specific gravity determined. Additional tests may be called for when in the judgment of the Underwriters' Laboratories, Inc., it may be necessary.

All tests are to be made at the Underwriters' Laboratories, Inc., at the expense of the applicant.

SELECTION OF SAMPLES.—For the purpose of the tests at least sixty-five (65) samples representing the ordinary commercial product shall be provided.

They may be selected from stock or taken at such stages after manufacture as may be desired by the collector, or made in the presence of the collector at his discretion, but in no case shall the samples be more than twenty-four hours old when taken. The samples shall be approximately 8 inches long, 4 inches wide, and 2 inches thick, and in all cases shall be the size of the commercial product.

Information regarding the character and treatment of materials used, the method of manufacture, and also samples of raw materials, shall be furnished the collector, if required by the Underwriters' Laboratories, Inc.

The samples shall be tested between the thirtieth and sixtieth day after manufacture.

TESTS.—Five samples shall be required for each test, except for fire tests, where twenty-three samples are necessary. All tests shall be made on full-sized samples, where possible.

All samples shall be carefully examined and condition noted before subjected to any test.

PERMEABILITY AND ABSORPTION TESTS.—The five samples to be first thoroughly dried to constant weight in an atmosphere of about 250 degrees Fahrenheit, and weight carefully recorded. Samples then to be placed on their faces in a pan or tray of water to a depth of one-eighth inch.

The samples shall again be carefully weighed at the following periods: One-quarter hour, one-half hour, three-quarters hour, one hour, and each hour thereafter for a period of seven hours. The level of the water shall then be raised to a depth

of two (2) inches, and samples again weighed at the following periods: Twelve hours, twenty-four hours and forty-eight hours, respectively, from the time of first immersion.

Note.—Superfluous moisture to be removed by carefully wiping with a damp cotton cloth before each weighing.

FREEZING AND THAWING TESTS.—Five samples to be immersed to a depth of two inches, as described in the absorption test, for forty-eight hours, and the weight carefully recorded; to be then placed in a refrigerator and subjected to a temperature of less than fifteen (15) degrees Fahrenheit, for sixteen hours; to be then removed and placed in water, where they shall remain for at least eight hours, temperature of the water being not less than one hundred and fifty (150) degrees Fahrenheit, nor more than two hundred (200) degrees Fahrenheit during this period. This operation to be repeated ten times, after which the samples are again weighed while still wet from the thawing.

Note.—Immediately on completion of this test, samples are to be subjected to transverse and compression tests.

FIRE TESTS.—To be made on twenty-three samples as follows: Eighteen to be placed in a panel 4 inches thick by 18 inches high by 24 inches long. The samples to be laid on the four-inch face in cement mortar with joints broken, having one header and five stretcher courses. The header course to be in the center. The panel to compose one side of a gas furnace suitably constructed to permit the removal of the panel for water treatment at the end of the fire test. The sample panel to be subjected to fire on one side only for a period of one hour and thirty minutes. Temperature of furnace to be raised uniformly from that of the atmosphere to seventeen hundred (1,700) degrees Fahrenheit in about thirty (30) minutes, and remain at about that temperature for the succeeding hour.

At the end of the fire test, panel is to be quickly removed from the furnace and a stream of water immediately applied for one minute through a one-half inch nozzle at a pressure of seventy-five (75) pounds per square inch at the base of the nozzle. The distance of the nozzle from the sample to be twenty (20) feet.

Five samples are to be placed within the gas furnace at the time of the test on the panel and receive the same fire treatment as the panel, except that they are to be heated on all sides. Two samples to be removed at the end of one and a half hours and plunged into cold water of about 50 to 60 degrees Fahrenheit, the other three to be removed and permitted to cool gradually in air.

After the above fire treatment the condition of each sample shall be carefully noted.

Note.—The fired samples which have been fired on all sides, and as many as five samples selected from the fired panel, shall be tested for transverse and compression strength, as prescribed, within twenty-four hours. The samples to be protected from the weather.

TRANSVERSE TESTS.—The samples to be placed flatwise on two rounded knife-edge bearings, set parallel, seven (7) inches apart. The load is to be applied on the top, midway between the supports, and transmitted through a similar rounded edge until the sample is ruptured.

The modulus of rupture shall be determined by multiplying the breaking load in pounds by twenty-one (21) three (3) times the distance between the supports in inches, and dividing by twice the product of the width in inches by the square of the depth in inches.

Twenty-five (25) samples, which have been treated as follows, shall be tested:

(a) Five (5) samples which have been dried to constant weight.

(b) Five (5) samples which have been saturated as prescribed in the absorption test.

(c) Five (5) samples which have been subjected to freezing and thawing treatment as prescribed in the freezing and thawing test.

(d) Five (5) samples which have been fired on one side only. Samples to be selected from the fired test panel.

(e) Five (5) samples which have been fired on all sides and were quenched and cooled in air.

Note.—This includes all of the samples subjected to fire on all sides.

COMPRESSION TESTS.—To be made on whole samples. The samples to be carefully measured and then bedded flatwise on blotting paper, to secure a uniform bearing in testing machine and crushed. Total breaking load is then divided by the area under compression in square inches.

The following requirements shall be met to secure the approval and classification of the material represented by the samples submitted:

(a) Absorption (being the weight of water absorbed divided by the weight of the dry sample) shall not average higher than 15 per cent., and no sample shall exceed 20 per cent., and the absorption in six (6) hours shall not exceed 75 per cent. of the absorption in forty-eight (48) hours.

(b) Freezing and thawing process shall not cause a loss in weight greater than 5 per cent.

(c) The fire and water treatment of the panel must not damage the brick to a greater average depth than three-eighths inch.

(d) Modulus of rupture must be as follows:

For samples thoroughly dry, average shall not be less than 400; and no sample shall fall below 325.

For samples thoroughly saturated, average shall not be less than 300; and no sample shall fall below 245.

For samples subjected to freezing and thawing process, average shall not be less than 265; and no sample shall fall below 210.

For samples subjected to fire treatment on one side only, average shall not be less than 250; and no sample shall fall below 205.

Samples subjected to fire on all sides and either quenched or cooled in air shall fill the above requirements for fired samples.

(c) The ultimate compression strength must be as follows:

For samples thoroughly dry the average shall not be less than 2,500 pounds per square inch; and no sample shall fall below 2,000 pounds per square inch.

For samples thoroughly saturated the average shall not be less than 2,000 pounds per square inch; and no sample shall fall below 1,600 pounds per square inch.

For samples subjected to freezing and thawing process the average shall not be less than 1,657 pounds per square inch; and no sample shall fall below 1,500 pounds per square inch.

For samples subjected to fire treatment on one side only the average shall not be less than 1,750 pounds per square inch; and no sample shall fall below 1,600 pounds per square inch.

Following the adoption of the above, Mr. J. D. Jackson moved that the Committee on Specifications, representing the sand-lime manufacturers, should meet with a committee of the clay brick manufacturers for the purpose of co-operation in the establishment of standard specifications for these building materials.

The motion carried.

Can Sand-Lime Brick Be Enameled?

A paper decidedly out of the ordinary, by J. M. Hirsch, chemist, of Chicago, was read by the Secretary. It told of a number of experiments in the production of an enamel for sand-lime and common clay brick. Trial pieces were displayed on which he had experimented, and he declared that it was feasible to enamel sand-lime brick by burning them in the same manner that clay brick are burned. Several of the members differed with Mr. Hirsch on the subject, and Dr. W. E. Lazell was requested to prepare a formal criticism to be published in the regular report of the convention proceedings.

Report of Committee on Representation.

The committee appointed for the purpose of dividing the country into districts offered the following report, which was accepted:

That the United States, Canada and Mexico be divided into five districts, viz., Eastern—Comprising the New England states, New York, Pennsylvania, New Jersey, Delaware and Eastern Canada.

Southern—Virginia, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi, Tennessee and Kentucky.

Central—Minnesota, Wisconsin, Michigan, Iowa, Missouri, Illinois, Indiana and Ohio.

Western—Montana, North Dakota, South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, Texas, Arkansas, Louisiana and Mexico.

Pacific—Washington, Idaho, Oregon, California, Nevada, Utah, Arizona and Western Canada.

We further recommend that the Executive Committee be increased to five members and that the President appoint as his Executive Committee a member to represent each district, such member to keep in touch with the local plants in his district and do such special work as he may be called upon to do by the officers of the association to promote the general good of the industry.

Report of Committee on Resolutions.

The following is the report of the Committee on Resolutions, which was adopted unanimously:

WHEREAS, In certain localities the present method of weighing loaded railroad cars (more particularly in our industry those loaded with coal and lime) is ineffective, inaccurate, and unjust owing to the impossibility of connected cars being weighed in such a manner as to secure exact individual record of their weight.

WHEREAS, These cars en route, being delayed frequently, are subjected to pillage, and the shipper in consequence does not receive the amount stipulated in his contract; therefore, be it

Resolved, That, in such cases, this association demands from the railroads the right to purchase material according to weights at point of delivery; and, furthermore, that should such request not receive prompt attention, that action be taken by the Executive Committee to bring this subject in a prominent way before the Interstate Commerce Commission and such other state bodies as may have control of these matters, and this association requests co-operation of other associations to that end.

Resolved, That the thanks of this association be expressed to the Columbus Granite Brick Company for the courtesies it has extended to us, and its handsome souvenir buttons; also, that we express our appreciation of the good services of our officers during the past years; the work of the Insurance Committee, and co-operation of those who have contributed so ably to our progress, thereby making this convention one of the most successful we have held.

Resolved, That the thanks of this association be given to the

Chittenden Hotel and its courteous manager, Nicholas A. Curt, for the use of the exhibit room and convention room, and also for his general assiduity in promoting our general comfort.

Resolved, That the association specially recognizes the support of J. Y. Bassell, the Secretary of the Board of Trade of Columbus, and realizes that he has made good in his promises of last year.

Resolved, That the association publicly thanks T. M. Marriott, the Columbus architect, whose broadminded paper expressed so ably the true relations which should exist between the architect and the sand-lime brick manufacturers.

H. DE JOANNIS, *Chairman*.

W. E. PLUMMER.

W. J. CARMICHAEL.

Officers Elected.

The following officers were elected for the ensuing year:

President, H. O. Duerr, Wilmington, Del.

Vice-President, F. A. Smith, Wilmington, N. C.

Secretary, F. K. Irvine, Chicago, Ill.

Treasurer, W. E. Plummer, Buffalo, N. Y.

The Exhibition Room and the Exhibitors.

In a small room directly across the hall from the German room in which the deliberative sessions were held there were exhibited some excellent samples of sand-lime brick, and several of the machinery manufacturers displayed models of machinery and photographs of sand-lime products and buildings built of same.

The American Clay Machinery Company was ably represented by Messrs. L. W. Penfield, A. R. Batley, W. J. Carmichael and James F. Hobart. They distributed to willing recipients a "keen cutter" pocket-knife.

P. L. and H. S. Simpson, of Chicago, representing the National Machinery Company, were much in evidence, as was also their neighbor, Mr. John J. Moroney, whose genial presence was felt chiefly in the lobby talks.

Anton Berg and son, John, of Toronto, Canada, exhibited a number of fine sand-lime brick of excellent quality made on the Berg press, and presented the delegates with a catalogue of Berg machinery.

D. D. Deeds, Lorain, Ohio, represented the Thew Automatic Shovel Company, and industriously circulated their literature.

The King Crown Plaster Company, Cedar Rapids, Iowa, showed photographs of some splendid dwellings built of brick of their making. Some of these pictures we will reproduce in subsequent issues of THE CLAY-WORKER.

List of Those Present.

James E. Randall, Indianapolis, Ind.

W. K. Squier, Syracuse, N. Y.

Wm. King, Cedar Rapids, Iowa.

W. J. Carmichael, Willoughby, Ohio.

Fred K. Irvine, Chicago, Ill.

John C. Reinke, Saginaw, Mich.

James F. Hobart, Willoughby, Ohio.

Alex. R. Batley, Willoughby, Ohio.

John J. Moroney, Chicago, Ill.

W. E. Plummer, Buffalo, N. Y.

F. H. Smith, Wilmington, N. C.

D. D. Deeds, Lorain, Ohio.

H. G. Chappell, Flint, Mich.

Herman Irion, Flint, Mich.

George W. Mitman, Easton, Pa.

J. S. Palmer, Sebawaing, Mich.

H. O. Duerr, Wilmington, Del.

American Sandstone Brick Machinery Co., Saginaw, Mich.

E. Beach, Columbus, Ohio.

E. G. Hall, Calgary, Canada.

A. Berg & Sons, Toronto, Ontario, Can.

J. Harry Allan, Winchester, Ky.

J. E. Robinson, Columbus, Ohio.

O. W. White, Columbus, Ohio.

L. W. Penfield, Willoughby, Ohio.

S. E. Flexer, Catasangra, Pa.

R. J. Walton, Waltonville, Pa.

S. O. Goho, Waltonville, Pa.

J. H. Van Glahn, Wickliffe, Ohio.

J. R. Traver, Wickliffe, Ohio.

W. J. Gibson, Madison, Wis.

Louis J. Buchrist, Mitchell, Ind.

E. W. Lazell, Philadelphia, Pa.

P. L. Simpson, Chicago, Ill.

H. S. Simpson, Chicago, Ill.

H. Knapp, Rochester, N. Y.

R. W. Holden, Rochester, N. Y.

C. J. Rausch, Columbus, Ohio.

C. W. Herb, Columbus, Ohio.

Harry de Joannis, Chicago, Ill.



THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Cheerfully Recommends The Clay-Worker.

Editor THE CLAY-WORKER:

Enclosed please find check for \$2.00 as per your statement for THE CLAY-WORKER. We find the THE CLAY-WORKER very valuable, as it gives all the different experiences and different methods of brick making and brick machinery, and we cheerfully recommend THE CLAY-WORKER to any who are interested in this line of business. Wishing you success for the up-to-date knowledge you furnish us, we remain,

Very respectfully yours,

Columbus, Neb., Nov. 16, 1907. KARR-NICHOLS CO.

Expects to Renew Acquaintances at Columbus.

Editor THE CLAY-WORKER:

Enclosed find a check for \$4.00 to pay our subscription to January, 1909.

Replying to your inquiry regarding our business for this season, it has been fairly good. Labor in this section has been very scarce. We installed a 60 h. p. electric motor last spring, thereby using our boilers for steam for our dryer entirely. We formerly burned our brick in scoved kilns, but have done away with that costly system and are now using round down-draft kilns, and we are now building two more. This will make six in all, and we will add each year as many as we can. We make soft mud and stiff mud brick and drain tile from three to twelve inches. The writer intends to meet you at Columbus in February. The St. Louis convention was the first I ever attended and if I can receive such kind treatment in the future as I have in the past at the hands of the craft, I will not want to miss any of the conventions.

Benton Harbor, Mich., Nov. 25th. J. J. MILLER.

Doings at Galesburg.

Friend Randall:

Things at Galesburg are progressing very nicely. This will be the largest year in the history of our business—we think our records will show over 100,000,000 brick manufactured at the end of the year. We are putting in one of Rodgers' fans, thirteen feet in diameter, for exhaustion from one of our dryers. We may put in more if this proves to be what Rodgers claims for it.

We are now building two round kilns. We have also recently purchased a Brown Hoisting Machinery Company's fifteen-ton crane, to be used for unloading coal, but have found so many uses for it that we have not handled very much coal up to the present time, although I feel sure we will perfect the system so that we will not only save money, but it will enable us to unload coal from iron-bound cars, which has been impossible with our former method.

A short time ago we decided to put in one of the Chambers indentors, with stamping device, and have the machine now in operation. We did some experimenting which caused our decision; that was that a brick taken from the die and put through the repress gained three and one-half cubic inches in size, showing that the clay was not dense after being repressed as before. We also tested blocks, repressed and nonrepressed, and found that the nonrepressed would

stand four per cent. less loss in abrasion than the repressed.

We have taken the represses out of one machine room, and I propose to make only nonrepressed brick at this machine. After we have made further tests from the brick now being made, and we can demonstrate fully what I have stated above, we shall probably remove all our represses from our plants.

In my conversation with, at least, one-half dozen manufacturers of paving brick, I think they all agreed with me that they never made as tough brick since they repressed as they did before. We acknowledge that we have spent a good deal of time and money trying to educate people to the use of repressed brick, but we think it would be a simple matter to re-educate them if we can prove what we have stated above.

Prospects for the New Year look very good, and I do not think the financial flurry will affect us very much, if any.

W. S. PURINGTON, General Manager.

Brick News from Texas.

Editor THE CLAY-WORKER:

Enclosed find money order for \$3.00 to pay my subscription to the close of 1908 and for fountain pen.

The above company has been in operation but six months, during which time we have made 2,500,000 brick on a Ross-Keller four-mold press, and in which time we have built four updraft kilns with a capacity of 1,000,000 brick. We have excellent shale, and make a beautiful red building brick. The demand for same is brisk, and we expect by next spring to double the capacity of the plant.

Mr. R. L. Ingram is establishing a dry press plant about one mile distant from this plant on the Frisco Railroad. He expects to be in shape to place brick on the market by the 1st of March next. His shale being of the same quality as ours, he will make building brick also, and says he expects to make a paving brick, as he is of the opinion that the shale will vitrify and make a good paver.

Another company, called the Independent Brick and Tile Co., of Dallas, has in contemplation the erection of a large plant on the Frisco Railroad, in close proximity to the above plant. It is expected they will break ground in the near future. As soon as we can get our plant completed with permanent roofs on all our kilns we will have a photo taken and will then give you a full detailed description of our plant and a write-up of the little town of Carrollton.

Carrollton, Texas.

J. L. JOYNT.

A Fine Record in Making Paving Blocks.

Editor THE CLAY-WORKER:

Permit me space in your correspondence for the purpose of ascertaining as to how near we are to standard of production in our manufacturing of paving blocks.

During the year of 1905, while tied up with a contract in delivering face brick, we were compelled to close down our works or turn to making some other production than face brick, and consequently turned to making paving blocks. Our first attempt was a failure, but after putting in a mixing bin, and making some changes in composition, we have succeeded in making paving blocks which now stand a test equal to any.

During the experimental stages of proper mixing, handling, burning and cooling, the paving blocks we also had cut a few of our eye teeth, but of late we have been getting along very nicely. Usually, we do not keep any account of the percentage of blocks taken from any one kiln, but in order to get the exact count we kept a close tally on two kilns, which have just been shipped.

Kiln No. 1 was loaded with 105,700 paving blocks. These blocks were 3 inches face, 4 inches depth, 9 inches long, and 44 blocks to the yard. They were set in a Wilson down-draft kiln, 33 blocks high. Out of No. 1 kiln was shipped 92 per cent. of firsts, about 7½ per cent. of seconds, and 1½ per

cent. broken blocks, caused by the unevenness of the bottom of the kiln.

Kiln No. 2 was loaded with 102,200 blocks, out of which we shipped to Washington, D. C., for the Government, under the most stringent inspection of any city in the country, and 123 blocks were rejected out of 192,150 shipped. Now, I would like to know if this record is considered high or low percentage of firsts by the paving block manufacturers.

Yours truly,

Pittsburg, Pa., Nov. 26, 1907.

C. P. MAYER.

Don't Fancy Automobiles.

Editor THE CLAY-WORKER:

Enclosed find \$5.00. Please credit me for \$4.00 on the journal, and send me as premiums two CLAY-WORKER'S Pocket Kits. I want one myself and one for my foreman. Our firm does not contemplate any changes at present beyond general repairs, as every plant has these from time to time. Business has been very prosperous up till the last month, when we had our share of the general depression in business felt all over the country. I noticed in your journal, in a recent issue, a suggestion to send a delegation to Washington, D. C., to petition Congress for aid on the good roads question, and mentioned your name as the one to lead them. Now, I well remember, in 1893, an army went to Washington to ask Congress to pass a bill to improve the roads. The leaders were arrested and put in prison. But that was to relieve thousands of starving men, when the country was in a financial panic such as it had never seen before. While this is a movement to benefit a few people with their automobiles, who are a menace to travel, and in many cases a positive nuisance. Why, right here in Greater New York the county commissioners give the roads for a racetrack for a day, a stretch of thirty miles, and warn all persons to keep off while a few of the Four Hundred race and do as they like. Last year, a spectator was killed, and the man who killed him was exonerated, the excuse being that he had no right to get in the road. Well, I guess I will close for this time, so hoping to hear from you soon and wishing you and your paper every success.

JACK FROST.

Brooklyn, N. Y.

Written for THE CLAY-WORKER.

NEW YORK AND VICINITY.



TERRA COTTA has won a signal victory. The engineers of the Pennsylvania Railroad began an investigation some time ago to see what material they could obtain for filling the frame of the great station on Thirty-fourth street, which would be water and fireproof. After examining a large number of materials and subjecting them to the severest tests, porous terra cotta was finally selected as being both water and fireproof, and the frame of the great structure will be filled with this impervious and unresponsive material, practically guaranteeing the inmates of the terminal and the company who owns it against damage by fire.

Prices about New York haven't changed much during the month. Demand for the season is practically over, except here and there orders for brick for interior work. Nevertheless, holders are confident of the future and are not making concessions to satisfy anyone unless they bring them a handsome order. It is always possible to obtain shaded quotations under those conditions. Spot prices are: Front buffs No. 1, \$32.00; grays, shaded and speckled, \$32.00; white No. 1, \$32.00; Hudson River common, \$5.50@6.00; light hard, \$4.50@5.00; pale, \$3.50@4.00; No. 1 fire, American, \$25.00; No. 2 fire, American, \$20.00; Scotch, \$35.00.

Navigation is still open on the Hudson, and some brick are coming down. Nothing like the quantity is arriving that was shipped last month, but that could scarcely be expected. If one takes the trouble to inquire, however, it will be discovered that the depression which is ascribed to the financial

stringency this year is of more or less periodic occurrence, and the situation now is not nearly as bad as it has been. But it has been prosperous so long that makers are more or less discouraged if things do not look roseate all the time. Next spring will see things all right again, and the plants will have plenty of business to keep them going through the next year.

A brief review of the year shows that New York makers and dealers have comparatively little to complain about. The market has been generally good and there has been little of the price cutting and the consequent derangement of values and demand which have characterized some previous years. The supply left over is not large, and there will be ample demand for everything offered before the new season opens next spring.

The brickmaker undoubtedly enjoyed his turkey thoroughly. He can eat his Christmas pig and his New Year's goose with the same gusto. He has little to complain about. He has much for which he should feel like celebrating. However, he should prepare to open the New Year with a smile upon his countenance which shall not wear off during the entire year. Good profits and plenty of business. These are the two important features of trade which have much to do with the appearance of the brickmaker. This year the situation has been quite as good as was expected. Next year it promises to be even better.

Drivers are cursing the prepared wood pavement with all the vehemence they can muster. And, well they may. Of all the pavements now down in New York, perhaps this gives the poorest satisfaction to the public. It evidently pleases some one high in the city government. They threw out the asphalt trust bodily. But the new wood paving is worse for horses and for those who must walk upon it in slippery weather than any other that was ever laid. The advent of the snow is awaited with much anxiety regarding the probable effect upon the traffic conditions. It has to be admitted, immediately, that all over the West Side where these pavements have been laid there is trouble with the transportation interests. With snow on the paving it is impossible to do more than haul a small load. And when the snow thaws and the paving is covered with ice it is even worse. Moreover, the wetting of this sort of pavement by rain will make it so slippery that neither man nor horse can stand upon it.

Petitions have been sent to the city government, asking that something be done for the relief of the traffic interests, but relief for the traffic interests by the city government is about as remote as anything one could think. The experience of the drivers here ought to serve as a lesson to city and municipal governments elsewhere. What happens in one place will happen in another.

BURTON.

HUMOROUS LOGIC.

The positive assurance of Mrs. Stuyvesant Fish that a woman can dress on \$5000 per year will be splendid news to many young men who are contemplating matrimony.

Science is great. A scientist has at last come to the relief of the poor devil who has to live in a boarding house. He says that music gives one an appetite. The knowledge of this fact will insure the early closing of the boarding house piano.

Missouri has a state superintendent of public schools by the name of Gass. The state is safe, however, as the meter on the job is in the shape of a regular salary, and there is no danger of it being worked over-time.

It will take some power greater than the national pure food law to repress the New England manufacturer. The adulteration instinct seems to penetrate all classes of life there. According to the newspapers a Rhode Island hen has laid an egg which had a pin in it. This is about as fowl a case of food adulteration as has yet been brought to the attention of the public.

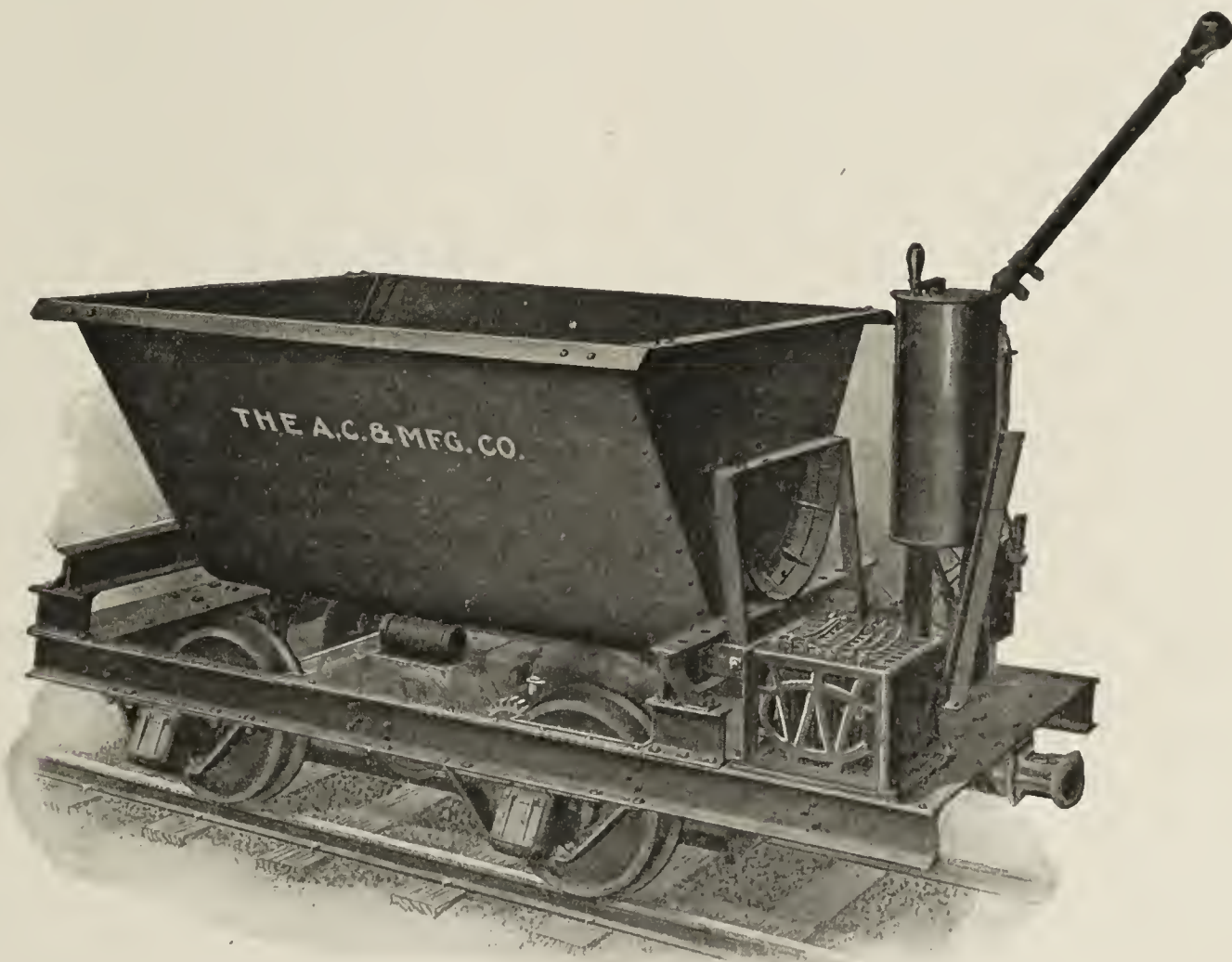
ELECTRICAL DRIVEN CARS FOR BRICKMAKERS.

THE RAPID DEVELOPMENT of electricity as a motive power in the past decade has brought its use into every class of labor-saving devices. The clayworking industries have been slow in taking hold, but at the present time some large plants are operated entirely by such means. As a flexible and economical motive power there is no power as easily and readily adapted as electricity. Through the introduction of labor-saving tools and being manufactured in large quantities, the cost of electric motors is brought within the reach of all. Especially so is this true in the street car type of motors, and of many electrically driven devices in clayworking establishments, especially may be mentioned brick-making machinery, pug mills, represses, exhaust fans, transfer cars, winding drums, clay and brick cars.

We take pleasure in presenting a type of car which is not new by any means, particularly in handling clay, shale, etc. It has demonstrated its satisfaction to a number of

kinds of weather. Very few plants to-day are without electrical equipment for lighting purposes, or otherwise. During the day time the generator could be used to advantage for operating these motor cars. Any ordinary handy man or boy of the average intelligence can run them; the cost of maintenance is very low; all parts are covered and accessible, being dust-proof; cut steel gears with bronze bushings, and other wearing parts of equal quality are used. The cost of hauling clay for 100,000 brick one-half a mile, with six two-yard cars and one motor car, is approximately 5 to 6 cents per 1,000 brick. Of course this varies, depending upon the location and circumstances. This motor-driven idea can also be applied to other types of cars, depending upon the material to be handled; such as rectangular bottom dump and gable bottom cars; also gauge can be varied from 18 inches to 4 feet 8½ inches. This type of car can be brought into use in many ways, such as handling common brick, pulling transfers long distances, or handling dummy cars from kiln to docks or sidings.

The Atlas Car and Manufacturing Co., Cleveland, Ohio,



An Atlas Electric Driven Dump Car.

concerns as an economical, quick and serviceable car. As will be noticed, the car sets very low and can be used either as a hand or steam shovel car. They are made in any capacity, from two yards to six yards, and a train of trail cars can be taken care of, one or more as desired. The operator has all the operating levers and attachments within easy reach; he can dump motor car, also the next trailer, and take care of his trolley, brake and controller. The motor car is equipped with a cab if desired as a protection from the elements.

In some instances this car is furnished with a device so as to readily go up the inclines directly over store bins, instead of being hauled by haulage drums. The cost of equipping an electrical road is very small in comparison with the saving, as it is not necessary to bond rails, two trolleys being used. The cost of operating one of these electrical cars compared with steam locomotives is far less; in fact, some firms are considering putting them in for short haulage where horses are now being used, as they can be operated in all

are exclusive manufacturers, and make a large line of electric cars as well as clay and dryer cars of all descriptions. Their new catalogue shows a number of up-to-date cars of all types. Among their customers are numbered some of the largest clayworking institutions in the country.

DAY DREAMING.

Day-dreaming is a good stimulant to the ambition, but, like many a stimulant, it must be taken in moderation to give the best results. Dream golden dreams, and build aircastles if you will, for great accomplishments must be dreamed of in this way before they become realities. But don't forget that the dream is a mere outline plan, and it takes work to build the real castle. The exact proportion of time that should be given to dreaming and the time for work have never been set forth, but the lion's share is evidently on the side of work.—Exchange.

Written for the CLAY-WORKER.

THE CHICAGO SITUATION.



HE SITUATION HERE has changed little from last month. Things are pretty dull, to be sure, but the outlook is not all gloom any more than it is all sunshine. The chances are that next year will not be what might be termed a lively year in building. It is also predicted by many old-timers in the building material lines that matters are not unlikely to get a good bit worse before they mend. On the other hand, nearly every one believes that by next spring a considerable activity will be manifested in spite of all present indications. By that time the effect of whatever commercial failures may attend the closing up of business for the year and the adjustment of financial waters to the new levels will have passed away to a considerable extent, and money should, in the opinion of dealers who have weathered many periods of depression and some real hard times, be a trifle easier.

Chicago shows a decrease of fifty-one per cent. in building activity during the month of November, as against the corresponding month of last year. In November of last year permits were taken out for 740 buildings or improvements, contemplating a total expenditure of \$4,561,300. During the month just closed permits taken out here numbered only 496, and the estimated cost was placed at only \$2,205,150. There are, however, signs of cheer to be noted, and while stagnation exists so far as new plans go, large amounts will undoubtedly be spent in carrying on work already planned.

Members of the trade here believe with the real estate men, that several big building projects, which are soon to be put under way, will act as a strong stimulus to market conditions. The basis for this belief may be appreciated when it is stated that it is estimated that three of these projects will involve the expenditure of \$18,000,000.

Plans for the office building that is to be put up by the People's Gas, Light and Coke Company, at the northwest corner of Michigan avenue and Adams street, are being completed by D. H. Burnham & Co., architects. This building will be eighteen stories in height and will cost in the neighborhood of \$1,000,000, it is estimated. It will be of fireproof steel construction as regards the framework. Brick and terra cotta will probably be used for the exterior, while interior effects in enameled brick, tiles and terra cotta are being considered. The company now has its offices on this property, and for several years has been acquiring control of adjacent pieces of ground. This is the most insignificant of the three projects mentioned.

Plans for the most costly of the three enterprises are those for the new terminal station for the Chicago & Northwestern Railway, and they will be finished within a short time by Frost & Granger, the architects for the road. This is the station, talked of much in past months, which is to cover the ground between Canal and Clinton streets and extending from Madison street north to Lake street. The condemnation suit for this property is now in progress, and experts are giving their testimony as to values of land and present improvements which have to be torn down. This stage of the proceedings will soon be followed by a decision which, it is believed, will be taken as final, and then the actual work will proceed.

The new station will involve an estimated expenditure of at least \$12,000,000, and it is the intention of the road's management to make it an enduring as well as an attractive architectural triumph. The details for construction have not as yet been made public, but it is understood that brick and terra cotta, as well as tiles will undoubtedly have an important part in both the exterior and interior finishing of the new station. The effects obtained by the use of brick in the LaSalle street station, used by the Lake Shore and Rock Island roads, proved so attractive, and the exterior has retained its original good looks to such an extent, that there is little doubt but that much the same materials will be employed in the new railway enterprise.

The third of the great plans now in sight will call for an expenditure of between \$5,000,000 and \$6,000,000, it is esti-

ated, and is for the immense new plant of the Corn Products Refining Company, near the course of the new drainage canal, approximately at Summit. The site runs along the south side of West Sixty-third street and extends west from Archer avenue to the channel bank. The plans have been prepared already and figures for the construction work are being taken. The work is in charge of George N. Chamberlain, engineer for the company. There are to be thirty-three buildings, which are to include refineries, starch warehouse, and manufacturing structures, a big power plant and several other large buildings. Work has been halted for several months while a search for water of proper character and in sufficient quantity was prosecuted. Two wells have now been sunk to a depth of 1,500 feet, which yield 1,200,000 gallons of pure water every day, however, and work on the plant itself will now be rushed. While much of the work will be in reinforced concrete, brick and fireproofing will also be largely employed, it is said.

In addition to these three especially large enterprises a number of smaller ones are on tap. Several good-sized flat buildings are being planned or talked of, and there is talk of a large building or two in the downtown district. All told, there are said to be expenditures amounting to about \$25,000,000 in view for the coming months on buildings alone, and it is believed that not only will the building material and real estate markets be materially helped thereby, but that there will be a consequent tendency toward relief upon the stringency of the general situation here.

The great bulk of the mercantile orders coming in now and of the jobs being figured, however, is for lesser items. The Eastern Refining and Supply Company has leased a site of 75x115 feet at the northwest corner of LaSalle and Twenty-fourth streets, upon which a four-story structure is to be erected at an approximate cost of \$35,000.

City Architect Charles E. Herman is planning two new structures, both somewhat larger than this. One of these is a new cellhouse for the Bridewell. It will be of fireproof construction, cover an area of 50x265 feet, and be carried high enough for four tiers of cells, which will be used for male prisoners only. The exterior will be of brick and stone trimmings. The cost is estimated at \$175,000. A new smallpox hospital is also being planned. It will be situated on a plot of ground bounded by Hamlin and Lawndale avenues and by West Thirty-fourth and West Thirty-fifth streets. It will be of brick, fireproof construction, and will cost in the neighborhood of \$50,000.

The Chicago Eye, Ear, Nose and Throat Hospital Association is planning the erection of a considerable building in the downtown district, at the southeast corner of Washington street and Fifth avenue. It will be twelve stories in height, cover an area 40x80 feet, and be of fireproof construction. It is to cost about \$250,000, and will be used for school as well as hospital purposes. The lower six floors will be used for rooms for the patients, while the upper floors will be converted into rooms and apartments for the doctors and the nurses. Larger rooms for clinics and laboratory work will be arranged for on the lower floors, also.

One of the buildings in process of construction during the past few months, which has been an object of much attention on the part of structural critics and experts, is the new home now nearly completed for Montgomery, Ward & Co., the great mail order house. Its chief interest has lain in the fact that it is a somewhat notable experiment in the use of concrete. It is a huge building for one of this type, being 700 feet long. It rises to a height of eight stories. Close tab will be kept on the building, to watch how it stands the wear of the weather, and also how the structure in general stands the tremendous demands which must be made upon it. As a warehouse for general merchandise the strain of the floor loads will tax walls and supports to the limit. Those who are acquainted with the well-tried and proved character of steel, fireproof and brick construction, and who have seen other experiments in reinforced concrete of a far less critical character go wrong, can not help being skeptical. Another feature of interest is the use of terra cotta for ornamentation. This goes to show the dependence that is placed upon the clay products when beauty in architecture is desired. In this case, the terra cotta bands are made a part of the solid concrete

wall, the concrete being forced through the hollow spaces of the terra cotta sets and allowed to harden there.

There are other indications that the outlook is not so wholly gloomy as some would have it. While a good many brick plants and brick machinery plants have been cutting down their outputs, and in some cases closing down in the past few weeks, a number of them are likely to be opened up with the first of the year. For example, there are strong indications that the Porter plant of the Hydraulic Pressed Brick Company, which has been shut down for a little while, will start up again January 2d.

The basis for the belief that there will be sufficient building in the face of the stringency to warrant keeping up stock of materials is found in the fact that, while big projects are being held up, or not being considered at all, the smaller fry of structural work is on the increase, if anything. This is a sign that the thrifty "little fellow" is waking up, and is looking for something more secure than banks or stocks in which to put his savings. More than one man of moderate means, who keeps his little horde of savings in the savings department of a banking institution, is planning to invest it in brick and mortar and land for his home, and take out his "three per cent., compounded semi-annually" in domestic pride and a greater sense of security hereafter. Only the other day a wage earner walked in upon a friend who is connected with a large pressed brick concern here.

"I've got \$5,000 in the savings department of the bank," he said. "I've put in a sixty-day notice and I'll have the money by the first of the year. I'm going to put it into a house, and I want credit for \$250 on pressed brick until I get my money."

He got his credit in a hurry. And so it goes. In addition to this sort of thing, some of the dealers are finding that men of more means instead of putting money in stocks, which at best are doubtful at such a time, are putting it into buildings. There isn't a whole lot of business just now, but there are Hopes, and the Wise Fellows are talking Happiness, as George Ade would capitalize it.

SCRIP.

THE POTTERY INDUSTRY PROSPEROUS.

The pottery industry in the United States, according to late reports from the United States Geological Survey, is not only prospering, but is growing nicely. Ten or twelve years ago, the pottery industry here was rather of minor importance, but it has developed steadily until now the domestic productions, according to statistics gathered by the United States Geological Survey, is nearly three-fourths of the domestic consumption and is steadily gaining. This growth is not merely in the cheaper grades of pottery, but also in the fine pottery, and at the same time the demand for home made pottery is also increasing rapidly, as people come to realize that just as fine an article can be made here as anywhere. The total value of pottery for the country for the calendar year of 1906 amounted to \$31,440,884, which is a gain over the calendar year of 1905 of 12.62 per cent. Pottery in general is made in thirty-seven states, but what is termed high grade ware is only made in six states, New York, New Jersey, Pennsylvania, Maryland, West Virginia and Ohio. Of these the greatest are New Jersey and Ohio, and the two great centers in these states, as is well known, are Trenton, New Jersey, and East Liverpool, Ohio. Trenton turned out during the calendar year a pottery product valued at \$6,791,428, and East Liverpool came a close second with \$6,162,717, the total value from the two states being over forty-one per cent. of the total production of the country. In red earthenware and stoneware and yellow ware and Rockingham ware, Ohio leads all other states, with Illinois second and Pennsylvania third. One of the growing features of the industry is what is termed sanitary ware, which was reported from seven states and shows a total valuation of \$5,097,311, New Jersey leading and Indiana second. Another, or what might be termed a side branch, is porcelain electrical supplies, and this branch, too, shows up in a flourishing condition with nine states manufacturing this product now, as against seven states in 1905. The total value of these electrical specialties was \$2,838,284, a gain of nearly twenty-six per cent. over the previous year.

Written for the CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.

THE CLAY industry is very quiet just at present and it has been for some time. While most of the brick manufacturing plants are in operation, they are not manufacturing their product for present use, but for stock purposes, and to use up the clay that they have accumulated. When this is gone, they will close down. Just before the holidays will find all of the plants idle and they will remain so until after the first of the year. During that period they will be thoroughly overhauled and needed improvements made. When this has been done work will be resumed.

There are plenty of brick on hand for all the building operations that are under way. The financial flurry and the stringency in the money market has put a stop to nearly all construction work, and until a betterment comes in the money market, few buildings will be erected.

Quite a number of big buildings were contemplated in St. Louis this winter, but with the financial troubles the action on them has been postponed.

The 1907 building decline in St. Louis, as compared with last year, reached its low ebb during November. Permits issued by the building commissioner showed a falling off in excess of 65 per cent. as compared with November, 1906, when St. Louis was making a record in building operations. The figures for the month are total permit values of \$789,186, which is a decrease of \$1,561,000 from the total of \$2,351,000, of November, 1906.

The following are the figures:

1906.	Permits	Amount
New brick buildings.....	225	\$2,206,440
Brick alterations	106	81,586
New frame buildings.....	253	54,131
Frame alterations	76	8,914
Total,	660	\$2,351,071
1907.	Permits	Amount
New brick buildings.....	93	\$633,835
Brick alterations	98	102,434
New frame buildings.....	222	47,996
Frame alterations	40	4,921
Total,	453	\$789,186

The Hydraulic Pressed Brick Company's shed, at Manchester and Spring avenues, was destroyed by fire a couple of weeks ago, which caused a loss of several thousand dollars. The roof of the structure was supported by wooden posts and several of them burned away, causing the central section to collapse. The shed was 300 feet long and 50 feet wide. Only one end of the shed was left standing. The value of the structure was estimated at \$5,000, and the damage to the brick by smoke and water at \$2,000. The value of the brick stored in the shed was \$15,000. The fire is thought to have been started from a cigarette or pipe.

There promises to be a big delegation of brick manufacturers and brick machinery men from St. Louis to the annual convention of the National Brick Manufacturers' Association at Columbus, Ohio, early in February. This fact is assured, although the meeting is too far off to mention those who will positively attend.

Robert P. Bringhurst, the well known artist, gave a display of pottery at his studio in St. Louis recently. In the early days of his work, Mr. Bringhurst obtained his clay from the Ozark Mountains, but now he uses clay mostly from St. Louis, and there is, he says, no reason why St. Louis should not be famous for its pottery.

A SAINT.

A western paragraph writer says: "In a recent raid on a gambling den a man named Pizymuszallaskivich managed to escape. It is supposed he hung his name out of the window and slid down." Most people would rather try sliding down a good piece of barbed wire.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.



GENERAL SLACKENING up on outside work has been noted during the past month in the brick industry in and about this city. This is not unusual, however, for the time has about arrived when active work must cease to some extent. Many of the brick plants, however, are still operating and turning out large quantities of stock in expectation of a general revival of the building industry next spring.

Not until December 4 was outside work interfered with to any great extent. A snow then fell, putting a damper on building, though all of the main projects under way are still faithfully worked at. Paving has been rushed to completion, and records for Cleveland have been ruthlessly smashed. Next year the city officials say they are going after a new and greater paving record, and are already laying plans toward that end.

Building permits for November fell off considerably over those of previous months. The report shows that 473 permits were issued for buildings, aggregating \$870,000 in value. With all the excitement incident to the financial flurry it is decidedly reassuring to note that this shows a good increase over a year ago, when conditions were unusually good, for then 661 building permits issued for November only showed a total expenditure of \$808,000. Of the permits issued last month twenty-six were for brick structures costing \$540,000.

The fact that brick will never be replaced as a building material has been emphasized during the past summer, where concrete has been used to replace steel and mill work for structural purposes but where brick has invariably been used for the outer walls as of yore. Concrete engineers are ready to admit that while that material has many advantages over steel and wood that it can never hope to entirely take the place of brick, because of the handsome effects which can be obtained by the use of the old reliable building material, which cement entirely fails to produce under the most favorable circumstances.

A good demand for brick in a number of big public structures, which have been in no way affected by the money panic, is keeping the market in fair shape in Cleveland. The foundations for the court house and new market hall are now under way, millions of shale brick being employed in each job. The new contagious disease hospital is well under way, while work on schools and several other big brick jobs has not been interfered with.

The architects for the new court house have raised a row during the past month because the contract for draining the site was not let sooner. Andrew Dall & Sons, general contractors for the building, have been let the \$30,000 contract for the job. Large quantities of tile and drain pipe are being deposited on the job and being laid as rapidly as possible. The engineers in charge of the work claim that the brick foundations will not be affected by any failure to drain the site before this time.

A welcome announcement to the building trades and the brick dealers came a week ago from the American Steel and Wire Co., when it was stated that work on the new \$1,000,000 brick mill for the mammoth concern would go right ahead during the winter season. A number of dealers are bidding on the job, as 6,000,000 or 8,000,000 shale brick will be required. It is aimed to have the mill ready for use by June 1st. It will be located on a 100-acre tract recently purchased at an immense expense in the heart of the Newburg manufacturing district.

Brick and tile making may be added to the other industries at Cleveland's city farm, consisting of 2,000 acres, where workhouse prisoners are to be lodged as soon as the main prison is erected next spring. There is a quarry in operation there, where stone is gotten out and crushed for road making. It is not intended that the brick shall be used for other purposes than that of building permanent buildings on the farm. Tile will be made for the same purpose and laid over the entire tract. The fertile fields will supply fruits and vegetables for the workhouse, city hospital and infirmary, and for the city's Outdoor Relief Department. Some of the

clay on the farm is well adapted for brick and tile making. Owing to the large percentage of lime, however, the brick can not be used for finishing, but will be employed for rough structural work as all buildings at the farm are to be finished in plaster.

Hundreds of feet of the new 13-foot intercepting sewer have been built of brick, hydraulic shields being employed in pushing the tunnel underground. Not a single accident of any consequence occurred. A recent section was let to a contractor who decided to use concrete instead of four rings of brick, employing only one ring on the inside. A serious accident occurred during the past month in which a large section of the concrete caved in, killing a foreman and doing much damage. Two workmen narrowly escaped with their lives. An hour elapsed before the dead body of the foreman was dug out. It is said by the city authorities that the contractors knew that the concrete had not set properly, and had intended having it removed but had neglected. This is not the first serious accident which has accompanied its use for this purpose.

The building inspection department has undergone a process of reorganization, the plumbing and smoke prevention departments having been merged with it. In future all buildings must be constructed so that smoke will not be emitted in such quantities as to cause a nuisance. Building Inspector Lougee has just returned from an extensive trip through eastern cities, where he has been picking up ideas of value. He declares that after a close examination into the various regulations of the big cities of the country that he is convinced that Cleveland possesses the best building code of any of them.

The extensive paving operations in this city and throughout Ohio have resulted late in the season in a shortage in paving brick. Despite this shortage, which has been felt for several months, Cleveland has again broken its paving record, having paved thirty miles of streets during the past season. Had orders for brick been filled the total would have been brought up to thirty-four miles. Last year's total was twenty-six miles, which at that time was considered quite remarkable.

On December 1 six carloads of brick were on their way to Cleveland for the paving of Detroit Avenue. It is believed that the job will be finished this fall. Four or five streets, which are all ready for the brick, will probably have to go over until next year because of the shortage. Five or six other jobs, for which money has been provided and waiting, have not been touched because every contractor in that line has had his hands full for the entire season.

In all about \$110,000 has been devoted by the city to sewer and paving purposes during the year. President Springborn, of the Board of Public Service, has announced that next year about \$150,000 will be appropriated for the season's work.

"Other improvements can wait," says Springborn, "but a city must be paved and equipped with adequate sewers. There are 2006 paving contracts to be cared for next year."

Commenting upon this report of the city authorities the Cleveland Plain Dealer in an editorial says:

"Thirty miles of streets paved in one season despite a constant shortage in paving materials is the report the city hall makes. It is a new high record, reflecting the desire of the Board of Public Service to place Cleveland in the front rank of paved cities. Last year twenty-six miles of pavement was laid.

"Probably nothing in the way of municipal effort does more for the health, pride and comfort of the people than the wiping out of unpaved thoroughfares. Property values are advanced and cleanliness made easier.

"Citizens may differ about this or that improvement, may debate the wisdom of bond issues for vast undertakings, but they will agree that the earliest moment the city's streets can be paved is none too soon. The reputation a city enjoys outside, important on grounds of business as well as sentiment, is materially improved by a liberal use of brick and asphalt. A city of homes, of broad, smooth surfaced highways, attracts visitors. Visitors bring permanent residents and property owners. In a large sense a city is known by the pavements it has."

William H. Hunt, ex-president of the National Brickmak-

ers' Association, and manager of the Cleveland Hydraulic Press Brick Co., left for Europe about December 1 for a four-months' trip, during which time he will visit England, France, Germany, Italy, and other Continental countries. Mr. Hunt has a particular mission, it being his desire to obtain material which will prove of value in the formation of a civic art commission for the city of Cleveland.

BUCKEYE.

POTTERY NEWS.



MANUFACTURING POTTERS, and especially those who are identified with the United States Potters' Association, are of the opinion that profits have been rather low during the past twelve months, but better results are to be assured during the coming year. This was brought about by a special meeting of the association held at the Hotel Schenley, Pittsburg, Pa., December 11, when nearly forty members of the association members present agreed to reaffirm the selling lists adopted a year ago.

There has been more or less cutting during the past year, so some manufacturers assert, but now this is to be eliminated. A better thing could not happen in the trade. The American pottery manufacturer is capable of producing a good article, and because of this he is justly entitled to a better price for his goods.

Wages have been advanced during the season of 1908 and raw materials have not been sold at prices prevailing in 1906. On the other hand, the pottery manufacturer has let his goods to the trade at about the same old price.

While a number of plants are closed, and others partly idle in the Ohio district, yet the outlook for 1908 is decidedly encouraging. Manufacturers have received many letters denoting this fact during the past week, and while stocks are low it is an indication that the new year's trading will start off with a rush.

At the annual meeting of the United States Potters' Association held at Washington, D. C., December 3, the following officers were elected for one year: President, George C. Thompson, of the C. C. Thompson Pottery Company, East Liverpool, Ohio; First Vice-President, Joseph Mayer, Mayer Pottery Company, Beaver Falls, Pa.; Second Vice-President, John M. Pope, Trenton, N. J.; Secretary, Harry A. Keffer, Severs China Company, East Liverpool, Ohio; Treasurer, Charles C. Ashbaugh, West End Pottery Company, East Liverpool, Ohio. Mr. Keffer has served the association as secretary for eleven years, and should he desire, the position is his for life.

While general trade conditions were discussed at the Washington session, the real work of the association was not taken up until the Pittsburg session, which was for the purpose of adopting an agreement that would be beneficial to the trade throughout the country. This has been accomplished.

The early reorganization of the Bell Pottery Company interests at Columbus, Ohio, can be expected at an early date. It is planned to form a syndicate of Columbus capitalists to take over the Bell property and operate it. The plant is a model one, and when running before was favored with a good business.

A number of Ohio pottery operatives have resigned their positions and left for El Reno, Okla., to take positions with the El Reno Pottery Company, which is to be worked by former East Liverpool pottery men.

Report has it that new potteries are to be erected in Georgia and Missouri during the coming year. However, such information is unconfirmed.

William Lynch, formerly connected with the Steubenville Pottery Company, Steubenville, Ohio, has purchased a block of stock and has been elected director and general sales manager of the Taylor, Smith & Taylor Pottery Co., at Chester, W. Va.

It is being said that John Wick, of Kittanning, Pa., plans the erection of a new pottery in the East Liverpool territory. He was for many years at the head of the Wick China Company, of Kittanning, Pa.

No signs are evident to indicate the early resumption of

activity at the plant of the Derry Pottery Company, at Derry, Pa. The property was for some time operated successfully by East Liverpool manufacturers.

A full order file characterizes conditions at the plant of the Kenilworth Tile Company, at Newell, W. Va. Claude Nease, of East Liverpool, has been elected general manager of the company.

The pottery at Keyser, W. Va., is in the hands of a receiver, and no statement has been made as to when operations will be resumed. Workmen are seeking positions elsewhere.

The Ceramic Supply Company, which was recently formed by Wheeling, W. Va., and East Liverpool, Ohio, pottery manufacturers to develop immense deposits of china clay in Texas, will take up the proposition of constructing a railroad thirty-five miles in length to reach this deposit. The company hopes to be shipping within six months.

The shortage of help in the general ware potteries has been felt more in the West during the past year than in the East. Not as many English potters are coming to the United States as was evidenced several years ago.

The Kirkwood Pottery Company, of Zanesville, Ohio, has been incorporated with a capital stock of \$15,000 by W. S. Meyers, A. P. Clark, J. S. Miller and W. E. Worstall.

Improvements which will increase the capacity of the



George C. Thompson, East Liverpool, Ohio,
President United States Potters' Association.

plant of the Kenilworth Brick and Tile Company have been undertaken. New kilns are being erected, and all has been caused by the increased business being offered the firm.

Twenty cents a day has been deducted from the wages of the employes of the sewer pipe employes in the Ohio Valley districts. It has been agreed between the bosses and workmen that the deduction shall be refunded not later than April 1, 1908.

Buildings of the American Sewer Pipe Company, at East Liverpool, Ohio, have to be enlarged in order to care for the large business being offered this factory. Until these improvements are completed, operations were suspended a few days ago.

For the general excellence of quality the Pope-Gosser China Company, of Coshocton, Ohio, has been awarded a gold medal by the management of the Jamestown Exposition.

Operations will soon start at the plant of the Augusta (Ga.) China Company, which has spent \$15,000 on its buildings. Directors of the company are: J. L. Hunter, A. S. Hatch, P. H. Rice, E. W. Herman, Abram Levy and E. F. Verdery, of Augusta, Ga. Collin McLean, of East Liverpool,

Ohio, is general manager of the pottery, and he organized the company. The plant is in the heart of the Georgia clay territory.

Operations which were suspended by the Salem (O.) China Company several weeks ago have been resumed.

Frederick Seegars, of Rochester, N. Y., a well-known pottery salesman employed by the Edwin M. Knowles China Company, of Chester, W. Va., died suddenly at Baltimore, Md.

A joint meeting of the arbitration board of the United States Potters' Association and the National Brotherhood of Operative Potters is scheduled to take place at East Liverpool, Ohio, January 6.

What is said to have been a direct result of the recent financial flurry in the United States, two hundred employes of the Haviland pottery at Limoges, France, were laid off indefinitely. Improvements, started with a view of increasing the capacity of this large plant, have also been delayed indefinitely.

Scrip has been paid by the manufacturing potters of the Eastern Ohio district to their employes during the financial stringency. Credits of the manufacturers have been above the standard, and the workmen accepted the "paper" with as good grace as if it had been the real coin. OMEGA.

East Liverpool, Ohio.

Written for THE CLAY-WORKER.

THE CLEVELAND BUILDERS' EXCHANGE.

THE ANNUAL MEETING of the Builders' Exchange of Cleveland was held on the evening of Nov. 13, being preceded during the day by the election of directors for the new fiscal year. The voting for directors started at 11 o'clock, and was conducted under the direction of five judges of election, the annual custom of depositing ballots according to the Australian system being followed. When the polls closed at 8 o'clock in the evening, it was found that two hundred and six ballots had been cast, out of the total membership of three hundred and seventy-five in the Exchange. The following were the successful candidates:

Messrs. Geo. B. McMillan, F. G. Hogen, Geo. H. Brown, R. J. Humphries, Geo. A. Rutherford, Henry A. Taylor, Geo. Y. Farmer, Elmer E. Teare, Geo. J. Lang and Geo. F. Theismacher. The board organized by electing Geo. B. McMillan, prominent general contractor, president; Henry A. Taylor, vice president; F. G. Hogen, treasurer, and selected Edward A. Roberts as secretary for the ninth consecutive term.

At the annual meeting held in the evening, the attendance was nearly two hundred. Reports presented by the officers of the Exchange indicated a very prosperous year. Among the important events recorded were the holding of the annual banquet jointly with the Cleveland Chapter, American Institute of Architects, at which Mr. Frank Miles Day, President of the American Institute, was the guest of honor; the holding of the annual Christmas party in the Chamber of Commerce Hall, with a program of mirth and jollity; the annual summer outing to Mackinac, on the steamer Northland; the annual watermelon feast in August; a series of social and business luncheons, held at noontime, and addressed by prominent men on subjects of interest; the holding of regular 'Change hour session every business day in the year, and the reading of bulletins of information at each of these sessions.

It was reported that the board of directors had held forty-six meetings during the year, averaging one hour for each session; that the average daily attendance of members and officers at the Exchange rooms was two hundred and thirty-one, compared with two hundred and nineteen for the previous year; that an Exchange directory, with a classified list of members had been issued and distributed; conferences held by the committee on trade education in Cleveland; that the Exchange had joined with the local Chapter of Architects to consider modifications in the new building code, and that important work had been done by the committee on legislation.

The average number of pieces of mail received and distributed at the Exchange was reported to be one hundred and forty per day, and the average number of telephone messages, in and out, over five hundred per day.

A handsome illustrated report was issued in connection

with the annual meeting, this report containing attractive half tone portraits of the members of the board of directors, and other illustrations. Following the business meeting, the members of the Exchange enjoyed luncheon at the Chamber of Commerce Club, where addresses were made by the retiring officers.

Written for THE CLAY-WORKER.

HOW TO CLEAN SET CEMENT FROM TILE WALLS OR FLOORS.

CEMENT IS A silicate of lime and as such is far too hard to remove by ordinary scouring with sharp sand or other gritty material. Consequently after a tiled floor or wall has been grouted and it is necessary to remove the superfluous cement from the surface, the wall or floor is washed with muriatic acid. This acid is a volatile gas dissolved in water. It attacks the cement and forms a soluble lime salt which can be readily removed by washing with ordinary water. Muriatic acid, however, casts off fumes which in physical laboratories, fine dynamo rooms or other places containing delicate metal instruments such as galvanometers, ohmmeters, etc., injures the metal by corrosion.

In these places dilute sulphuric acid may be used. It is not volatile and consequently does not injure metal work. However, it does not form with the cement a soluble lime salt, but a phosphate of lime, which is the same as plaster of paris. This is much softer than the original Portland Cement, so that by using dilute sulphuric acid and scouring hard with sand it is in most cases possible to clean the tile floor or wall.

The best medium for dissolving cement is citric acid. This is a clear solid substance which can be bought from any druggist. It dissolves readily in water and will attack set Portland Cement quite as well as will muriatic acid, because it forms with the cement a perfectly soluble nitrate of lime. Its only objectionable feature is its cost, which is several times greater than that of muriatic acid. Ordinary lemon juice is a solution of citric acid, but as the latter is made in a wholesale way in the tropics it is cheaper than lemon juice.

A cheaper substitute for citric acid is tartaric acid, much used in making lemonade. This also can be obtained at any drug store. It forms with the cement a tartrate of lime. It is not as soluble as citrate of lime, and consequently its use in cleaning tiled floors has disadvantages similar to those met with in using sulphuric acid. The tartrate of lime, is, however, somewhat easier to remove than sulphate of lime. Consequently, although a tile surface which has been treated with tartaric acid requires considerable sand scouring to remove the cement, the operation is nevertheless easier than when sulphuric acid has been used.

Muriatic acid is the most usual and most feasible medium for cleaning cement from tile floors. When, however, its fumes are likely to corrode delicate metal instruments, either sulphuric, citric or tartaric acid must be used in its place. The citric acid is the most effective. Sulphuric and tartaric acid change the cement into sulphate or tartrate of lime, which requires considerable scouring with hard sharp sand, but is, nevertheless, far softer and more easily removed than silicate of lime, which is the original form of the cement.

ONE OF THE CAUSES OF LACK OF CONFIDENCE.

After saddling the Chicago & Alton with an indebtedness of over \$80,000,000, of which only \$22,000,000 was applied on the road, Harriman has concluded that he squeezed all the juice out of that corporation and will now kindly consent to let the stockholders run it. If a mining magnate were to do such a thing he would be hanged to the nearest sycamore tree. But in railroad matters it's merely a matter of "high finance."—Industrial Examiner.

KEEPING CLEAN.

Copyright, 1907, by Harman Stewart.



WITH SOAP AND WATER? No.

That's important. But not all-important.

You want to keep the grime off of course—and not let the razor get rusty. But that's not enough.

There's another sort of cleanness, my friend.

"He that hath clean hands and"—remember how it reads?

Think that means soap and water?

It doesn't—you might as well know it.

Maybe you think being decent is just putting up a good front when you're with decent people?

How about "whited sepulchres?" Shining white outside and quite otherwise inside.

Keep clean, my boy—clean as to hands and pure as to heart.

It will pay you.

Why?

For practical business reasons.

Because your boss will care more for you if you do.

Your job will be surer, and your pay better.

Again: Why?

Because you can't be depended upon unless you're clean—the boss can't know where he stands insofar as you are concerned.

He must know if he's to consider you as a fixture—and if you're to get "raises" of any consequence.

See what I mean?

You've a right to go out with "the boys" as often as you want to.

That is—legally.

Morally—you haven't.

From the viewpoint of progression, you're a fool if you ever do.

Cartailing your liberty?

If you choose to look at it that way.

But listen: Fullest liberty lies in fullest observance of the law.

I learned that years and years ago.

Common sense says you shall do certain things—you shan't do other things.

You don't have to obey.

You don't have to do anything.

Except starve—or steal or beg—if you're out of a job.

Take this from me: Having a job nowadays—a worth while job—depends on keeping clean.

Depends on your ability to think and do.

Which is just another way of putting it.

Character—good character—is one of the finest things in the world.

Don't confound character with reputation—they're different.

Reputation is what the world thinks of you—character is what you really are.

Bad character may have good reputation for awhile—be a whited sepulchre.

But not for long.

What you really are becomes evident sooner or later.

And down comes the deluding front.

You can't be all that you may be without good character—without being clean.

Habits form character.

Clean habits—clean character—in the things that are usually classed as "right" or "wrong."

But there's more to character than doing right in a general way.

There are apparently little things that aren't little.

Unfairness to others can't be, if character is really good.

Nor any of the unmanly things that are so unfortunately prevalent.

Being honest in dollars and cents is undeniably right—but it's commonplace.

Being honest with the other fellow is just as right—but not commonplace.

As a matter of fact, absolute, unwavering honesty in dealings where cash is not concerned is rather rare.

There are so many ways of being dirty.

A shrug of the shoulders or a lift of the eyebrows may mean as much as a direct accusation in words.

Silent acquiescence to a slighting remark about some one is an assault.

And what about the things that are sometimes done in connection with the man higher up whose job is wanted?

Or the fellow alongside who seems to be more favored by the boss?

Or the boy whose stride is such that we can see him catching up?

I can't go as deep into the matter as I'd like to—it would take too long.

I've aimed to say enough to set you to thinking about things that may have escaped your notice, or seemed unimportant.

It's magnificent to be clean.

And it's profitable.

Keep this in mind—it's profitable.

Forget the occasional dirty fellow who gets along.

He's merely an accident, any way—there are very few of him.

You wouldn't want to be him—even if you do think so sometimes.

Written for THE CLAY-WORKER.

BOYD PRESSES THAT HAVE MADE 300,000,000 BRICK.

THE ACCOMPANYING statement is a remarkable one and will be read with more than passing interest by those of our readers who are making dry press brick. Of the two Boyd presses referred to, one has been run eighteen years, and in that time has been operated overtime sufficiently to make it equivalent to thirty-three years, working ten hours a day. The second press has been operated equal to twenty-seven years, running ten hours per day. A very remarkable showing.

MILTON PRESSED BRICK COMPANY.

Manufacturers of High-Grade Pressed Brick.

MILTON, ONT., Nov. 15, 1907.

Messrs. Chisholm, Boyd & White Co., Chicago, Ill., U. S. A.:

DEAR SIRS—We are pleased to advise you that the new Four-Mold Boyd "Special" which we recently purchased from you arrived in good condition and is now in operation, doing good work. We now have quite a family of Boyds.

It is now nearly eighteen years since we installed the first Boyd press. The second one was put in about two years later. We have operated these two presses all these years and they have never failed us, and are still in good condition, producing first-class brick. Up to about three years ago these presses ran continuously, night and day. We operate our plant twelve months in the year, so that you can imagine the amount of work these presses have done since we installed them.

Five years ago we installed our first Improved Boyd, the Four-Mold "Special," and two years later we put in the second one, which, with the one we have just started, makes in all five Boyd presses in our plant.

Each time we have received one of your presses we found many improvements over the preceding one, and the Boyd press, as you now build it, with all the improvements you have made from time to time, is stronger, more durable, and makes better brick than the original press built seventeen or eighteen years ago.

We take this opportunity of telling you that every time before buying your press we investigated presses of other makes, and the fact that we have bought five presses from you clearly shows the result of our investigation each time, and, in our opinion, your press has always been in the lead.

In conclusion, we beg to state that our Boyd presses have given us entire and complete satisfaction in every respect, and for endurance and quality of product they have no equal.

Thanking you for the prompt shipment of the last press, we remain,

Yours truly,

MILTON PRESSED BRICK COMPANY, Limited,
(Signed) J. S. McCANNELL, Managing Director.

CARNEGIE STEEL COMPANY INVESTIGATING THE MANUFACTURING OF BRICK.

THE EFFORTS of the Carnegie Steel Co., Pittsburg, to determine the quality of the various grades of fire and silica brick that are manufactured in different parts of this country, and particularly in the Pittsburg district, where most of the plants of that concern are, is the object of much concern in this section. The nature of the inquiries that have been sent out by the steel company have led many of the large manufacturers to fear that the United States Steel Corporation is seriously considering the construction and operation of large brick plants in the vicinity of the several groups of plants, and that in time it will manufacture its own brick requirements and specifications. It has been impossible to either have this belief confirmed or denied, however, and the subject, being one of the most important in the manufacture of steel and the hundreds of steel and iron products, is causing no end of worry in many brick manufacturing concerns. The real importance may be realized when we can state from actual experience that the steel companies in the Pittsburg district use considerably over two-thirds of the total quantity of brick manufactured by the two largest refractory manufacturers in this part of the country. There are also many instances where the deliveries have been anything but satisfactory, the brick not of a uniform or standard quality, and the price demanded excessive.

The Steel Corporation has appointed the following experts to compose a committee to investigate the quality, conditions, cost, etc., and as soon as the information can be gathered, a complete report will be made to the officials of the corporation: Thomas McDonald, chairman, Youngstown, Ohio; Homer D. Williams, Duquesne, Pa., and J. S. Unger, Pittsburg, Pa., the latter gentleman acting as secretary.

The above committee has sent requests to the leading manufacturers of silica, chrome, magnesite and fire brick, asking them to send twenty samples of each kind of brick made for five consecutive days, every brand manufactured being covered by this request. All brick are to be the standard 9-inch sizes. This committee will also visit all of the plants in order that they may see just how the brick are manufactured, how the different plants are operated, and to inspect every detail of brick manufacturing from the mining of the clay and ganister until the brick are removed from the kilns and loaded on the cars for shipment.

Inquiries are also made as to the location of the works, the distance from and railroad connections with Pittsburg, the capacity of the plant, names of the different brands, number of employes at each plant, the selection of raw material and how used, analyses of the different clays used, the mixes for the various brands and whether they are weighed or measured, the method of grinding the raw material and whether it is aged after grinding and prior to placing it in the molds, the degree of fineness in grinding, the temperature of the drying floors, the shrinkage on the drying floors, as well as the percentage of breakage during the drying process, the character of the kilns used in burning, the fuel used in burning, the method of placing brick in the kilns, the percentage of shrinkage in the kilns and the percentage of breakage in the kilns. Questions are also asked about the methods of testing the various brands of brick, how the density and hardness are determined, and tests as to absorption, abrasion and crushing.

The majority of the manufacturers are willing to give the above information, as they realize that a power as large as the Steel Corporation would readily find means of obtaining it in the event of their refusal, but there were some concerns, including several large ones, that flatly refused, although they were willing to submit samples for tests. The committee is well satisfied with the progress being made,

however, and authorizes the statement that they are having no difficulty in obtaining any information that they may require. The Steel Corporation, although the largest user of these grades of brick in the country, has never been a promiscuous buyer, it being well known that they are most particular as to the quality furnished, and that most of the business has been placed among a comparatively few concerns. This is another reason that the unlooked for investigation has created so much surprise.

MILLIONS OF BRICK.

Over 16,300,000 will be used above the curb line in what will be, when completed, the greatest of all railway stations, the Hudson Terminal Building, New York City. In addition to this the walls and foundation extend eighty feet below the curb level.

OBITUARY.

DEATH OF ANDREW F. BARRON.

Again we are called to chronicle the death of a prominent man in the clayworking industry. Mr. Andrew F. Barron, of Chicago, known through his connection with the Barron Dryer Company and as one of the best versed in his line of business in America, died at Toronto, Canada, November 21st.

His death was the result of a paralytic stroke, coming at a time when he was anxiously looking forward to the completion of the plant of the Barron Brick Company, Ltd., eight miles from Toronto, Ont., the construction of which he was superintending, being one of its originators.

Mr. Barron was born in St. Marys, Ont., in 1850. He came to the United States over thirty years ago when in his twenties, and engaged with the firm of Wolff & Curran, of Chicago, as their lumber dryer specialist. Some years later he took up the drying of all kinds of clay goods, which proved to be a fine field. He became most proficient in this branch, and in the late eighties was advanced to the position of chief engineer. He had a wide experience in the clay business through these connections, and in 1898 succeeded the Wolff Dryer Company, the firm name then being changed to the Barron Dryer Company.

Mr. Barron had been in poor health for the last two years. His many friends and acquaintances will receive the news of his death with much regret. He leaves a wife and two children, a son and daughter.

A Well-Known Chicago Fire Brick Manufacturer Dies.

Charles A. Reed, president and treasurer of the Chicago Retort and Fire Brick Company, died December 3d, 1907. Mr. Reed was born in Montpelier, Vt., February 12th, 1837. During the early part of his life he was a banker, but always had an inclination for manufacturing. In 1887 he became connected with the Chicago Retort and Fire Brick Company, then a small corporation, with one plant located at Chicago, and until shortly before his death was actively engaged in the management of the company. Owing to his clear-sighted, conservative judgment, the company has had a steady growth, and during the past year had erected, in addition to the Chicago plant, a new and modern plant at Ottawa, Illinois, which was completed and in operation in time for him to see the fulfillment of his work.

Mr. Reed was a man of sturdy New England character, who had but one way of doing business; with him, if a thing was right, there was nothing more to be said. His honesty of purpose and fairness of spirit made him beloved and respected by all those who knew him, and his loss will be keenly felt by his associates. He was taken for burial to his old home in Vermont, where his family had lived for three generations. He is survived by a widow and two daughters, and a son who has been associated with him in business for the past twenty years.

PROGRAM FOR CLAY WORKERS' INSTITUTE.

To be Held at the Department of Ceramics, University of Illinois, Professor C. W. Rolfe, Director, January 6-10, 1908, Urbana, Illinois.

IT IS THE FIRST DUTY of the Department of Ceramics of the University of Illinois to serve the clay interests of the State.

This it is endeavoring to do in two ways.

By training young men for service in the industry.

By investigating problems which will help the manufacturers to improve the quality and reduce the cost of their wares.

As many of the clayworkers are so situated that they can not avail themselves of the regular courses offered by the university, the members of the department have thought best to extend to them every possible opportunity for technical instruction.

It is for this purpose that the Institute for Clayworkers has been inaugurated, and it is for the clayworkers themselves to decide whether the movement is a step in the right direction and should be expanded.

Every one engaged in the technical side of clayworking is earnestly invited to attend these sessions, whether he be manager, superintendent, foreman, or burner. The work is to consist in part of lectures, in part of laboratory instruction dealing with the testing of clays by means of simple yet accurate methods, and the use of apparatus employed in measuring temperatures and controlling the burning. In all this work we shall endeavor to make clear the principles underlying clayworking operations.

Each evening an informal meeting for the discussion of particular problems proposed by those attending the institute will be held.

It is the intention of the university authorities in general, as well as of the instructional force of the Ceramic Department to make the stay of the visitors a pleasant one in every respect.

Those who expect to attend the sessions are requested to notify the director of the department. No charges whatever are made. Board and rooms may be obtained near the university at reasonable rates.

Program.

—Monday, January 6.—

9-10 A. M.—“The Preparation of Clays,” Professor A. V. Bleining.

10-11 A. M.—“Clayworking Machinery,” Mr. R. T. Stull.

11-12 M.—“Die Construction,” Mr. R. T. Stull.

1-4 P. M.—Laboratory Demonstration of Clay Testing Methods.

7:30-8:30 P. M.—Informal Discussion of Clayworking Questions.

—Tuesday, January 7.—

9-11 A. M.—“The Manufacture of Auger Machine Front Brick Without Repressing,” Mr. R. T. Stull.

1-4 P. M.—Laboratory Demonstration of Clay Testing Methods.

7:30-8:30 P. M.—Informal Discussion.

—Wednesday, January 8.—

8-9:30 A. M.—“The Drying of Clay Ware,” Professor A. V. Bleining.

10-11:30 A. M.—“The Vitrification of Clays,” Professor A. V. Bleining.

1-4 P. M.—Laboratory Demonstration in Making Burning Tests.

7:30-8:30 P. M.—Informal Discussion.

—Thursday, January 9.—

8-10 A. M.—“The Manufacture of White Ware,” Mr. Herford Hope.

10-11:30 A. M.—“Controlling Temperature and Draft of Kilns,” Professor A. V. Bleining.

1-4 P. M.—Laboratory Demonstration in Heat and Draft Measurement.

7:30-8:30 P. M.—

Mr. R. T. Stull, Instructor in Ceramics, is a graduate of Ohio State University, and has had extensive practical experience along the lines of architectural terra cotta, enameled brick and chemical stoneware manufacture.

Mr. Herford Hope, Assistant in Ceramics, has for years been connected with the Mayer Pottery Co., Beaver Falls, Pa., and is thoroughly familiar with all details of white ware manufacture.

USE OF THE DIVINING ROD.

NUMEROUS DEVICES are used throughout this country for detecting the presence of underground water—devices ranging in complexity from the forked branch of witch-hazel, peach, or other wood, to more or less elaborate mechanical or electrical devices. Many of the operators of these devices, especially those that use the home-cut forked branch, are perfectly honest in the belief that the working of the rod is influenced by agencies—usually regarded as electric currents following underground streams of water—that are entirely independent of their own bodies, and many uneducated people have implicit faith in their ability to locate underground water in this way.

In experiments with a rod of this type, one of the geologists of the United States Geological Survey found that at points it turned downward independently of his will, but more complete tests showed that the downturning resulted from slight and—until watched for—unconscious changes in the inclination of his body, the effects of which were communicated through the arms and wrists to the rod. No movement of the rod from causes outside the body could be detected, and it soon became obvious that the view held by other men of science is correct—that the operation of the “divining rod” is generally due to unconscious movements of the body or of the muscles of the hand. The experiments made show that these movements happen most frequently at places where the operator’s experience has led him to believe that water may be found. The uselessness of the divining rod is indicated by the facts that the rod may be worked at will by the operator, that he fails to detect strong currents of water running in tunnels and other channels that afford no surface indications of water, and that his locations in limestone regions where water flows in well-defined channels are rarely more successful than those dependent on mere guesses. In fact its operators are successful only in regions in which ground water occurs in a definite sheet in porous material or in more or less clayey deposits, such as the pebbly clay or till in which, although a few failures occur, wells would get water anywhere.

Ground water occurs under certain definite conditions, and as in humid regions a stream may be predicted wherever a valley is known, so one familiar with rocks and ground-water conditions may predict places where ground water can be found. No appliance, either electrical or mechanical, has yet been successfully used for detecting water in places where plain common sense or mere guessing would not have shown its presence just as well. The only advantage of employing a “water-witch,” as the operator of the divining rod is sometimes called, is that skilled services are obtained, most men so employed being keener and better observers of the occurrence and movements of ground water than the average person.—U. S. Geological Survey Press Bulletin 300.

A man was recently fined in St. Louis for throwing away money in the street. Such a policy would take all the spice out of life in New York, where the principal occupation of a good many people is throwing away money in “the street.”



REPAIR TIME REMINDERS.

There are a number of repair time recipes that might be given and found useful during the winter season, when machines are shut down and there is plenty of time to make alterations and repairs. But sometimes one is impressed with the idea that it is not recipes that are needed so much as reminders of things that we already know if we would stop to think about it.

One thing which we seem to be reminded of more continually than anything else is the matter of close attention to all small details, and yet when reminded of this fact we too frequently neglect to give it heed. Everything is made up of small details. Take, for example, that old story that most of us became familiar with in our early school days, in which a man's life paid the forfeit because the engineer's watch was five minutes behind time, and it is easy to see that if we but look with a discerning mental eye that there was not only an oversight as to a little matter of five minutes, but back of that there had been neglect of even smaller details in the adjustment and regulation of the watch.

Here's an instance from actual experience. One day the writer, while visiting a brick plant where about thirty men were employed, saw a machine stop about two hours while the men pottered around, doing a little of this and a little of that, but not much of anything. Investigation of the cause, in company with the proprietor of the plant, developed the fact that the engine had run a hot wrist pin, and the pin had become so overheated before the engineer's attention had been drawn to it that it required considerable dressing up after it had been cooled off to put it in running order again, and then it had to be run light and closely guarded for the rest of the day and refitted again in the night. This itself was not a small matter, yet, it was found on investigation that back of that was a very small and apparently insignificant detail which had been neglected. It was nothing bigger than the oil cup for the crank pin of the engine, which, through rough usage, had become damaged until it gave poor service. Through having a poorly equipped oil cup, oil was wasted for a short period through the journal, and then it ran dry, causing a wrist to heat and a stoppage in the plant, and a loss of time which, when totaled up, would have easily paid for a half dozen oil cups all in one day's time. Then the damage to the engine itself was probably ten times the price of the oil cup. Altogether, it furnished a striking illustration of what a little thing neglected can do, and how it can develop into big things.

There are a number of other instances of different character pointing to the same moral which might be related. Every man can recall many in his own experience if he will just spend a little time thinking over the matter, and during the season of repairs and refitting, recalling of things of this kind should serve as excellent reminders, and keep us from neglecting to give careful attention to all the little details. It helps us to realize that a journal box out of line, a key poorly fitted in a pulley, a weak link in a chain, or any one of a thousand different details which only require a little attention to correct them may, if neglected, cause a shut down and a waste of time which will amount to more than ten times what it cost to apply a remedy in season. It is an old time-worn song, but a good one, just the same, that a stitch in time saves nine, and sometimes the nine grows almost into ninety.

It should not be implied from the emphasis put on the

subject of attention to all small details that there, and there only, lies the secret to success. There are two extremes. There are some people who give too much attention to what might be termed the main point in selecting a machine, the general outline of plans, etc., and not enough to carrying out the details. On the other hand, there are people who give painfully close attention to minute details and not enough to what might be termed the bigger things, to the aggregate of things and the relation of one thing to another. Men with this tendency, in financial affairs, are classed as men to whom the penny looks so big that it obstructs their view, and prevents their seeing dollars behind the pennies. They are, in short, the penny wise and the pound foolish, and the pound wise and the penny foolish. Ordinarily, however, when it comes to the matter of repairs and refitting the plant, the best combination is to have men for doing the work who are sticklers for details and let the proprietor or superintendent look well after the main points. The main points in a case of this kind are, however, not merely the selecting or placing of machines, but are made up in part of extending attention to machines or parts of machines which are up for repairs. Quite frequently a man who is a good workman and painstaking as to details develops a sort of mania for tinkering and making difficult and tedious repairs where a new part or a new machine may be needed. A man skilled at repairing may relish opportunities to display skill, which is all right in its way, but it should be safeguarded with a proper judgment as to when to repair and when to discard parts of a machine or entire machines. Otherwise what you think is careful attention to details, you may some day in the midst of a rush be rudely awakened to the fact that you have got a lot of expensive patch work about your plant that is costing you much more than it would to put up new machines or new parts while you were at the work of repairing.

All this, and everything else about repair time, really should serve as a fresh reminder of an already frequently presented fact, and that is that the first cost of a machine is a minor factor, or should be, at least, in deciding on it as an investment. A small price for a machine as a first investment and a big item for repairs as a continuous performance afterwards, is so much more expensive than a costly machine as an investment and but little need of repairs afterwards, as to make the choosing between them an easy matter if we but stop to think about it.

THE CONVENTION CITY OF 1908.

Columbus, which is to be the convention city of the clayworkers for 1908, is not only the capital of the great Buckeye State of Ohio, but it ranks third among the cities of that State in population, wealth and manufactures, being outclassed only by Cleveland and Cincinnati, and in beauty it is not second to any city anywhere. The city of Columbus was laid out in 1812 and was adopted at that time as the location for the permanent capital of the State. It was a wise selection, too, not only for the capital but as a commercial city, because it is peculiarly favored with pure water and as a location the healthful situation has rendered it productive and led to a steady growth of high ideals in everything. Its finest public building is the State House, but there are numerous other noteworthy buildings of public character, and as for its schools and colleges, it appeals in this respect particularly to the clayworkers as no other city in the United States, for it is the home of the Ohio State University, with its famous Department of Ceramics, in charge of Prof. Orton. Likewise, of course, it is the home city of the American Ceramic Society, for which every student of clay has a mighty warm spot in his heart. In short, it is worth going to see for the city and the people dwelling therein, and being directly connected with the clayworking industries, even if there were no convention to be held there February 3-8, with the convention and all, it should take a mighty good excuse to keep any brick man at home.

Written for THE CLAY-WORKER.

RAPID PROGRESS IN BUILDING DRY PANS.

PERHAPS NO CLASS of manufacture has made more rapid progress within the last decade than that devoted to the manufacture of brick and kindred products. It can safely be said that the advance has been largely due to the designing and perfecting of machinery especially adapted for this purpose. Foremost among these improvements and one which has had more to do with the success of the clayworking industry has been the introduction of the latest improved dry or wet pans.

Our readers will be interested in the very latest machinery in this line for reducing the raw materials ready for the brick machinery. The 9-foot dry pan here illustrated is underdriven, the heavy bevel gears being protected from the dust and clay, and well shrouded, and so arranged that the grease and oil can be applied and retained without any difficulty whatever. The gears are easy to get at to repair or to examine. The shafts are very heavy and short. The journals are long through the bearings. The step-box is of large

A LITTLE LOGIC.

It now seems that the Irish landlords are also to be evicted. Our immigration laws should be strengthened at once.

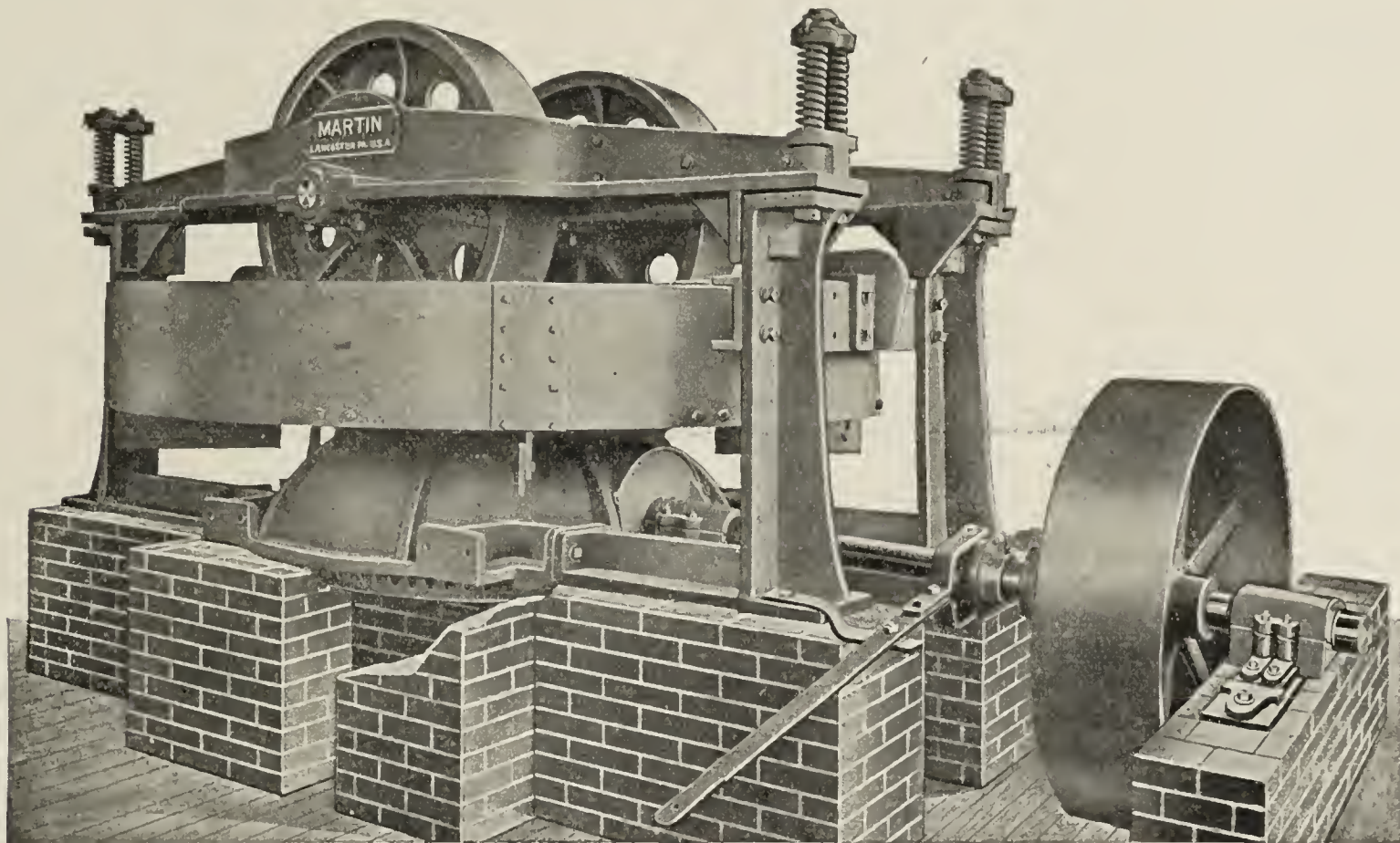
New York has a "movement" to stop the ringing of church bells. The New York preachers are said to have long ago stopped saying the things they really thought. Now, even the bells are to be "gagged."

From the developments of the past few months it becomes evident that railroads do not really need the money they make on freight and passenger service. The stockholders make their profits by selling watered stock.

It is a good thing our wealthy men are usually men of strong character. If they feared criticism they would never give away a cent, for harping critics are always looking for a sinister motive behind every donation.

A legal technicality is a means of evading justice. Why not do away with the legal technicality? What class does it protect?

It seems strange that people will study hard to pass an examination for a certificate to teach school, because they would rather teach school than do anything else, or because they can make more money at it than in anything else with



The New "Martin" Dry Pan.

diameter, and ball-bearing, the steel balls being three inches in diameter.

The mullers are solid and made of hard iron, with soft centers. Each muller is independent of the other, and is held in place by the heavy yoke, which adds to the crushing weight.

The pan revolves. It is neatly designed, heavily proportioned throughout, and has a friction clutch with large iron pulleys, so that the pan can be gradually started and instantly stopped.

These 9-foot dry pans are carried in stock or in course of construction, and will be on exhibition in the showrooms at the factory of the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., which is making a full line of crushing, grinding and elevating machinery.

With Roosevelt making a final and authentic announcement that he will not accept a third term the political pot straightway began to boil vigorously. This is all right in a way, for we need politicians, and if politicians will just make the New Year's resolution not to excite the general public and interfere with business, we will feel much relieved.

the same effort, and as soon as they get a job they seem to feel that they have done the state a great service and are entitled to a pension. That is the way it goes in Kansas.

Possibly it might do to change the name of the governor of Jamaica to Sweating Ham instead of Swettenham. There is nothing so fitting as an appropriate name.

When school teachers begin to draw pensions, why not put all people who work for hire on the pension list? Where is there any argument which applies to the teacher which does not apply to all other workers?

WED IN ELEVATOR CAR AT WELLINGTON MACHINERY COMPANY'S PLANT.

Albert Schnell and Mrs. Jennie Platt were married Nov. 27 in an elevator car in the Wellington Machine Company's shop, where Mr. Schnell is employed. In the presence of a hundred friends, with the noise of flapping belts and rushing wheels as an accompaniment, Justice of the Peace Binehower pronounced them man and wife. A gang of men threatened to kidnap Schnell, but machine shop comrades acted as a bridal escort, saving the Schnells annoyance.



OFFICIAL ANNOUNCEMENT.

THE TWENTY-SECOND NATIONAL CONVENTION
TO BE HELD AT COLUMBUS, OHIO,
FEBRUARY 3-8, 1908.

American Ceramic Society and National Paving Brick Manufacturers' Ass'n Hold Separate Sessions Feb. 3 and 4.

THE STATISTICAL CHART recently issued by the United States Geological Survey shows that Ohio still maintains her position as the leading State in the production of clay wares. Buckeye kilns turn out 19.26 per cent of the entire clay products of the country.

It is peculiarly fitting that we should meet in the capital city of this, the chief clayworking State of the Union. It is so centrally situated, so easily accessible to a great majority of the clayworkers of the land, that it would seem an attendance exceeding even that of the St. Louis convention, which was the best convention in point of numbers yet held, may be anticipated.

Hence we are pleased to announce that arrangements have been completed for a convention at Columbus the week of February 3d, at which time the Ohio School for Clayworkers will keep open house, and Prof. Orton and his assistants will not only bid all visitors a cordial welcome, but will be prepared to demonstrate the advances made along technical lines in the art of clayworking since our previous meeting there in 1899.

The brick manufacturers of Columbus and vicinity will demonstrate that the cordial invitation extended by them through Prof. Orton at our last meeting was not a mere form of words, but will individually and collectively extend a welcome so earnestly heartfelt and warm that, regardless of the temperature, the visitors will have no occasion to make a mid-winter trip to the tropics, and while the entertainment afforded will be so timed and planned as not to interfere with the deliberative work of the convention, the local committee will strive strenuously to make the week one of many pleasures.

It is too early to announce railroad rates, but as Ohio and adjoining States now operate under a 2-cent law, and those coming from a distance can obtain the same low fare by using mileage books, the same relative rate that has heretofore prevailed is assured. The N. B. M. A. hotel headquarters will be at the Southern Hotel, where special rates have been arranged for.

As in former years, the American Ceramic Society will meet Monday, Tuesday and Wednesday forenoon. They will rendezvous at the Hartman Hotel, which is two blocks from the Southern.

The National Paving Brick Manufacturers will meet in a parlor of the Southern, as will also the Machinery Manufacturers' Association.

The N. B. M. A. sessions will, as heretofore, begin Wednesday afternoon at 2:00 o'clock, and ample provision will be made for an exhibition room affording adequate facilities for all who may wish to display samples of brick, models of

clayworking machinery, factory supplies, trade literature, etc.

Those desiring more detailed information on any feature of the convention, or the requisite of membership, etc., are requested to communicate with the secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,

WM. CONWAY, President.

THEO. A. RANDALL, Secretary.

CONVENTION DATES.

The Louisiana Brick Manufacturers' Association will meet in annual convention at the St. Charles Hotel, New Orleans, the first week in January.

* * *

The thirtieth annual convention of the Illinois Clay Workers' Association will be held at Peoria, Ill., January 14th, 15th and 16th. The headquarters will be at the National Hotel, where the assembly room will be used for meetings and exhibitions. Peoria is quite a railroad center and is easily reached from any point in the State. A splendid program is being arranged and those intending to go to the convention this year are assured a good time.

* * *

The Iowa Brick and Tile Association will hold its twenty-seventh annual convention at Des Moines, Wednesday and Thursday, January 22d and 23d. Headquarters will be at the Hotel Savery.

* * *

The American Ceramic Society convention will enjoy a successful meeting at Columbus, Ohio, February 3rd and 4th. Their headquarters will be at the Hartman Hotel.

* * *

The National Paving Brick Manufacturers' Association convention will be held February 3rd and 4th at the Southern Hotel, Columbus, Ohio.

* * *

The Wisconsin Clayworkers' Association will hold its next annual convention at Milwaukee, February 12th, 13th and 14th. Headquarters will be at the Hotel Blatz.

Hollow Tile Used Successfully for Heating Purposes.

Editor THE CLAY-WORKER:

Dear Sir—The writer noticed in your November issue an article, "The Colonel on Clay Conduits," and the suggestion made of using clay pipes for heating pipes in houses where hot air furnaces are used.

Last spring the writer built a house—this time a brick house, which is a novelty for a brickmaker, or at least used to be—and in the lower partitions, or rather the first floor partitions, used four and six-inch hollow tile. Where the heating pipes come I set the tile directly over each other on end and made the heating flues out of tile. For the benefit of the clayworkers in general and the Colonel in particular will state that this system of using clay pipes for heating purposes is very successful. While not only having my heating pipes, it at the same time forms the partitions as well. Of course on the upper floors, where the registers are in the wall or partitions, we used a tin connection between the top of the lower floor partition and the partition in the side wall. It is something that the general public should be educated to more fully, and that is the use of hollow tile for partitions in private houses. Of course they cannot be used where they set on wood joists, as the shrinkage of the wood will crack the partition, but where the partition walls in the cellar can be arranged so as to come directly under the partition walls on the first floor it is a very easy matter to use fireproof partition, not only making the partition fireproof but soundproof as well. As to the matter of expense, they are no more expensive than wood. Trusting that this idea may be of benefit to someone, I remain yours truly,

Warren, Pa., Dec. 10, 1907.

J. E. MECUSKER.



Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-FOURTH YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	\$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " " " " " "	10.00
Ten copies, " " " " " "	15.00

Foreign subscriptions 65 cents additional.

Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVIII.

DECEMBER, 1907.

No. 6.

CURRENT COMMENT.

Now, it's off with the old and on with the new. May the new prove an improvement on the old to every reader, is our earnest wish.

* * *

While considering improvements for the coming season, do not lose sight of the fact that a new machine, which will do more and better work, will pay for itself over and over every year.

* * *

These long winter evenings afford a splendid opportunity for reading and investigating the unsettled problems in the clay line, and there are many of them, so keep the CLAY-WORKER handy.

* * *

Speaking of investments, a very little information of a practical sort is oftentimes worth a great deal of money, no less in what it saves than in what it earns. The CLAY-WORKER brings many such suggestions to its readers every month—twelve dividends a year on a total investment of \$2.00. Now is the time to subscribe.

* * *

The convention season is now well under way. There is much profit and pleasure both in attending these yearly gatherings. The printed reports of the meetings, while interesting and instructive, are but the echo of the voice of wisdom which is heard best in the lobby talks. If you want information up-to-date and practical, attend the conventions.

* * *

There is an old saying that more different remedies can be offered a man with a bad cold by his friendly advisors than can ever be produced in connection with any other one ailment. But this old saying will have to take a back seat now in favor of the multitude of suggested remedies for the present ailments of the financial system of the country. And a peculiar thing about it is that all the freakish ideas are not advanced by men without money in their pockets, and

after reading the expressions of some of the financiers and noticing the ideas of some of the bankers, one is at times impressed with the idea that all the yokels were not raised on the farm.

* * *

Quite a number of eyes may be turned toward Washington these days, but Columbus, Ohio, is the most interesting center of attraction for brick manufacturers. That is where the annual meeting is to be held February 3d-8th, 1908.

* * *

It looks like Kentucky just must have a scrap of some kind in full blast all the time. When they can't have a political battle or a family feud they have a tobacco war. Why can't the colonels calm down and be like ordinary people.

* * *

If there is any law you want made or think the Government needs, don't hesitate a minute, but write your congressman about it. They probably have a few opinions of their own, but that don't matter, and they are getting so many different opinions from so many people anyway that one more added to the lot won't hurt.

* * *

Taken altogether this has been a pretty hard year for grafters and hoodle politicians and not a few of them have been for the time being almost eliminated from the political arena. Maybe in time we will grow some new ones of a different brand, but it is at least refreshing to know when the public once becomes aroused it can dispose of the worst of them anyway.

GOOD-BYE, 1907, GOOD-BYE.

As the time for ringing out the old and ringing in the new year draws near there is seen and felt evidence on all sides that probably no new year in the history of the past decade has been looked forward to as anxiously or any old year desired to be more fleetly than the present one. This is easy to understand and it illustrates in some measure, too, the fickleness of men, or rather the changeableness of human emotions. The latter days of the year have brought with them a depressing condition of finance and business which is weighing somewhat heavily, and for some unaccountable reason the general feeling is that this is to be shaken off with the old, and a business revival begun with the new year at a healthy rate. Why it is that we get ideas of this kind, that the end of the year is a better time than any other to release the strings of money bags and put fresh coal under the furnace of industry, is a question largely of sentiment that might easily involve long and tedious discussions.

Without going into all that, however, it is apparent that the general public in the United States, at least, is right now anxious to be off with the old year and on with the new, and in this anxiety probably gives but little time or thought to the remembrance of all the good things 1907 has brought.

The beginning of the year was bright in prospects and everybody felt not merely cheerful, but enthusiastic. Enthusiasm, especially in the building circles, was cooled off a little in the spring by the persistency with which winter lingered in the lap of spring. In fact, the chilliness of the first half of the year went so far as to threaten much of the crops of the country, and this caused quite a lot of apprehension. By and by however, the spring started in and made up for some of it; and, while some of the early crops were made into late ones, there was in the end an abundance of the products of the soil to insure both food and raiment for all the people of the country, that is, provided the people are wise enough to see them properly distributed.

With the coming of summer and improved conditions of crops there was a new tone of health and life in the business world, yet it was not allowed to prevail continuously for any great length of time. In this it has been one of the

most peculiar years of the decade in furnishing, intermittently, short seasons of brightness and gloom. No sooner would the industry get swung into action and develop enthusiasm, than some rumor or some indefinite feeling of panic would pervade the whole country, and arouse such a spirit of apprehension that industry would be checked. In time this would wear off and confidence be restored again to a point where enthusiasm would again develop and along would come the same gloomy feeling again. Generally it was without much source or definite form, and it must have been just the rumblings of what was to follow in the end, and, finally, toward the latter part of the year when everybody was breathing easy and feeling that all these apprehensions had been without foundation, there suddenly swept down over the country as it were, a great financial panic that almost in a twinkling cut the business of the industrial world in half. Merchants suddenly found themselves not receiving many orders; mills and factories and all lines of industries were as if the bulk of their business had been suddenly shut off, and bankers would stand guard over their money bags as if they were afraid that if they paid out currency it would never come back again. As to what caused it all, people differ all over the country. There is a variance of opinions, and evidence that all the yokels of finance are not on the farms. And we might just as well undertake to explain why the Midianites turned and fled when Gideon's little band broke their empty pitchers and raised a big shout. It was simply a matter of sudden panic and apparently inexcusable. Some phases of it could be looked on with humor were it not for the seriousness of the whole thing. For example, some of the wisest editorial writers of the country only two or three months before were explaining in painful detail and authoritative tone how the country was suffering from a surplus of money, and suddenly forgetting all this, when the depression came, turned about, and, with the same minute detail and authoritative tone, told us that what was needed was more elastic currency, that would stretch and cover all our needs.

With all these things and many other incidents happening it has not been an uneventful year by any means, and humanity throughout the United States has been so vacillating and wavering in sentiment that it is not to be wondered at that they turn anxiously to welcome the new year and want to see the old one rung out.

It is not the year's fault, however, but the people that are to blame, and instead of speeding the old year out, there are lots of us who should tarry awhile, meditatively, in these latter days of the year, and strive to glean therefrom some goodly lessons that may equip us for meeting the new year with a better spirit of understanding, with a full realization that what the year will bring in the way of fruits depends largely on what we plant and how we cultivate.

PAY AND BE PAID.

Sentiment and feeling may be immaterial things, but the man who figures that they have but little bearing in material business makes a big mistake in his calculations. For nearly two months now we have been getting an example of the fact that these same immaterial sentiments and feelings have done more to cause the business depression than all the material things together. Personal feelings or apprehension have inspired many an industrial man to slow down and lay off men and wait until conditions have improved, and all this, too, in the face of the directly apparent and indisputable logic that practically every other man is doing the same thing, which makes each man doing this responsible for the depression. Next to this, or probably preceding it, is the disposition of the banks to hold on to currency, and following in the footsteps are those who show a marked reluctance about paying bills and reducing one's bank ac-

counts thereby. In short, it is a sentimental panic more than a real one, and we can all see it plainly, too, that is, we can see that the other fellow is doing the very best that he ought not, and its effect. It is hard, nevertheless, for each of us to take these things home and see how they apply to ourselves even strongly enough to stimulate us to the right kind of action. Every man who hesitates about paying bills simply makes it difficult for some other man ahead of him to pay his bills, and thus the long stream of circulating medium is blocked, whereas if we would shake some of the foolishness out of our sentiment, and some of the panicky apprehension out of our system, and pay our bills more promptly it would probably do more than anything else to start finances moving smoothly and rapidly again. Lots of people are realizing this fact, too, but they continue to let ink dry on their pens and hold tight to their purse strings, waiting for the other fellow to show signs of activity. A pretty good way to start things moving is to begin using ink in signing checks before the New Year. The way to resume is to resume.

RAISE THE PRICE OF POTTERY.

Trenton pottery manufacturers have decided that they must increase the prices of their finished ware, or be compelled to go out of business. They have held several conferences among themselves and some have conferred with Western manufacturers. It is understood that an advance in prices is contemplated on all general ware and that it will probably take effect the first of the year. The reasons assigned are higher cost of raw materials, labor, etc., which enter into the production of general ware. This has been contemplated in Trenton for some time, but it was realized that it would be practically useless to undertake to advance the price in New Jersey unless manufacturers elsewhere co-operated. Now that the movement has spread to other manufacturing centers, it promises to become an established fact.

FAILURES IN CONCRETE.

The persistency with which failures attach themselves to concrete work is reaching the point now where it is time to take full stock of the idea that building material that has to be safeguarded with many precautions to prevent failures is a material that should be handled not merely with care, but sparsely. In other words, instead of striving to push it into channels which furnish a lot of opportunities for failures, if due attention is not given it, it should rather be restricted to narrower fields of use as the safest means of avoiding chances for failures. Among the late failures reported in the daily news items is one at Newburg, New York. The Newburg Light, Heat and Power Company was having a new concrete smoke stack erected when, as the news report states, it lost its cohesion and gave away, huge chunks of concrete falling both outside and inside the chimney, driving the men in alarm out of the fire room and doing considerable damage to property. The cause of the failure is said to be the cold weather retarding the setting of the concrete in the course of construction and the molds being removed and the work continued too soon. That is the way it is every time it fails, it is too early removal of the molds, improper mixture, poor reinforcement, or some one of a dozen different faults every time concrete fails. There is always an explanation, but the explanation comes afterward, and the explanation doesn't seem to ever serve as a sufficient warning or caution to prevent others from going ahead and making the same mistakes right along. In other words, concrete is so prolific of faults of this kind that its use as a structural material should be avoided when its giving away is likely to do damage to either life or property. Even when it is pos-

sible to so surround it with precautions as to make it a reasonably safe material, the evidence keeps piling up right along that it isn't and hasn't yet become at least practical to make general use of concrete and avoid these failures. The moral of it all is too plain to need setting in details.

WOMEN LAY BRICK.

There is a unique as well as a refreshing report among the news items of recent date in Frankfort, Ky., which tells of a woman of Frankfort giving an actual demonstration in bricklaying, for the sake of impressing the young women of that locality with the fact that honest toil of any kind, instead of being degrading, is something that every woman should be willing to turn her hand to. The report says that Mrs. Nancy Johnson, age 73 years, went to a new brick building being erected by S. W. Howell and there laid brick and carried the hod for one-half hour, for no other purpose than to show the young women of her locality that it does not bring dishonor to women, even if they do manual labor, and that they should not be ashamed to do this if required of them. It seems that Mrs. Johnson was leading a bunch of young women and that she was ready and willing to give them examples and instructions in housework, but desired to carry the idea even further and graphically illustrate her ideas that no one, not even a woman, should turn aside from any honest toil. It certainly was a novel example, and, while we would hardly recommend that young women as a rule turn to bricklaying, the idea might be taken up by young men, because it is not only an honorable calling, but there is plenty of room for them. There is good money to be made at it, and there appears to be need for quite a lot of additions to the ranks of bricklayers to help the building industry along.

THE SHAKE-DOWN AND ITS FRUITS.

The financial flurry, panic, shake-down, house cleaning, or whatever you want to call it, is the subject of more talk and countertalk, more explaining and more declaiming than anything else these days, and after one reads it and talks it over and over it appears that the more one reads and listens to opinions and tries to think it out, the more one concludes that he doesn't know anything positively about it. It is one thing that it seems difficult to find an entirely satisfactory and acceptable scapegoat to blame it on. One can, however, through all the tangled ideas and suggestions for remedies and for preventatives gain now and then a flash of light pointing to some of the possible fruits that may be gathered as a result of this shake-up or shake-down of the tree of finance. One thing, of course, that everybody feels certain of is, that business of all kinds will be resumed on a more rational and substantial footing, and that for quite a while, at least, we will be free from a repetition of what we have been through. Another thing, and one that is of special interest to the brick manufacturing trade is, that instead of hurting, it will evidently improve the building outlook. We are finding fresh evidence of this on all sides, evidence that while people may fight shy of questionable stocks and bonds as safe investments and certain kinds of banking methods as being conducive to encourage heavy deposits for small interests, there is no loss of faith whatever in real estate and buildings as a safe and permanent investment.

Real estate men and dealers in building supplies all over the country are actively promoting these ideas and are setting forth in earnest to encourage building operations, both as a means of investment and for homes. The time is ripe for this, too, and with all the logical arguments that can be brought to bear in support of the idea of more extensive building, there should be an abundance of fruits as a reward

for efforts expended in this line. It is meet, too, that the brick manufacturers get into the game, for they might, each man in his own locality, help encourage these ideas of building, and, while about it, include therewith others pertaining to the importance of building better structures; in short, of building with brick and clay products more extensively, and less with the flimsy and unsatisfactory building materials that have been too freely used in the past because of being favored a little in the matter of price. So, while times are not so urgent in the brickyard, because of the weather, where there is time to spare it may well be employed in efforts to encourage more and better building, for, with these ideas promoted rationally and kept to the front in proper shape, the fruits of the present shake-down should be more building and better times ahead for brick manufacturers.

THE HOUSE ON THE SAND.

We were just beginning to think that the idea of ridiculously cheap houses made of concrete had had enough light turned on it to give everybody a clearer view, and that the general public even had at last come to realize that too much had been claimed for concrete, especially in the matter of cheapness and quality, but there comes to us through the courtesy of a friendly reader an editorial clipping from the Evening Journal of New York, which paints a glowing picture of what is termed Mr. Edison's one piece, one thousand dollar house, which, it is said, the famous inventor, Mr. Thomas A. Edison, is now working on. That is, he has been busy this winter making molds and machinery for making this house out of cement and sand. Quoting a letter said to have been received from Mr. Edison, the Evening Journal says: "To build this house for one thousand dollars it is essential to have it erected on sandy soils, as the material excavated for the cellar is all that is required to build the house, except, of course, the cement."

It might be said incidentally that in addition to being interested in promoting the sale of whatever machinery and moulds may be essential to this idea, Mr. Edison is also interested in cement production. However, Mr. Edison has done so much good for humanity with his numerous inventions, that it is not desired to speak disparagingly of him or his efforts. It is more than passing strange, however, that papers will print and people who know better will encourage the publicity of ideas of this kind, though they must know they are decidedly misleading. There is no question but what a house can be made of cement and sand, and some good ones have been so made, but the idea of going into sandy soils indiscriminately and taking sand from a building lot which is a mixture of sand and dirt, and making concrete out of it, is too ridiculous on its face to receive serious attention were it not that the idea is persistently brought forth. Any concrete man knows that the first essential to good concrete is clean, sharp sand. There are places in the world where a building site might be secured on a sandy lot where the sand is clean enough to make concrete, but it is so widely misleading as to be deplorable that any one should promote the idea of digging out a cellar on any sandy soil and making concrete from the soil to erect houses. Then, even should the sand be clean enough to answer this purpose, which is very seldom, a house of this kind, the house of this graphic word picture, would suggest a construction that would practically be as damp as a cellar and really unfit for habitation. This is a matter that has been gone over and threshed out time and time again, and as stated above, we thought the light had been turned on it until even the general public was well informed of the fact that it takes time and money and skilled work to get a good house out of concrete, and frequently the same time, work and money will get a better house out of brick.

The idea seemingly bobs up at this time in connection

with the promotion of the home building idea instead of the depositing of funds in savings banks, and in this there is formed a combination that might be called a bad rider on a good horse. Such papers as the Evening Journal, and for that matter the daily papers that give such news service to mankind, will find that they can do better by confining themselves to the idea of promoting the building spirit in a general sense, and leaving to those who make a specialty study of building materials the task of presenting the advantages of the different materials offered. Then there will be less chance for error. A big daily newspaper is not presumed to have in its employ an expert on technical matters merely for passing on things of this kind, and, anyway, the building idea can be better promoted and encouraged by leaving it free from riders of this kind. Let the man who intends to build look over the situation and select his own building material, being governed in the matter by his own good sense and advice of experts who are familiar with the different kinds of building material and their advantages.

Nobody could kick at that and every class of building material would benefit from more and better homes, and to build more and better homes makes better people generally. So, let us promote the building idea—and if we must put a rider on it, put a good one and not one that is misleading.

Wants a Business Motto.

Dear Friend Randall:

In working out our organization we seem to have overlooked a rather important factor of our company, and that is a business motto, and in talking over the matter with our officers, we thought it best to give the brick manufacturer and engineer an opportunity to make suggestions.

We therefore wish to offer a prize of \$20 to the one who will furnish us the best motto to be applied to an engineering company such as ours. The length of the motto must not be over twenty-five words, and we would prefer some standard quotation from a recognized author.

Will ask you to publish this letter, so that parties will write us direct. Any suggestion will be considered up to January 1st. Yours very truly,

LUCE ENGINEERING COMPANY,
Peter B. Gibson, Secretary and Treasurer.
St. Louis, Mo., Nov. 27, 1907.

Written for THE CLAY-WORKER.
CHRISTMAS AT WASHINGTON'S HOME.

Winter had spread his carpets on the yard, the field, the wood,
And dressed each shivering little shrub in ermine gown and hood.
The unborn snow man, and the unmade snow balls lingered late—
For children's busy little hands they were content to wait.

To orchestra of wind, the bare-armed trees played pantomime,
Watching for baby faces 'gainst the window pane, meantime.
The snow birds chirped for little hands with wealth of crumbs to give—
For youth delights to give to youth the privilege to live.

The house was large and roomy, the grounds of ample sweep,
The hearth was wide and generous, the fireplace was deep;
The dining-room was hospitable, seeming to invite
A brood of noisy, happy youngsters in, for "something nice."

The halls seemed made for frolicing, the stairs for little feet;
One room was for a nursery, where voices glad and sweet
Might float like music thro' the house, and drive away its care,
And poe'tize existence for the grown ones living there.

The mantel-piece was high and long, and many little stockings
might
Have hung up there for Santa Claus, on many a Christmas night—
Then, early in the morning, oh, what fun there would have been!
The father of his children, too, would have enjoyed the din.

But, never was a little face pressed 'gainst that window pane,
And never from that nursery floated a child's refrain;
And never any pitter-patter heard upon those stairs,
And never, in that dining-room, were any baby-chairs;

And never was a stocking hung! So, never Santa Claus
Came tumbling down that great old chimney with his pack, be-
cause—
Tho' Washington had wealth and friends, was great and true and
mild,
The "Father of his Country" never had a little child.
MARGARET ANDREWS OLDHAM.

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ESTABLISHED COMPANIES, as well as beginners, find our services profitable. We correct faults of manufacture and keep plants up-to-date. Engagements for special service, or by the year.

THE RICHARDSON-LOVEJOY
ENGINEERING CO.

[See page 681.]

WANTED, FOR SALE, ETC.

FOR SALE.

Little Wonder Brick Machine complete, with
tile dies, 4 inch -2 foot tables, wheelbarrows, etc.
A bargain. Good reason for selling. Address
E. M. COMBS,
121 cm Mechanicsville, Ill.

WANTED.

Position as superintendent of stiff mud brick
plant, capacity about 20,000 daily. Continuous
kilns preferred. Address
HARDWORKER,
121 c Care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on
Pages 666, 667 and 668.

200%

MORE

Radiating Service than any "Hot Air" Dryer made.

Simple of operation and construction.

Burns any kind of fuel.

Constantly under perfect control.

A new system of ties and a positive rail clamp
absolutely prevents spreading of the track.

Write for exhibit 2077.

The C. W. Raymond Co.,

Dayton, Ohio, U. S. A.



THE RAYMOND RADIATED HEAT DRYER.

Written for THE CLAY-WORKER.

EVIDENCE OF GOOD WORK.

WE ARE RECEIVING in newspaper clippings some evidence, every now and then, of good work being done along lines of practical methods of educating the public on the subject of the use of brick and other clay products. For example, the Los Angeles, Cal., Express gives quite a lot of space to a discussion of the question of brick paving, in which it is pointed out that the unsatisfactory results derived from the use of asphalt is inspiring the Board of Public Works there to use brick. The only objection that it seems could be offered in that locality, is that brick costs at that point a little more than asphalt. In rebuttal of this, however, it is pointed out that asphalt streets are expensive to repair and that the difference in cost of construction is soon made up by the saving in repair bills by the use of brick. After seeing the matter from this standpoint, the Board of Public Works saw fit to recommend vitrified brick paving, and we are satisfied that they will not have cause to regret this decision.

What we would like to see, is those who are interested in pushing brick products, getting in touch with their local papers so as to have the good qualities of brick, both as a paving material and a building material, properly put before the people. The editors of such papers, as a rule, are always looking for good stuff, something that is worth reading and contains ideas of value to the community, and there is no building material on which there is room to say more good things than brick and other clay products. The lumber people have a splendid material, but it does not compare with brick in any way. They have discovered the advantage of properly exploiting their product and explaining increased values through the medium of local papers, and if they find this pays, or rather bears good fruit without much cost, certainly clay people with the finest product offered should get even better results. And opportunities for saying things are always presenting themselves, opportunities for furnishing rational information of specific value, and sometimes others looking on from a distance can see these opportunities better than those who are near. There is an example of this among our recent clippings, in which a Louisville paper quotes from an international authority on "La Construction Moderne Paris." This writer in commenting on our terrific fire waste and our manner of constructing buildings, says:

"In the crowded city districts Americans should avoid granite, marble, sand or limestone for exterior work. These crumble and disintegrate under fire. Brick and terra cotta constitute far preferable materials, where surrounding fire is so imminent. The framework, the skeleton, should be of steel, well coated with cement as protection against rust, and covered with brick or heavy tile as a protection against fire; the floors and partitions should also be of brick or hollow fireproofing tile. Or, if there is any special advantage in it, reinforced concrete construction may be used, but it, in turn, similarly to the steel, should be fully protected with brick or hollow tile.

"To claim that concrete in itself is fireproof is folly. Particularly the concrete generally made in the United States, which is in many respects inferior to the French, largely on account of the difference in labor conditions. As a matter of fact, in the United States actual collapses of reinforced concrete buildings, even when not exposed to fire, are not unusual.

"Wood should be used most sparingly, even in the decoration of buildings. Marble and plaster and paint are much more effective and less dangerous. Windows should be glazed with wire glass. Elevators and stairways should be inclosed and the principal stairway should be so planned as

to constitute in itself the ordinary and natural escape from a building in case of panic or real danger.

"The greatest intelligence should be brought to bear in designing a building so that nothing but incombustible material is used and so combined as to minimize the fire damage, remembering that a building that is only fireproof in part does not merit the appellation at all. As a chain is only as strong as its weakest link, so is a building only as fireproof as is its most vulnerable part."

Clayworkers should make it a point to look for things of this kind at home and make efforts to put them before the people themselves, instead of waiting to be incidentally informed now and then by others looking on from a distance. There is an encouraging amount of work already being done along this line, and what we want to see is more of it. Let the good work go on, keep it always in mind, and the results should not merely be good for the brick business but for the welfare of the country itself.

Written for THE CLAY-WORKER.

AN ACKNOWLEDGED AUTHORITY PREDICTS A BOOM IN BUILDING.

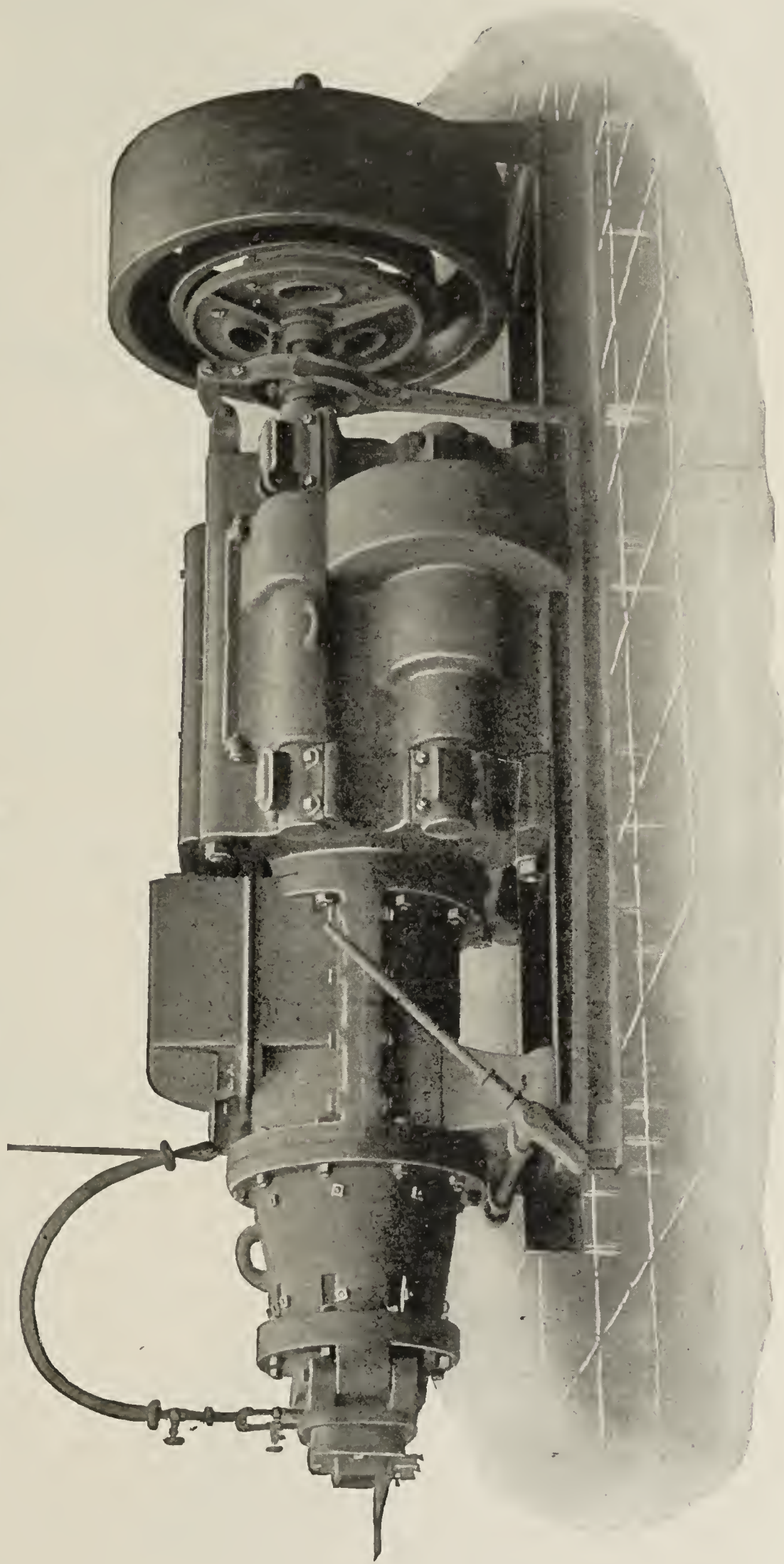
IN AN INTERVIEW just given by Architect Fitzpatrick, of Washington, the executive officer of the Building Inspectors' Society, an organization that keeps in closest touch with building matters all over the country, that authority asserts that the present is a most opportune time for people to build. The money stringency has developed some peculiar effects upon the building situation. Just prior to the so-called panic everything was at the highest point, not only materials, but labor. Wages were at the highest point ever reached and the amount of work done in a day was the lowest ever given. Labor was exceedingly independent, and the result was that buildings cost anywhere from 20 per cent. to 60 per cent. more than they did a very few years ago. Tightening of money has scared people generally; manufacturers are anxious to get rid of their stock and get some money in and are making low prices on materials, and while wages have not been reduced to any great extent men are desirous of "holding their jobs" and are rendering immeasurably better service. It is only a question of a little time when conditions will have eased up and labor and materials will be at the same old high-priced standard.

Unmistakably the people have had a stiff enough dose of stock depreciation and have seen the folly of trying to make big returns by stock gambling. More and more will it be brought home to them that real estate and building constitute infinitely safer investments, and it will not be long before we will have boom times again in building. The men who are far-sighted enough and have acquired wisdom are the ones who will close up contracts and "cinch" their building operations and get started at once. Those who want to wait and see, and postpone building contemplated structures for a year or so, will pay the penalty in a greatly increased enforced expenditure.

To build now would be wise, and to build well at all times is wiser still. The safest and most reasonable investment in building is a structure that can not be destroyed or even damaged materially by fire—a thoroughly fireproof building. And a thoroughly fireproof building is one whose frame is of steel, whose outer walls are of brick and terra cotta, whose floors and partitions are of brick or hollow tile, or concrete protected with tile, whose several stories are separated and constitute distinct units, whose windows, protected against external attack, keep fire out, and whose entire construction is thoroughly and sensibly executed. To all sensible investors I would say, "Build now, and build well!"

The man who is spending all he makes, is a slave, and always will be.

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

E. M. FREESE & CO., Galion, Ohio.

(Mention The Clay-Worker.)

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF NORTHERN OHIO.



MOST OF THE LOCAL DEALERS as well as the local manufacturers are feeling very optimistic about the prospects for business next year. The season which has just closed has not been as successful as many of its predecessors so far as the building brick business has been concerned. Building operations have been at a very low level in Toledo because of local reasons, and the brick dealers and manufacturers have not had a business since last spring which has carried any large amount of encouragement with it. Their trade has been largely from out of the city, but there are now some promises of nice business for next year.

Already there are in sight for the early operations of spring a half dozen enormous buildings, while a number of lesser ones are also in sight. The new People's Savings Bank building, costing \$130,000, the \$150,000 Y. W. C. A. building, the Newsboys' building, the new ten-story building for Teidtke Bros., and a number of others are already past the preliminary stages, and it would seem that there is no question but what next year must be far ahead of this from the standpoint of building operations.

The local paving brick men have fared far differently this season, and the year has been one of great prosperity for them. In Toledo the street paving has been a record breaker. There never was as much paving laid in any one year as during the past, while the Summit Avenue job of brick paving, which is still uncompleted, is the largest the city ever contracted for. Other cities throughout the contiguous territory tell a similar tale as to the immense amount of brick paving contracted for the past year, and as a large portion of this material comes from Toledo plants, the business generally along this line has been extremely lucrative.

Other clayworking institutions have been quite prosperous. The large amount of sewerage work carried on by Ohio municipalities the past summer has made a strong market for vitrified tile of all kinds, which, taken with the general healthy condition of the trade from other quarters, has made the business good throughout. The same condition may be said to exist among all the clayworking industries of the city at this time, and there is no cause for alarm as to the business of next season, so far as indicated by present prospects.

James Fox, vice-president of the Collingwood Brick Co., and a resident of Toledo for forty years, recently died at his home in this city, at the age of 60 years. Death came as the result of an injury brought about by a fall. His wife died last July. Six children survive, all of whom reside in Toledo.

The brickmaking season having closed at the Toledo workhouse, it is said that the inmates may be required to while away the winter months in the manufacture of cement blocks.

The Logan Brick Manufacturing Co. recently secured a judgment of \$1,000 against the village of Gibsonburg, Ohio. The verdict was a compromise and settlement of pending litigation.

The Hanover Red Pressed Brick Co. was recently incorporated with a capital stock of \$130,000. The new concern will take over the property of the Hanover Pressed Brick Co., consisting of a large brick plant at Hanover, Licking County, with a daily output of about 30,000 brick. The \$100,000 increase in capital will be used to erect an additional plant at Newark, Ohio, for the making of soft mud brick, of which it is expected to manufacture 60,000 daily. The offices of the company will be removed from Columbus to Newark.

C. L. Allen, of Marion, Ohio, was recently awarded a hand-

some sewer construction contract at Girard, Ohio. The work is for the main or trunk sewer leading from the disposal works to Liberty Street, the price named being \$19,329.30.

T. O. D.

Written for THE CLAY-WORKER.

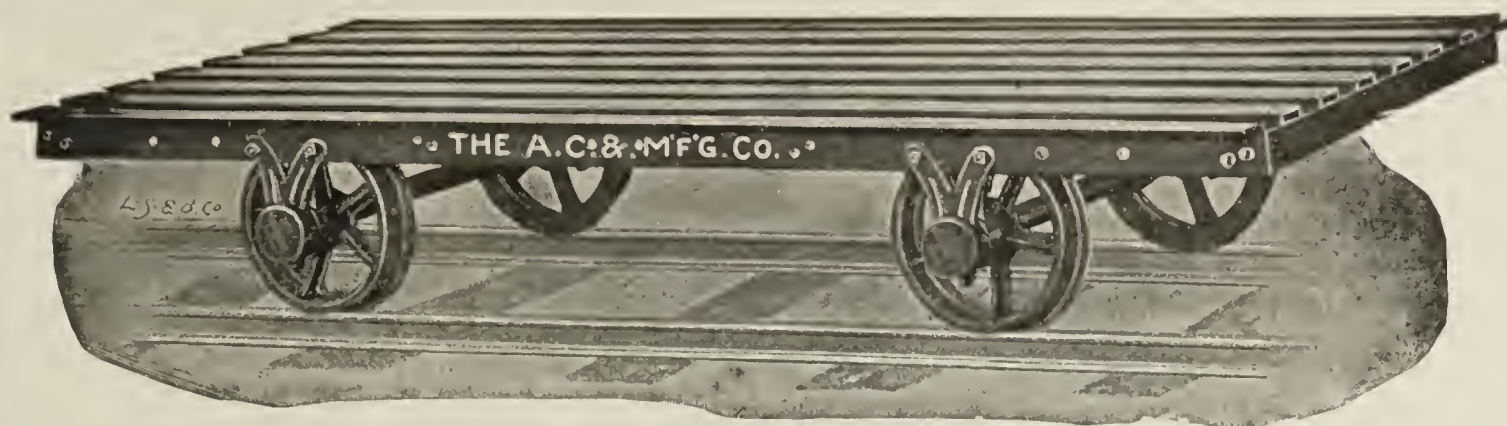
TENANTS TO BE CONSIDERED.

THE ASSOCIATED Building Departments of our principal cities have taken up the cudgels in behalf of the tenants of our big so-called fireproof buildings. The society's tireless executive officer, Architect Fitzpatrick, of Washington, in a recent article widely used by the technical press says that: After every conflagration or major fire it is noticed that the owners of the best built buildings, the so-called fireproof ones, come out of the scorching with a loss of from five per cent. to eighty per cent. of their property, but the tenants' property is, in almost every case, totally annihilated. Yet the tenant has occupied that building and carried the minimum of insurance in the fond hope that such occupancy of a "fireproof" building assured him immunity from damage by fire. These losses of his are in the nature of a revelation. Most of the trouble comes from a species of unintentional conspiracy 'twixt grossly inadequate building regulations and their lax enforcement, carelessness or lack of sufficient ability or intelligence on the part of architects, and the equally as reprehensible desire of our people to build only as well as they are actually forced to (with foolish disregard for their own best interests). A conspiracy, innocent or criminal, whichever you wish, that has led to a misinterpretation or misapplication of the term "fireproof." Generally, an owner thinks that he has done all that is requisite when he has made the structural parts of his building invulnerable. If he builds his frame of steel, thoroughly protected with fireproofing tile and the outer walls of brick and terra cotta, he thinks, and generally speaking the laws affirm, that he has done all that is necessary, and as far as the structure itself is concerned he has. He has also begun to give his tenants some safety. He has made a good start, but exceedingly few such owners complete the job in the same way. To make that building absolutely fireproof, he must also protect the external openings; he must close off his stair and elevator wells; he must avoid the use of wood in finish and decoration. It is little short of criminal to start out with good structural parts and then see how combustible and flimsy everything else about a building can be made, and alas, thousands upon thousands of our newest buildings are just in that condition—a delusion and a snare to their tenants.

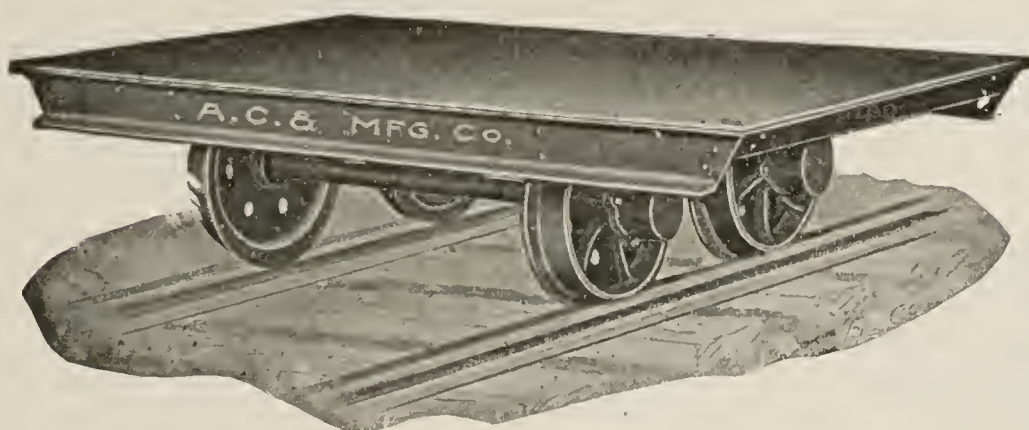
A tenant should inquire and be satisfied as to just how "fireproof" a building is before he goes into it. If it is only fireproof enough to assure the impossibility of total loss to the owner and no regard has been paid to the tenants' protection, then the latter is a fool for going into it. And a building well built in all its parts is as safe thirty stories high, as it is three or five or ten. There has lately been some criticism of the tall skyscrapers, such as the Singer Tower in New York. Built as that one is, a tenant would be as secure in a sixtieth story as he is in the sixth of most of the buildings that have been built. Our cities should legislate a little on behalf of the tenant as well as for the owner.

THE BANGOR COMPANY MAKES RECORD PRODUCTION.

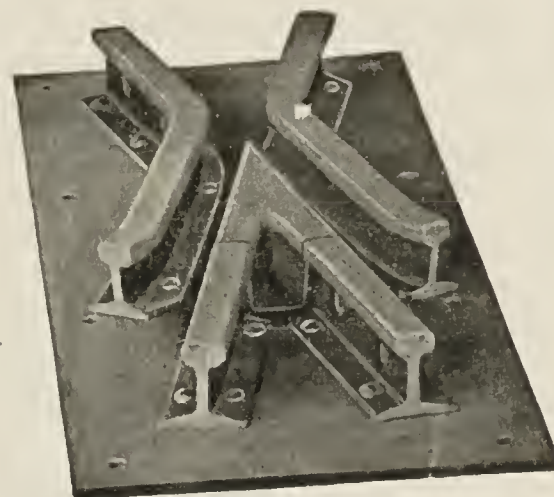
The Bangor Brick Company, Bangor, Me., has this season manufactured 5,000,000 bricks, the largest product in its history, and of that number only 35,000 were spoiled by rain, whereas a loss of 500,000 is not uncommon. The production in 1906 was 3,500,000 bricks. In the last ten years the price of bricks has advanced greatly, the quality that sold for \$4.75 per thousand in 1897 being now quoted at \$7 to \$8, while face bricks have advanced in the same time from \$6 to \$12 per thousand.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



No. 1025. Steel Frog.

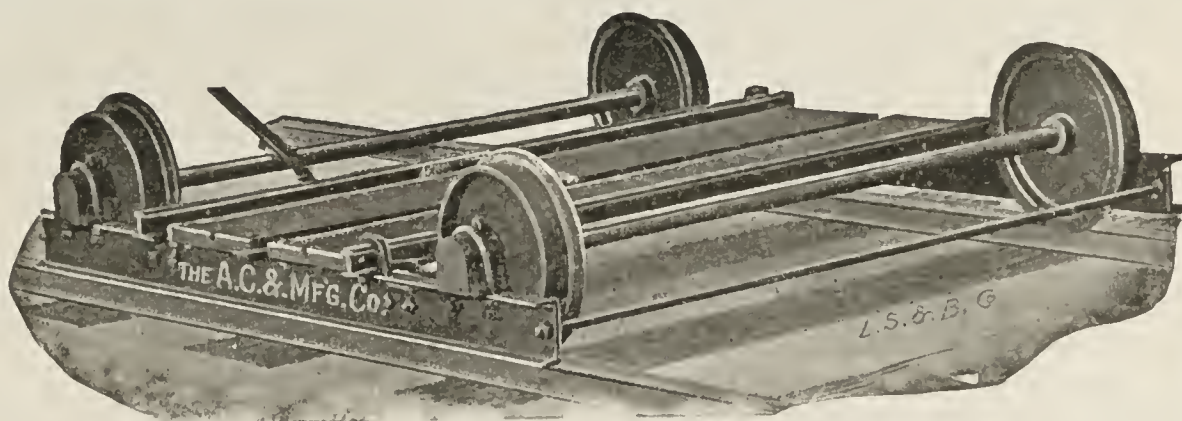
The Atlas Car & Mfg. Co.,

CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc.
Also Transfer Cars, Turntables, Clay and Dump Cars.



No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for the CLAY-WORKER.

THE SOUVENIR SHOWER.

The Colonel Moralizes on the Fads and Frivolities of Novelty Advertising.

WHEN THE SOUVENIR shower comes, bringing with it calendars, catalogs, memorandum books, pocket books, card cases, unique novelties of various kinds, and freakish foolishness that isn't kind at all, the editorial writer, the office cat, and billy goat, have intermittent periods of feasting, frolics, and meditating. There are some things, like some people, of which we wonder why they are and what excuses they have for existing anyway. There are other things that give us thrills of pleasure, some that give us pangs of longing for quiet streams and the good old summer time, and some that make us wonder how much money is squandered annually about Christmas time foolishly. Good calendars are not only good things and pleasant calendars pleasant things, but calendars of some kind are a necessity, and as long as there are plenty of the pleasant and attractive kinds, the poor ones and the freaks don't get much of an inning except with the billy goat. If there is one thing that the souvenir shower serves to remind us of more than anything else, it is of the wide variety in ideas and tastes of humanity and the strange forms that our fancy takes at times.



The good souvenirs are practically always appreciated and treasured, and generally it is better to either send out a good one or none at all. A good letter would be better than a poor souvenir, and costs less money. In fact, the item of cost doesn't necessarily furnish a correct measure to the value of a souvenir in the hands of the recipient. Take calendars, for example, and some of the plainer and less expensive ones are the most likely to be preserved, either because of their simple neatness or because of conspicuous figures that may be seen from any part of the room. Some of the most artistic ones get so damaged in transit through the mails that it raises the question of how many good intentions go wrong. Some that get through safe are so highly treasured that they are carried off for den or private room use instead of being hung in the office. Some have one thing happen to them and some another, and then, after all, after we get through trying to round up and put in concrete form our own ideas of what is best and what is not worth while, we are confronted with the fact that different people who receive calendars have different ideas and tastes just the same as the different ones who select them and send them out. So, what fails to please one may please some one else, and the things that the billy goat gets at one place he may go hungry for at another. This souvenir shower, which seems season-

able at this time of year, is a source of some pleasure, though that is marred somewhat by the reflection that it represents a wanton waste that, in the aggregate, is enormous.

Written for the CLAY-WORKER.

THE NATION'S EXTRAVAGANCE.

THE GOVERNORS of the several States have been invited by President Roosevelt to meet in Washington, in May, to discuss the Nation's wastes and extravagances, her criminal prodigality with what have seemed to be inexhaustible natural resources that are fast disappearing, and to devise means of lessening this appalling destruction. This is a splendid and most timely move on the part of the President.

While these gentlemen are assembled here, it is planned by Architect Fitzpatrick, the executive of the International Society of Building Commissioners, to submit for their consideration some facts and figures anent the fire waste that it is believed will impel them to take the initiative in proposing legislation in their several States, looking to the betterment of building construction and the reduction of the fire tax. That authority points out that of all our wastefulness, fire is one of the very costliest and the only one in which human lives are also sacrificed. Over 6,000 lives have been destroyed by fire in a year's time. The tax in actual combustion of buildings, in the maintenance of fire departments, and in premiums to insurance companies in the hope of recouping some of the damage, amounts to over half a billion dollars a year, a sum that is just barely equalled by the cost of new buildings erected in our most prosperous year. No other nation on earth permits of any such waste. Fire has eaten up in twenty years' time over \$3,500,000,000 worth of property—a sum that exceeds the highest point ever reached by the United States debt!

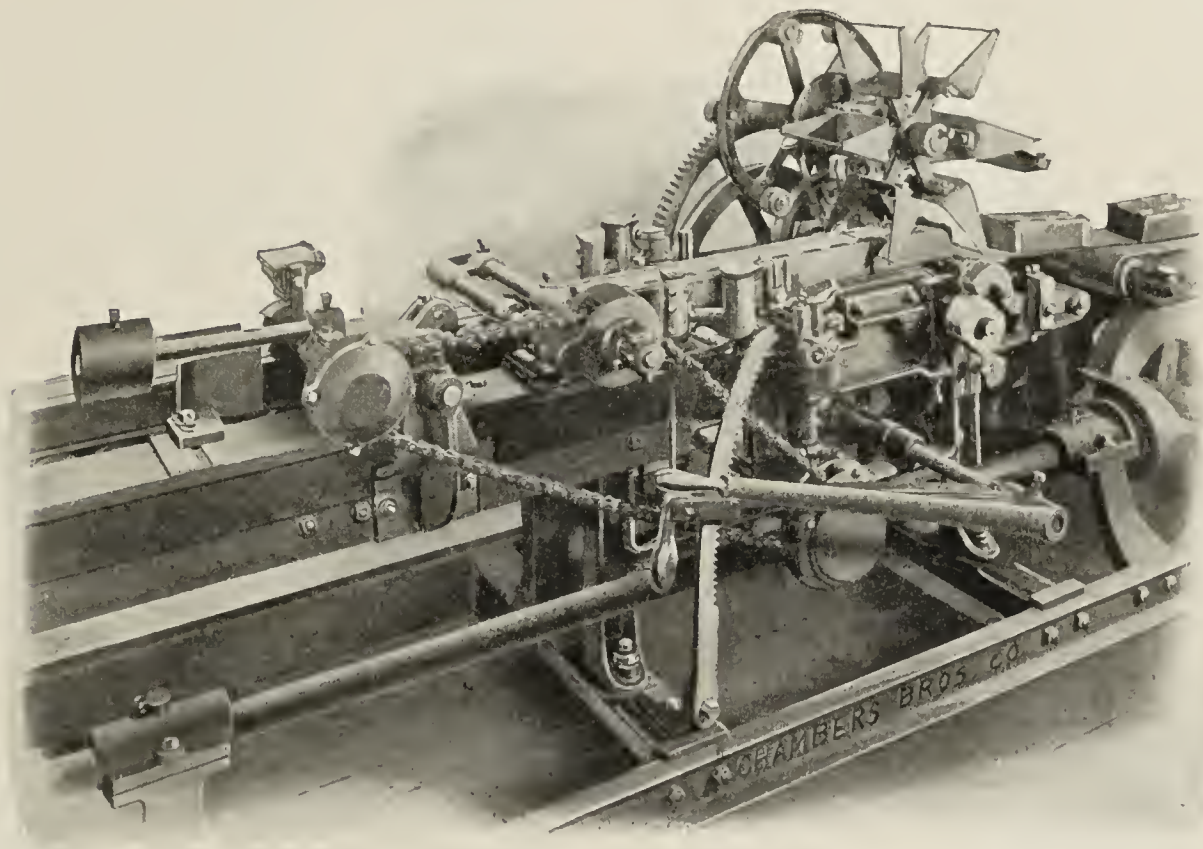
In Europe fires seldom extend beyond the buildings in which they originate; in this country, whole city blocks of buildings and even entire sections of cities are wiped out in one conflagration. Boston will average \$1,500,000 in fires a year, while the average of five European cities of equal size is but a trifle over \$150,000. Our fire tax here, the cost of combustion only, exclusive of the cost of fire departments, etc., is over \$2.00 per capita; in Europe it is less than \$.33. In forty-three cities of Europe, there are but .86 fires per thousand people; in the United States there are 4.05 per thousand. Here in Washington, a city of 300,000 people, there were 846 fires last year, with a loss of \$288,744, and the cost of maintaining its most excellent fire department was \$433,920. And Washington stands well toward the head of the list of American cities for low fire losses and economical management of department. In Berlin, during the same period, a city of 2,100,000 people, there were 2,099 fires, but involving a loss of only \$169,205 and its fire department cost \$312,000. Rome, a city of 500,000 people, had a loss of but \$56,000, and its fire department cost \$50,000. Figures and comparisons that may well make the governors stop and think upon the wastefulness of their people.

Mr. Fitzpatrick will also point out to them the cure that is proposed. He maintains that if adequate legislation is enacted, compelling that all new buildings be at least moderately well-built, and that the old ones have such improvements made in them, involving little cost, but rendering them less vulnerable to fire, this terrific tax will be reduced more than one-half inside of five years, and that we will be able to compare favorably with European cities within fifteen years. The one and only thing to do now, since we have insisted for so long in building shoddily, is to add no more firetraps and to replace them, as fast as they are destroyed, with modern, well-built structures.

PAVING BRICK MACHINERY.



Round Corner Pavers Without Repressing.



The Round Corner Cutter Greatly Improved.

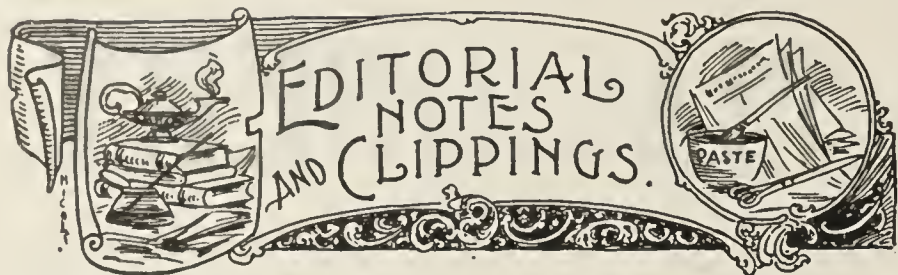
Ribbed brick with grooves for cement produced by the new Automatic Indenting Cutter.

CHAMBERS BROTHERS COMPANY

Fifty-Second and Media Streets, Philadelphia, Pa., U. S. A.

59 West Jackson Boulevard, Chicago.

SEE AD ON PAGE 587.



Landers, Wyoming, wants a pressed brick plant.

The plant of the Ashton Fire Brick and Tile Company at Salt Lake City, Utah, has been purchased by the Western Clay Products Company.

Fire which started in the kiln shed of a new kiln at the plant of the Brush Bros. brick plant caused a \$1,000 loss before the flames could be controlled.

The Columbus Brick and Terra Cotta Company, Columbus, Ohio, recently booked an order for the face brick to be used in the buildings at the new army post at Columbus.

Dr. Bussen and Mr. A. Bowser have purchased a tract of land at Richardson, N. D., on which they will erect a brick-making plant. The clay has been tested and proved of excellent quality.

The Devonshire Brick and Ceramic Company, at Zanesville, Ohio, has made a change in its product, and is now manufacturing building brick instead of paving blocks. Business with this firm is very satisfactory.

Mr. John Sullivan, of Lansdowne, Pa., has just installed a Martin latest improved style A steam power brick machine, in combination with pug mill, etc., furnished by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The Western Clay Products Company has filed articles of incorporation at Salt Lake City, Utah. The officers are: President, George Curley; vice president, Andrew A. Curley; treasurer, Wm. S. Romney, and secretary, Alice Curley. Capital stock is \$250,000.

The Mohawk Brick and Supply Company, of Utica, N. Y., has certified to the Secretary of State that the amount of its capital stock has been increased from \$15,000 to \$25,000. The directors of the company include Thomas F. Conboy, W. N. Kernan, George P. French and J. S. Kernan.

The Bickford Fire Brick Company purchased the big plant of the Curwensville Fire Brick Company at Curwensville, Pa. The cash consideration was \$170,000. The plant will be immediately put in shape for operation, and will probably be in full operation again by the first of the year. The plant has a daily capacity of 50,000 brick.

Articles of incorporation have been filed for the Fort Pierre Brick Company, of Fort Pierre, with a capital of \$50,000. The incorporators are Charles J. Harland, Willis C. Kuester and Edward T. Harland. They intend to manufacture brick and terra cotta, using the gumbo shale in the hills at Fort Pierre for their raw material and the tests made show that the material is of the best for that purpose.

The plant of the Drury Brick and Construction Company, at York, Pa., was damaged to the extent of \$12,000 by fire which destroyed the main building, containing the machinery, which was ruined. The loss is covered by insurance, and the plant will be rebuilt at once. The company has had a very busy season, and but few brick are on hand, so the building of the new works will be rushed as rapidly as possible.

The plant of the Gay Head Fire Brick Company at Somerset, Mass., is to be pulled down and an entirely new and modern plant erected instead, suitable for the manufacture of all kinds of brick and various shapes required by the trade. When completed, the plant will be one of the most thoroughly equipped fire brick plants in the East. The company has a large stock of fire brick on hand to supply their customers while the new plant is being built.

The works of the Spencer Brick Company, at Ithaca, N. Y., have been transferred to the Tioga Brick Company, and the latter company will be incorporated for \$30,000. A new modern steam brick dryer is in course of construction and a system of conveying brick from machine to dryer and from dryer to kiln will be installed. Everything will be in readiness for work in the spring. Dark red building brick and repress brick and drain tile will be the specialties. The officers of the Tioga Brick Company are: George W. Cook, president and treasurer; Samuel Howard, vice president;

Charles H. Chapman, secretary, and Wilson Toliver, Elisha Johnston, C. H. Harris and John Smith Williams, directors.

H. R. Heinicke is making a number of improvements at his plant at Newcomerstown, Ohio. He makes a specialty of chimney brick.

H. H. Petersen has made a number of improvements in his plant at Holtville, Cal., putting in machinery that will enable him to turn out 25,000 brick per day.

Emery T. Graham, superintendent of the Tempest Brick Company, at Gallatin, Pa., was seriously injured by being hit on the head by a belt which broke in two while he was trying to adjust it.

The Delaware Clay Company, of Delaware, Ohio, recently booked orders for over 100,000 tons of material in one week; rather a good showing just now when many plants are experiencing a slump.

M. James B. Oberly, of Wilmington, Del., is, at the present time, installing the Martin patented system for handling and drying brick on his plant of 24,000 daily capacity, and which is being installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

John K. Bickel, for a number of years a brick manufacturer at Nebraska City, Neb., died November 18th, after an illness extending over several years. He leaves a wife, two daughters and one son, Wm. J. Bickel, who is in the brick-making business at Mill Center, Neb.

George Drew, formerly of Chicago, Ill., has moved to Columbus, Ga., where he will take charge of the manufacturing department of the Muscogee Brick and Terra Cotta Company's works, one of the best equipped and up-to-date plants in the South, with a capacity of over 30,000 brick a day.

Additional kilns are being erected by the Zanesville, Ohio, branch of the Hydraulic Press Brick Company, at its Ironspot plant. The old stock shed is to be razed at once and a part of the ground will be used for increased kiln capacity. These will be thirty-one feet in diameter and will be of the down draft pattern.

The West End Brick Company, Allentown, Pa., are, at the present time, installing the Martin patented rack pipe steam brick dryer system of 18,000 daily capacity, including the Martin automatic cable delivery system, this being installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

W. A. Hancock, general manager of the South River Brick Company, Atlanta, Ga., reports that their plant, which was destroyed by fire last March, has been rebuilt and is now ready for operation, and will be one of the best plants in that section. Mr. Hancock is looking forward to meeting with the "faithful" at Columbus in February.

The Farr Brick Company, Cleveland, Ohio, who have had the Martin patented dryers in operation on their plant for some time, have now placed contracts with the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for an additional Martin of 30,000 daily capacity. This brings their daily capacity up to 60,000 brick.

The Tyro Vitrified Brick Company, Tyro, Kans., advise us that they are in the market for 2,000 feet of 56-pound second-hand rails, together with spikes and splices, etc., necessary to lay a switch; also 1,200 feet of second-hand 12-pound rails. They will be glad to correspond with anyone who can furnish what is wanted.

The plant of the Baltimore Vitrified Clay Company at Westport, Md., was almost wholly destroyed by fire Dec. 6. The flames originated in the dryer and then spread to the other parts of the plant. Only the office and barn were saved. The loss, which is estimated at \$30,000, is full covered by insurance. During the past summer the plant had been overhauled and new machinery installed. The plant will be rebuilt at once.

H. B. Camp, one of the pioneers in the clay industry of Akron, Ohio, died November 21, as a result of heart failure. Mr. Camp organized the H. B. Camp Company in 1886 for the manufacture of fireproofing, and erected a number of large plants, all of which were operated successfully, and sold to the National Fireproofing Company in 1903, in which company Mr. Camp had an interest. He was also president of the Camp Conduit Company, the Akron Fireproof Company, and was interested in a number of other local manufacturing concerns. Mr. Camp is survived by his wife, two daughters

(Continued on page 664.)

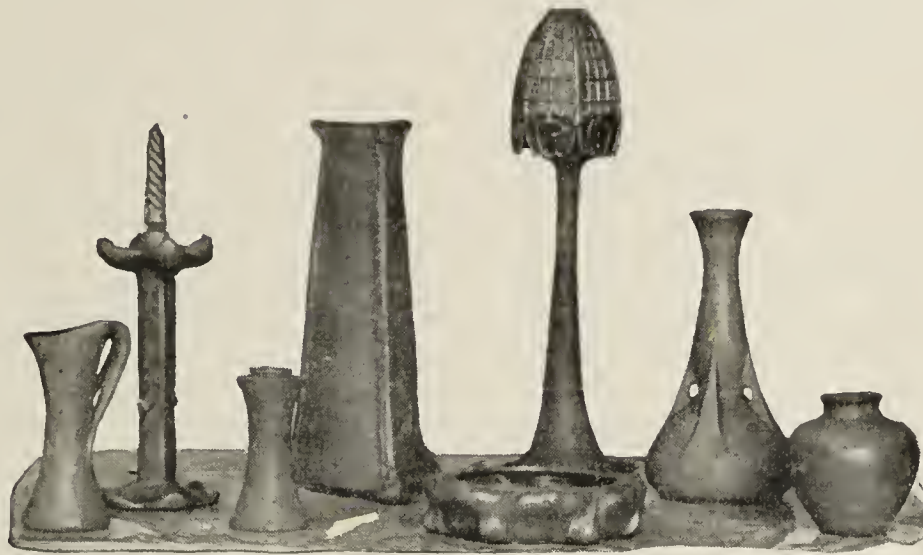
TECO POTTERY

is a very appropriate Christmas Gift.

Order direct from us or call on our representative in your city.



294
9-in. high, \$6.00.



283
9-in. high, \$5.00.



297
5-in. high, \$6.00.

All genuine Teco bears trade-mark on bottom of pieces, and is on sale in only the best store in each city.



289
7-in. high, \$4.00.



271
7-in. high, \$10.00.



Trade mark.



O. S. M.
5 pieces, \$10.00.

Our booklet, together with list of representatives, will be mailed upon request.

GATES POTTERIES,

653 Chamber of Commerce, Chicago.

EDITORIAL NOTES AND CLIPPINGS—Continued.

and two sons, Louis W. and Henry H., both of whom were engaged with their father in business.

Fire, which started from an overheated kiln at the brickyard of Edward Schusler, Buffalo, N. Y., caused a \$500 loss, which is covered by insurance.

The Kirkwood, Ohio, Pottery Company has been incorporated with \$15,000, by A. P. Clark, J. S. Miller, W. S. Myers, W. E. Worstan and C. S. Myers.

The Mount Olive Brick and Tile Company has been organized at Mount Olive, Ill., with \$5,000 capital stock. The incorporators are C. Welder, T. H. Koch and C. Clavin.

R. A. Brown, a well-known brick manufacturer of Concord, N. C., died at his home in that city recently, after a long illness with cancer. He leaves a wife and four children.

One of the barns of the Simons Brick Company, Los Angeles, Cal., was burned early this month, causing a loss of about \$1,000. The fire is believed to have been of incendiary origin.

The Queen Brick and Lime Company, of Seattle, Wash., has been incorporated with \$75,000 capital stock. The incorporators are C. B. Lazier, L. M. Presnall, H. C. Applegate and L. S. Treen.

Mr. George W. Washburn, Catskill, N. Y., has placed his order with the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., for two latest improved and all steel Martin style P steam power brick machines, in combination with all iron pug mills, etc.

In a recent letter, I. R. Lamport, superintendent of the Guthrie Mountain Portland Cement Company, Mapleton, Kans., writes: "I have always been a reader of the CLAY-WORKER, and, in fact, the other clay journals, but prefer the CLAY-WORKER to any of the others, in spite of the fact that it costs twice as much."

The Red Wing Sewer Pipe Company, of Red Wing, Minn., has secured an option on the present plant of the Fort Dodge Brick and Tile Company at a price of \$80,000. This company has several options on clay beds in that vicinity, but the option above referred to is the first on any of the plants in operation in that vicinity.

A receiver has been appointed for the Zanesville, Ohio, Tile Company, upon the application of the secretary of the company, Harry L. Moar, of Columbus. L. E. Dodd was named receiver. The company is the successor of the J. B. Owens Pottery Company, and the strange feature of its embarrassment is that its liabilities are but \$77,000, while its assets are \$286,500. The trouble is due to the unavailability of assets. About forty people are employed by the company and the receiver expects to continue operations.

The Montague City Aluminum, Carbon and Brick Company was organized recently with a capital of \$150,000 to produce aluminum from the clay beds at Montague City, Mass., and make brick and carbons for electrical purposes. The clay is said to be very rich in aluminum and to yield at the rate of 25 per cent. The officers are: President, C. P. Wise; vice president, W. C. Davis, of Readsboro, Vt.; secretary and treasurer, W. H. P. Gilmore; directors, C. P. Wise, W. C. Davis, W. H. P. Gilmore, Edward Webster and one more to be chosen.

The Cook Brick and Tile Company has been incorporated and has taken over the plant of the East Ithaca Red Brick and Tile Company at Ithaca, N. Y. A number of improvements will be made in the plant at once, including the installation of a steam dryer and a cable conveyor to carry the brick from the machine to dryer and thence to kiln. The officers of the East Ithaca Company are George W. Cook, president; N. Dennis, secretary and treasurer; Samuel Howard, vice president, and Charles H. Chapman and L. G. Cook, directors. The plant will be run the year through hereafter, instead of just during the summer months.

The Plymouth Clay Products Co., Ft. Dodge, Iowa, started its one press sewer pipe plant with fifty employes, and will operate it during the winter months, storing all stock ready for spring business. The clay will be secured under a strata of gypsum rock sixty feet below the surface, and the bed is twenty-seven feet thick. It is of unusual quality and has been thoroughly tested for sewer pipe and pottery products. There is an inexhaustible supply of it and the plant has been so constructed that another plant of equal size may be added next summer if necessary. Since the burning of the Western Stoneware Company plant, two years ago, there have been

rumors of another pottery plant in conjunction with this new plant just started, as it is well known that the clay is suitable for such products.

The Fultonham Brick Company, Axline, Ohio, sustained a small loss recently by the burning of a storehouse in which oil and other inflammable materials were stored.

All plants of the Illinois Brick Company, Chicago, Ill., are closed and the brick now being so'd is from surplus production. While sales have fallen off somewhat, prices are being well maintained at \$5.50 and \$6.00 per thousand.

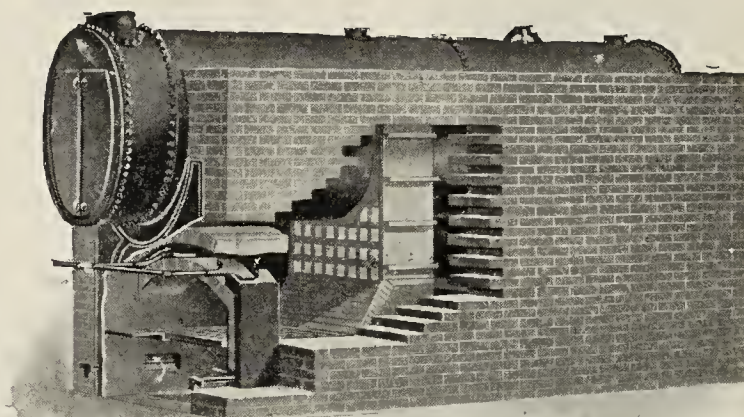
The O'Kelly Brick Company, of Ashland, Ky., have placed contracts with the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., for the erection of a Martin 30,000 daily capacity patented rack pipe system dryer, complete, including automatic cable delivery system.

BUILDING COLLAPSES IN JEFFERSON CITY, MO.

Four-Story Concrete Factory Structure Falls Under Machinery's Weight.

A four-story factory building at Jefferson City, Mo., only completed a few days ago, and which was designed for a large broom factory, collapsed early this morning, one block west of the penitentiary. The Central Broom Company, a firm operating a plant in the penitentiary, and intending to use this factory for a large one on the outside, had been moving its stock into the building the last few days. Some fifteen carloads of machinery, broom corn and other material was in the building, and about forty men had been employed.

Shortly after midnight one of the side walls, 160 feet long, and an end wall, 64 feet in length, fell, carrying the roof along. The structure was unoccupied at the time. The building was constructed of concrete, and is a total wreck, the loss being placed at \$30,000. There is much difference of opinion as to what caused the walls to collapse.—St. Louis Globe-Democrat.



HARRIS SMOKELESS FURNACE—Patented.

HIGHLY RECOMMENDED.

Established in 1886.

MILLEDGEVILLE BRICK WORKS.

J. W. McMILLEN, PROP.

Manufacturer of

BUILDING AND PRESSED BRICK, PLAIN AND ORNAMENTAL.

Dr. J. B. Harris, Nashville, Tenn.:

December 6, 1907.

Dear Sir—The installation of your furnace has proven a SUCCESS in every detail, I would not be without it for FIVE TIMES the COST. We use coal, your furnace being a COMPLETE and EFFECTUAL cure for the smoke nuisance which was so objectional that the dryer hands could not stand it. We have tried the furnace by opening the damper in the smoke-stack and closing dryer tunnel damper. There was no smoke from top of stack.

The draft in furnace is perfect when using the stack or using dryer fan.

With many kindly wishes

I am yours truly,
J. W. McMILLAN.

Write for full particulars and ready references.

J. B. HARRIS, M. D.

921 Fatherland Street.

Nashville, Tenn.

Written for the CLAY-WORKER.

BALTIMORE BRICK YARDS.



THE BALTIMORE Brick Company reports business as particularly quiet. This has not been a good year for the brick manufacturers here.

Mr. Busey explained that they were making changes in their seventeen plants, cutting down the cost and erecting up-to-date kilns, and had spent \$50,000 in the betterment of their plants. Meanwhile, they are supplying millions of brick for the new sewerage system in this city.

The Baltimore Vitrified Clay Company has removed to Baltimore and South streets. Mr. Bartgis, formerly president of the company, has gone back to his old line of business, that of printing, and has been succeeded by Mr. Hall.

They have had a good year, and have recently installed a new machine for making vitrified blocks. They are supplying about 500,000 brick for the sewers of this city. The management of the company has also undergone a change, Mr. Joseph R. Wilson being the present manager.

The Champion Brick Company has refused many orders, owing to the demand for brick, not in Baltimore particularly, but in other cities. They shipped 20,000,000 brick to the Annapolis Naval Academy. They were shipping brick to Norcross, New York, and, after the payment of \$5.00 freight, received more money than they could have realized in Baltimore. Brick here were selling for \$5.50 that were bringing \$13.00 in New York and Philadelphia.

The stringency of the money market and a fear of his fellowmen prevents the standard price of brick here. The former prevented the completion of many contemplated build-

ings, and the latter caused the loss of courage to name a price and stick to it.

Gloninger & Co., Builders' Exchange, report a dull season, with little encouragement for next season. Burns & Russell, American building, also report a dull season.

Mr. Marchant, of the Potee Brick Company, continues or corroborates the inertia in the brick business, deplors the low cost of brick, and wonders whether pulling up stakes and moving north would help matters any.

The Hydraulic Pressed Brick Company, through its sales manager in Baltimore, Mr. Alfred Tyler, reports that during the past year they have furnished most of the large contracts for face brick made in that city, and calls attention to the following: Y. M. C. A. building, J. E. Sperry, architect, 450,000 grays; St. Joseph's House of Industry, Tormey & Leach, architects, 200,000 iron spots; Hebrew Hospital, Louis Levi, architect, 200,000 white mottled; Ready School, J. E. Sperry, architect, 150,000 Colonial.

The State Bureau of Statistics and Information has finished compiling the figures showing the number of buildings of all kinds in Baltimore, the information having been collected through the police department during the past summer. The figures show that there are 114,165 houses in the city, 6,349 more than when the last census was taken in 1904. This is not only a gratifying increase, but when it is taken into consideration that the character of the building is very much better than ever before, the progress made by Baltimore may be well understood.

M. E. LOCKINGTON.

Mr. Wm. Kelley, of the Frankford Brick Works, Philadelphia, Pa., has just installed in his plant the Martin improved style A steam power brick machine, in combination with horizontal pug mill, etc., which are being installed by the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa.

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THE FOLLY OF FIRE.

AN APPEAL WAS recently made to the mayor of every city in the country by the International Society of Building Commissioners, urging the better construction of buildings and more strenuous steps toward fire prevention. Architect F. W. Fitzpatrick, the executive officer of the society, in a recent interview, made the following statements:

"In buying a suit of clothes, do you select the shoddy, cheap-looking, cotton things, that are but little better than paper and that you know will lose their color and shape after a few days' wear; or do you look for clothes of good materials, that feel wooleny, that will keep their shape and look natty ten times as long as will the cotton ones and whose initial cost is but a trifle more? If you don't know the difference between the good and the poor clothing whose fault is it, and isn't it to your best interest to learn something about the matter without delay, or take some one with you who can advise sagely?

"In buildings, the conditions are exactly the same. It is absolutely incomprehensible why a man who lays any claim to business perspicacity, will deliberately invest his money in something that is shoddy, that is ever a source of worry and expense and that stands a very great chance of being utterly destroyed, the so-called cheap building. Like the inferior suit of clothes, it is the poorest kind of investment and, adhering to the same comparison, it is certainly a sad commentary upon our intelligence that over \$400,000,000 a year are being placed in what can be called 'shoddy' construction, while probably there are millions of suits of as shoddy clothing being made to fill the 'demand' that has been created therefor by some one who profits by that demand at the sore expense of an easily beguiled public.

"The answer is made that insurance insures those buildings. It does nothing of the kind. Insurance is but a gamble

the average man is trapped into and, generally, with merely the hope that the loss he feels certain may occur will not be a total one. The chance of the building's standing by reason of its insurance is actually diminished rather than improved.

"The only thing to do is to build our new buildings better and revamp our old ones just as quickly and as well as we can. Our losses have gotten to the point where they are absolutely unbearable. That is something that even the least observant of our people must realize; insurance has become almost unbearable as a tax; the cost of living, everything has been much increased by that one factor in our commercial economics, the craze for shoddy construction.

"Thoroughly fireproof building is the only sensible, reasonable economical way of doing things. It ultimately means a great saving, and even the initial cost is but a trifle over that of shoddy construction. And when I say 'fireproof' I mean not only that the building should be constructed of undamageable as well as incombustible materials, but they must be properly put together and the whole designed in a 'fireproof,' intelligent manner. Indeed, part of the trouble so far has been that few architects know what 'fireproof' really means. There are countless ways of finding out, but they seem not to avail themselves of the advantages, and it has now become the imperative duty of cities to protect themselves and their people against the continued destruction of life and property, in any such ratio as it has been going on, and that has been brought about by such utter stupidity and neglect of the very first essentials in safe, permanent and sensible construction."

J. C. Headley, Glouster, Ohio, writes that there are excellent deposits of clay in that vicinity, and that the erection of a good brick plant there would prove a profitable venture, as there is a good local market. He will be pleased to give further particulars.

WANTED, FOR SALE, ETC.

FOR SALE OR EXCHANGE—A \$7,000 stiff mud brick plant in Mississippi, with a saw mill in connection and two hundred and fifty acres of timber. For particulars, Address, "JOHN,"
12 1 c Care CLAY-WORKER.

FOR SALE—One three-mold Andrus dry press; one American two-roll crusher, corrugated rolls; one Raymond hand repress. All in good condition. Address, MILLER & SON,
11 1 cm Clermont, Ia.

FOR SALE—Up-to-date dry press brick plant in a growing town; 16 acres fine clay; capacity 20,000 per day. Sale for all that be made and good prices. Good reason for selling. Address, GIVENS BRICK CO.,
11 1 cm Providence, Ky.

FOR SALE—One 14 h. p. traction engine; one all iron Quaker brick machine, steam power; three trucks; 21 panel bottom cherry molds, all in No. 1 condition and good for several million brick. Cheap for cash. Address, GEO. H. JENKINS,
11 1 d Monona, Iowa.

WANTED—Position as superintendent or foreman of either dry press or stiff mud brick plant. Thoroughly understand brick machinery, also burning with oil, coal, gas or wood. Am also a machinist and thoroughly understand the handling of labor; strictly temperate and can furnish the best of references. Address, W. G. P.,
12 1 c Care CLAY-WORKER.

WANTED—Manufacturers of front brick, stiff mud or dry press, requiring the services of a competent man as superintendent, or manager, to communicate. "PYROMETER,"
12 1 cm Care CLAY-WORKER.

WANTED—Position as superintendent. Have had 16 years experience in the manufacture of stiff and soft mud brick. Can give best of references. Apply to W. S. URQUHART,
12 1 cm 30 Prince st.,
Cambridgeport, Mass.

WANTED—To communicate with experienced shale brick man desiring active interest with parties now established in mud brick business, who are now contemplating installation of shale brick plant. Address, "BEACH,"
12 1 dm Care CLAY-WORKER.

WANTED—Position by a young man as burner on a dry press building brick plant, either shale or clay. Prefer a plant of twenty-five to fifty thousand capacity and down-draft kilns. Can furnish first-class references. Address, L. M. T.,
12 1 cm Care CLAY-WORKER.

SITUATION WANTED. As an all around man in molding shop. Have had experience in general ware from the molding shop until the ware comes from the kiln. Also have my own process in colored enamels for majolica and enameled brick. Address, H. KOEHLER,
12 1 cm 343 East 57th st.,
New York City, N. Y.

WANTED.

Experienced man who understands the manufacture of face brick and street pavers to take some stock and take charge of plant. Will give the right man a first class opportunity. Address BERT,
12 3 d Care Clay-Worker.

FOR SALE.

Little Giant Traction Shovel with long dipper handle and special dipper for trench digging. Send for latest circulars. THE MALES CO.,
26 Cortland Street, New York, N. Y.,
1508 First Nat'l Bank Bldg., Cincinnati, O.

FOR SALE.

One steam power and one h. p. soft clay machines. One feed water boiler heater. A number of dryer cars. Two second-hand dump carts, practically as good as new. All of the above in first-class condition. Address, THE HORTON MANUFACTURING CO.,
6 tf L Painesville, Ohio.

FOR SALE.

One 75 h.p. Brownell Engine. One 80 h.p. Brownell Boiler. Three 10 Ft. Freese Pug Mills. Three 14 Ft. Freese Pug Mills. In good condition. Immediate shipment. FRUIN & COLNON,
615 Merchants-Laclede Bldg.
11 3 cm St. Louis, Mo.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than \$1.00.

FOR SALE—One of the best standard makes of brick machines. Capacity 75,000 brick per day. Wearing parts good as new. Address, "CAN,"
12 1 L Care CLAY-WORKER.

FOR SALE—Remodeled dry presses of different sizes and makes. Nothing reserved. First come, first served. Address, FERNHOLTZ BRICK MACHINERY CO., Boyle ave. and Old Manchester road,
12 3 L St. Louis, Mo.

FOR SALE.

Gasoline engine, 40 h. p., for less than one-half original cost price. First class condition. Write for full particulars. Address,
R. B. HINKLY,
12 1 d Luverne, Minn.

FOR SALE.

One 40 h. p. engine and 75 h. p. boiler, pumps, heaters, shafting, two duplex soft mud brick machines and two Potts' sanders. All in good condition. Address, G. H. CLIPPET & BRO. BRICK CO.,
12 d Detroit, Mich.

WANTED.

A man to make himself generally useful. One who can make a plaster mold, experiment with glazes, enamels, clays and repair kilns. Address, X. Y.,
10 3 1 Care Clay-Worker.

WANTED.

We are in the market for a second-hand heating apparatus, fan, etc., and coil containing about eight or ten thousand feet of one-inch pipe. Address,
SOUTHERN BRICK AND TILE CO.,
10 3 d Louisville, Ky.

WANTED.

Man to take charge of dry pressed and stiff mud brickyard that works all the year. Must thoroughly understand the business, and have A1 references showing that he not only understands the business, but can handle men successfully. Plant is located west of Rocky mountains. Fine climate, growing country and growing plant. Address, KANE,
11 2 d Care Clay-Worker.

BRICK PLANT WANTED AT JACKSONVILLE, ILL.

One of the best places in the whole country to establish a small up-to-date, modern brick plant. Local consumption 3,000,000 annually. Abundance of good clay; no competition. Will give detailed information upon application to the JACKSONVILLE BUSINESS MEN'S ASSOCIATION,
11 3 dm Jacksonville, Ill.

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH,
5 tf L 3325 Caroline St., St. Louis, Mo.

FOR SALE—Sixty thousand dollar brick plant, center gas and shale belt. Good railroad facilities and business. Write, IRED PFENDLER, Homestead Bldg.,
10 3 cm Muskogee, Ind. Ter.

FOR SALE—One 9 ft. Bonnot dry pan, used six months; one 40 h. p. Skinner engine, fair order; one No. 6 Clark hand cut-off table. Address,
GOTEBO BRICK CO.,
11 2 cm Gotebo, Okla.

FOR SALE—Within 100 miles of the City of Chicago, 60 acres of the best Illinois fire clay and shale land. Will join party in erecting plant or sell outright. This is worthy of thorough investigation. Address,
8 6 d G. A. R., care Clay-Worker.

FOR SALE CHEAP.

Freese A1 combined union machine and cutter. Thirty thousand capacity. One sixty h. p. engine and two pumps. One five tunnel Iron Clad Dryer. Address,
J. W. WELLS & BRO.
11 2 c Chattanooga, Tenn.

DRY PRESSES FOR SALE.

One 2-mold U. S. brick press. One 3-mold Boyd brick press. One 4-mold brick press of standard make. One 3-mold Andrus brick press. Dry pan, pulverizer, screen and transmission. One set of plates for 7-foot wet pan. 1,000 horse power Corliss engine and boilers. B-K BRICK CO.,
9 tf d Denver, Colo.

TO LEASE—Former brickyard site of the Middlesex Brick and Tile Company, on shore of Pentwater Lake, Michigan. Chambers machine. Railroad and government harbor. Abundance of clay adjoining plant makes fine white brick. Cheap labor. Also marl deposit. Address,
C. MEARS, 345 Ohio street,
10 3 cm Chicago, Ill.

FOR SALE.

Two single transfer cars, almost new. Racks, trucks and turntables for 75,000 brick, Mock system. One Nolan & Madden endless carrier cutting table. Cuts from 6 to 10 inch tile. One Adrian cutter, cuts from 3 to 8 inch tile; one Adrian hand brick cutter; two pulleys, 12-inch face, 62-inch diameter, 2 15-16 bore; one pulley, 10-inch face, 62-inch diameter, 2 15-16 bore; one pulley, 12-inch face, sixty-two-inch diameter, iron hub and spokes, with iron rim. Address,
A. FRIES & SONS,
12 1 d Connersville, Ind.

INDUCEMENTS OFFERED FOR CLAY PRODUCT MANUFACTURERS.

There is no better clay than we have to offer. Address
BUSINESS MEN'S ASSOCIATION,
11 3 c Box 122, Francisville, Ind.

WANTED
BRICK AND TILE PLANT
at Rich Hill, Mo., 80 miles south of Kansas City, Mo. Three lines of railroad. More shale and fire clay than can be used up in fifty years. For full information, write
Secretary Commercial Club,
10 3 dm Rich Hill, Mo.

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If you want to sell, send me full description and price. Confidential. Established 1881. I bring buyer and seller together. If you want to buy, sell or exchange any kind of business or real estate, anywhere at any price, address

FRANK P. CLEVELAND,
965 Adams Express Building,
11 tf d Chicago, Ill.

FOR SALE—ENGINES AND BOILERS.

BOILERS.
4 72x18 horizontal tubular, high pressure.
1 84x18 horizontal tubular, standard.
1 78x16 horizontal tubular, standard.
1 72x16 horizontal tubular, standard.
5 72x16 horizontal tubular, standard.
1 66x16 horizontal tubular, high pressure.
3 60x16 horizontal tubular, standard.
1 60x18 6-inch rivetted flue, standard.
Sixty others, all styles and sizes.

ENGINES.
20x48 Wheelock.
18x42 Hamilton.
18x36 Wright.
16x32 Buekeye.
18x26 H. S. & G.
16x20 Brownell.
14x20 Atlas.
14x14 Vertical.
Forty others, all sizes and styles.
Also pumps, heaters, tanks, saw mills and general machinery. Send us specifications of your wants.

THE RANDLE MACHINERY CO.,
1735 Powers St.,
7 tf d Cincinnati, Ohio.

Continued on next page.

CEMENT and BRICK

Three in One—Sand, Clay and Marl.

Sand, clean and fine, that will make the very best grade of lime and cement sand brick.

Clay, that will make the very finest pressed brick in the world, in all colors.

Marl, the cleanest and purest marl bed in America, which with the clay will make the finest grade of portland cement.

Three trunk railroad lines and water transportation on the property, and is less than seventy-five miles from Chicago. It is without question the best location in all the west.

This property is for sale. For further information and samples of the brick and cement, address

P. HESSE, 530 W. 69th St., Chicago, Ill.

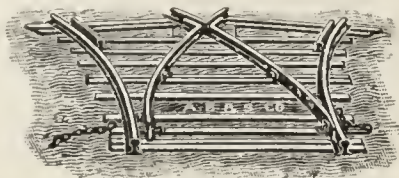
FOR SALE.

Well equipped fireproofing, tile and brick plant near Portland, Ore., runs the entire year. Will take the entire output of plant at a good price per 1,000; \$6,000 needed to handle this plant. Best of reasons for selling. Address, C. E. FULLER, 8 tf d 374 Water st., Portland, Ore.

FOR SALE—One of the best brickyards in the Northwest. Fine deposits of clay. Plant equipped throughout with modern machinery, including Penfield brick machine, Potts disintegrator, Benson side cutter, Bechtel system of trucking, good kilns and dryer sheds, machine shop, barns, boarding house for employes, gain if sale is made at once. Reason for selling, owner moving away. Address, MINN.,

10 tf d

Care CLAY-WORKER.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

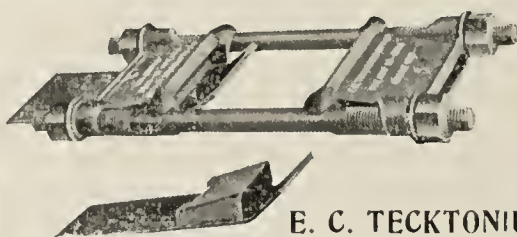
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FOR ALL USES.
LUMP, GRAIN AND GROUND
60-70% 70-80% 80-90% OXIDE.
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METALLIC ALLOYS CO.
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SUCCESSORS TO KENDALL & FLICK.

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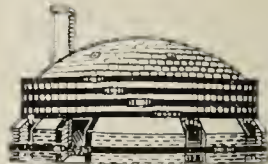


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TO PRODUCE POTTERY ECONOMICALLY
USE

CROSSLEY MACHINERY

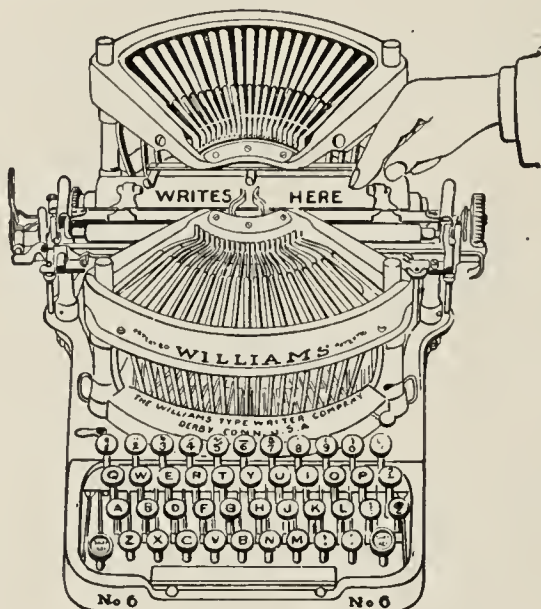
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TRENTON, N. J.

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Saves the beginner time when learning.

Saves the learned time when beginning.

New
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Six
Visible
Writer



Saves time, energy,
worry and money.

Gives speed, simplic-
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The Williams is sold
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antee and on easy
terms.

If you want the best
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ever offered, write us.

Williams Typewriter Agency,

Indiana Agency, 221 East Ohio Street, Indianapolis, Ind.

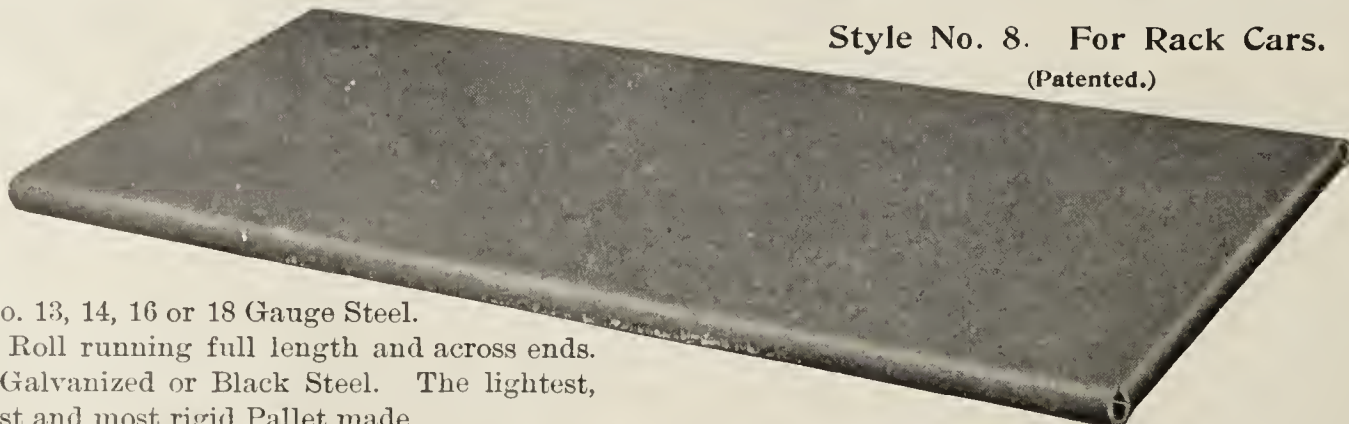
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Derby, Conn.

Old Machines Taken in Trade.

"OHIO" ROLLED EDGE STEEL BRICK PALLET.

Style No. 8. For Rack Cars.

(Patented.)



Made from No. 13, 14, 16 or 18 Gauge Steel.

 $\frac{5}{8}$ -inch Roll running full length and across ends.Either Galvanized or Black Steel. The lightest,
strongest and most rigid Pallet made.

THE OHIO GALVANIZING AND MANUFACTURING COMPANY, Niles, Ohio.

THE WEBB WIRE WORKS

MANUFACTURERS OF
MUSIC WIRE NEEDLE WIRE
NEW BRUNSWICK, N. J.

We manufacture BRICK AND TILE CUTTING WIRE, drawn especially to withstand abrasion.

Send for prices of wire in coils.



A New Clay Feeder and Mixer.

Send for full descriptive circular.



BOSTON BRICK COMPANY,

Main Yard and Office, South Boston, Va. Branch Yard, Banister River Branch N. & W. Ry.

Manufacturers of

PLAIN AND FANCY BRICK, CEMENT BRICK AND BLOCKS.

H. W. Cosby, Supt. and Gen'l Manager.

South Boston, Va., Jan. 19, 1907.

Marion Machine, Foundry and Supply Co., Marion, Ind.:

Gentlemen—As regards the Rust Clay Feeder we bought of you last year, will say it has been in use in our branch yard at Houston, Va., since last July and is giving PERFECT SATISFACTION. It practically saves us two men, besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regularly—they will over feed and choke the machine, break or run belts off, and then sit down and rest while the owner labors to repair and start up again. Your Clay Feeder is perfect, and is indispensable to any brick manufacturer who wishes to make a good brick at lowest cost.

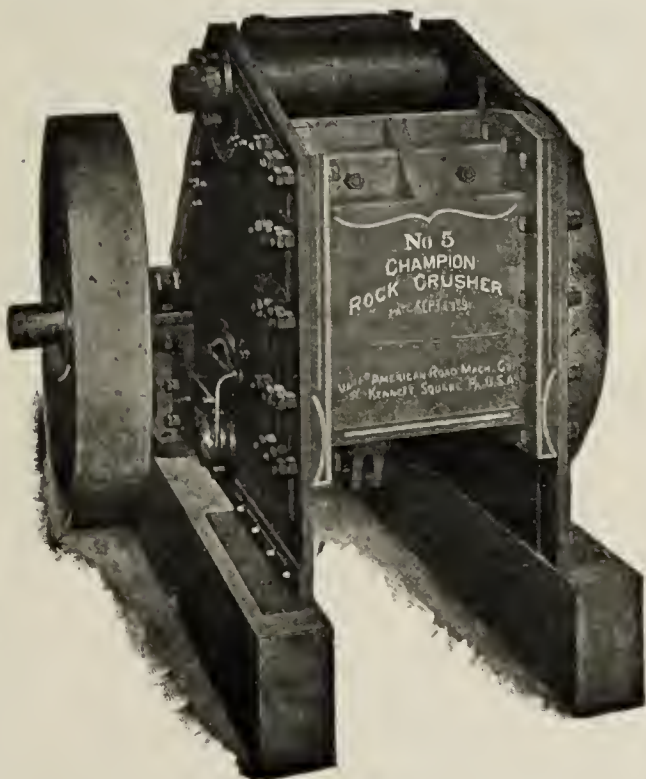
(Signed) By H. W. Cosby, Supt. and Gen'l Manager.

Yours truly,

BOSTON BRICK CO.

For further information address

MARION MACHINE, FOUNDRY AND SUPPLY CO., MARION, IND.



NO. 5, 11x26 CHAMPION CRUSHER.

It Looks Good
on paper.

It Looks Better

crushing shale, fire clay,
rock and other hard material.

THE CHAMPION CRUSHER

is expensive, *to do without*, because it saves you money.

Catalogue is free on application. Address

AMERICAN ROAD MACHINE CO.

KENNETT SQUARE, PA.

FOR SALE.

One 9-foot dry pan, iron frame.

One revolving screen.

THE T. B. TOWNSEND BRICK & CONTRACTING CO.,

5 tf d

Zanesville, Ohio.

(See additional ads under Table of Contents.)



Elevator Buckets

All sizes, shapes and weights for handling any material. We are Sole Agents for

Genuine Salem Buckets

made only by W. J. Clark Co., Salem, Ohio. Fill readily, carry maximum load, empty clean.

Belts, Chains, Pulleys, Sprocket Wheels, Shafting, Bearings, Other Kinds of Buckets, Etc.

H. W. Caldwell & Son Co.

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Woodward, Wight & Co., Ltd., New Orleans

The Department of Clayworking and Ceramics

Established by the Legislature in 1902 at the

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RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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W. H. S. DEMAREST, D.D.

OHIO STATE UNIVERSITY

Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture.

Tuition is free. Laboratory fees are nominal. Faculty of over one hundred instructors. Equipment very extensive.

For information or catalogue address,

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Department of Ceramics.

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Largest Manufacturers in
United States of

Brick and Mortar COLORING.

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Samples and estimates cheerfully furnished
on application.

Chattanooga Paint Co., Chattanooga, Tenn.

Manufacturers of

Red Oxides for Brick- makers' Use.

Eclipse Mortar Colors,

Red, Brown, Buff, Black.

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NEW YORK.

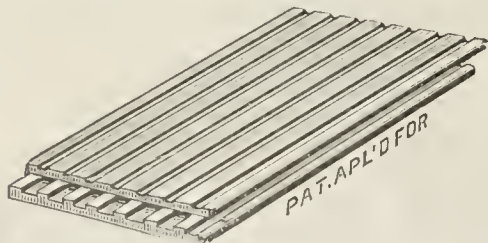
Sole Importers in the United States of the



The only preventative for scum and discolor-
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tralizing the Sulphate of Lime in the Clay and
Water.

Circulars and Particulars on Application.

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Patent Revolving and Hand Presses for
Interlocking Tiles, Dies for all shapes,
Hips, etc., in metal or plaster.

Special Roller and Auger Presses for
Shingles, Interlocking Spanish Tiles. Au-
tomatic Shingle Cutting and Punching
Tables. Special Tile Tables.

Stiff Mud Machinery for smaller capa-
city and horse power, stiff mud brick
and hollow block dies, dry press liners.

MUELLER BROS.,

39 South Channing Ave.

St. Louis, Mo.

Mention The Clay-Worker

When Writing to Advertisers.

Make Money

WITH THE ONLY SUCCESSFUL

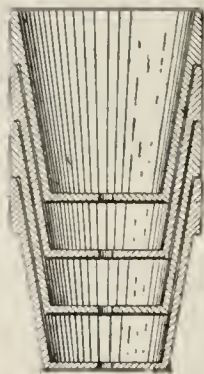
Flower Pot Machine (PATENTED.)

No expert workmen required.

Capacity in 10 hours:

6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "

Write for Circular and prices.



The Rockwood Mfg. Co.,

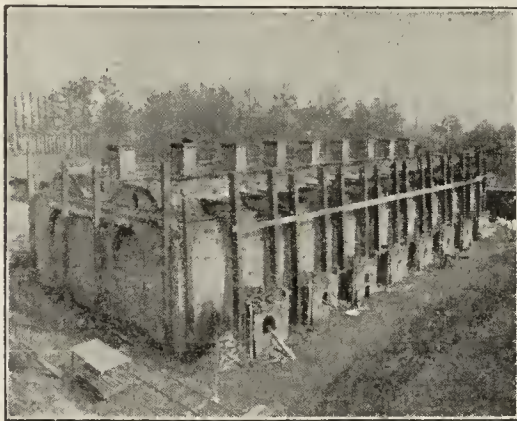
1801 English Ave.

INDIANAPOLIS, IND.

Something New in Brick Kilns and Brick Dryers

Patented April 14, 1903, and September 8, 1903.

ANY KILN OF THE MORRISON OR WINGARD TYPE CAN EASILY BE
CHANGED INTO THE DENNIS DOUBLE DOWN DRAFT KILN.



Double Up and Down Draft Kiln.

THE INDUSTRIAL BRICK CO., Inc.

Manufacturers of

All Kinds of Building Brick.

Mount Vernon, Ind. Nov. 1, 1907.

To Whom it May Concern:—

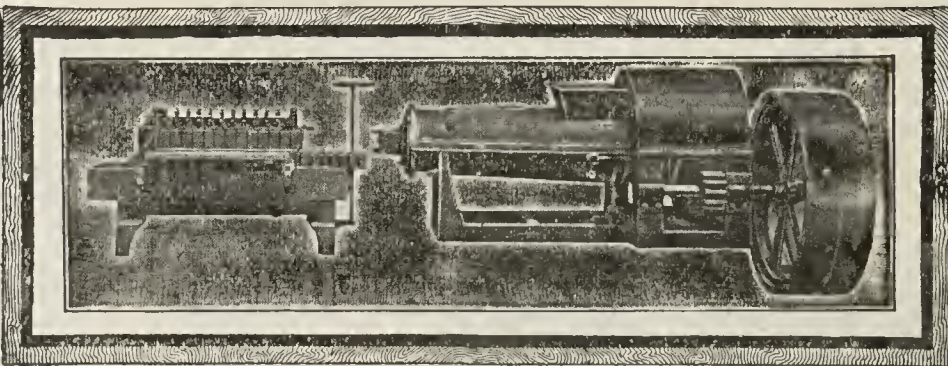
This is to certify that Mr. W. F. Dennis has con-
structed one of his Double Chamber Up and Down
Brick Kilns in our yards, burned a kiln of brick
to the entire satisfaction of this Company, and we
further certify that the kiln above mentioned will
do all that Mr. Dennis claims.

We cheerfully recommend his patent, and will
also state that we found Mr. Dennis a straight,
honorable and pleasant gentleman to do business
with.

Respectfully,
INDUSTRIAL BRICK COMPANY,
Jake A. Behrick, President.

Wood burning kilns changed to coal burning.
Brick plants installed and put in operation.
Write for booklet. Correspondence solicited.

F. W. DENNIS,
145 WATER ST., NORFOLK, VA.



THE PIONEER. Kells Brick and Tile Machine

has been the synonym of excellence in the Brick and Clay-
working industry for the past thirty years.

It has had few rivals and no superiors. Improved from
year to year to gain increased

Strength, Simplicity, Durability, Efficiency and Quality

of finished product, until it has reached the highest state of
the Mechanical Arts in Brickmaking.

Our new handbook will give you the detailed informa-
tion desired.

The Kells Foundry and Machine Co.
ADRIAN, MICH.

COX'S Special Drawn Coil Wire is
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires

GEO. S. COX, East Liverpool, Ohio.

For End-Cut, Side-Cut
and Automatic Tables.
Satisfaction guaranteed.
Send for samples and prices.

Books for Brickmakers

"CLAY GLAZES AND ENAMELS," H. R. Griffen.....	\$5.00
"BRICKMAKERS' MANUAL," Morrison and Reep.....	3.00
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"CLAYS," Heinrich Ries	5.00
"TABLES OF ANALYSES OF CLAYS," Alfred Crossley.....	1.00
"VITRIFIED PAVING BRICK," H. A. Wheeler, E. M.....	1.00
"PRACTICAL FARM DRAINAGE," C. G. Elliott.....	1.00

T. A. RANDALL & CO.,

PUBLISHERS,

INDIANAPOLIS, IND.

White Pine Pallets

For Brick, Roofing Tile,
And Sewer Pipe Boards.

The Best Are the Cheapest.

Send Specifications and Get Prices.

Mershon, Schuette, Parker & Co.,

Saginaw, Mich.

TRIPLE PRESSURE BRICK PRESS

The strongest and most efficient Brick
Machine made, and the only Press that
gives three distinct pressures to the brick.

We build and equip complete
SAND-LIME BRICK PLANTS,
SHALE AND CLAY BRICK PLANTS.

Ross-Keller Triple Pressure Brick Machine Co.,

Offices Fullerton Building,

St. Louis, Mo.

The Anton Vogt Down Draft Kiln

and the

QUESTION OF THE HOUR.

Built Round or Square.

Can a man with many years practical experience in burning all kinds of kilns design a better kiln than a man who never handled any kilns? You are the judge. To purchasers of plans with explicit instructions for building, setting and burning the Vogt Kiln, my bureau of practical information is FREE.

Anton Vogt,

Ada, Okla., U. S. A.

ATTENTION.

Do you want to buy a

Good Clay

Disintegrator

or Pulverizer?

Do you want to buy a

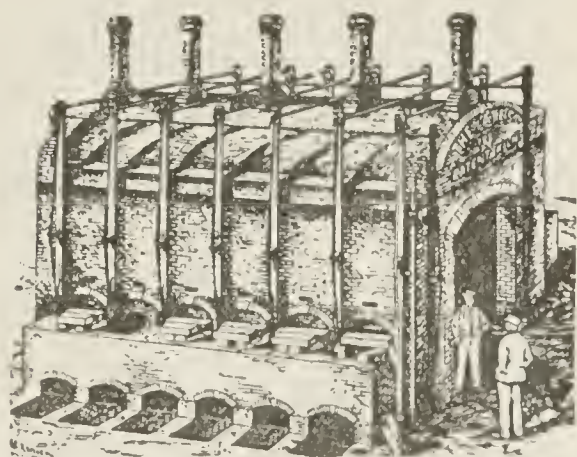
Good Clay Screen?

If So

Correspond with

Stedman's Foundry & Mach. Works

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For Economy of Fuel and Percentage of Hard Burned Brick,
This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

ALFRED YATES,

SHAWMUT, PA.

Or Eastern Terra Cotta, Brick and Tile Co.,
327 Old South Bldg., Boston, Mass.

IF YOU ARE HAVING TROUBLE

With your machine, or your drying or kiln burning, send for an expert who will soon put you right and teach your employes how to do it. Will go East as far as Montana and South as far as Mexico. Address the Brick Machine and Kiln Burning Expert,

J. H. FINNIE,
P. O. Box 611, Portland, Ore.

Terms
reasonable.

First-class
references.

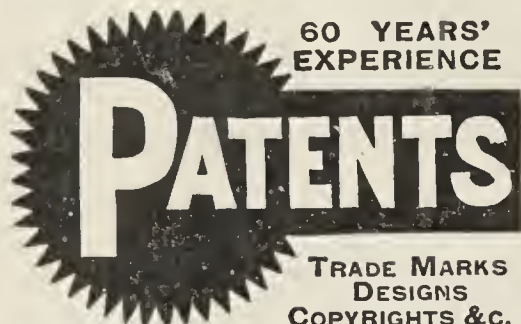
If you have trouble with Clay, Machinery or Kilns, then consult

THE BRICKMAKERS' ADVISOR,
Julius J. Koch,
(25 years practical experience)

3325 Caroline Street, St. Louis, Mo.

Special attention paid to dry clay press processes and down-draft kilns.

Contracts made contingent upon success.



Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. HANDBOOK on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the

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Send model, drawing, rough sketch or photograph of your invention and I will examine the records FREE of charge and advise you whether you can obtain a patent.

All patents taken out by me are advertised FREE in the leading mechanical, electrical and scientific magazines in the country.

Write for my special offer for obtaining Patents, Trade-Marks, Designs, Copyrights, etc. 20 years experience. Best references.

WM. N. MOORE,

Loan and Trust Building,
Washington, D. C.

LACLEDE=CHRISTY FIRE BRICK

"CHRISTY" PLANT
formerly
Christy Fire Clay Co.

Are the Best for

"LACLEDE" PLANT
formerly
Laclede Fire Brick Mfg. Co.

BUILDING KILNS.

Laclede=Christy Clay Products Co., St. Louis, Mo.

CHICAGO RETORT AND FIRE BRICK CO.

Fire Brick for Building Kilns.

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Phone Yards 525.

Evans & Howard Fire Brick Co.

ST. LOUIS, U. S. A.

Sewer and Culvert Pipe. Locomotive Tile.
Furnace and Boiler Tile. Fire Brick and Cupola Blocks.
Flue Lining and Chimney Pipe.
Sanitary Earthenware. All kinds of Fire Clay Products.

"Mitchell St. Louis No. 1"

Brand of

FIRE BRICK

Awarded Gold Medal at St. Louis for
Kiln Construction.

— Made by —

MITCHELL CLAY MFG. CO.,

5627 Manchester Avenue.

ST. LOUIS, MO.

\$2.00 THE CLAY-WORKER \$2.00
ONE YEAR, (IN ADVANCE)

MANGANESE.

BEST QUALITY MANGANESE, CAREFULLY AND UNIFORMLY PREPARED FOR BRICKMAKING. WRITE US FOR SAMPLES AND PRICES.

NATIONAL PAINT AND MANGANESE CO.,
LYNCHBURG, VA.

MINERS AND GRINDERS.

If you intend to build or rebuild your brick plant acquaint yourself with the

Chmelewski Patent Kiln

That's just the thing you need to get prosperous.
For descriptive booklet write to

DR. HERMAN ROBERGH,

Sole Agent in the U. S. A. and Canada.

24 Cottage Ave., Fitchburg, Mass.

The Improved Flue System.

The most profitable kiln on the market
for burning any clay product.

Absolute Draft Control. Economy of Fuel and Time.
All Hard Brick.

Kiln and Yard Rights, with Plans, Specifications, etc., sold at very reasonable rates. Booklet, estimates and full information cheerfully furnished.

GEO. E. SNOWDEN & CO.,

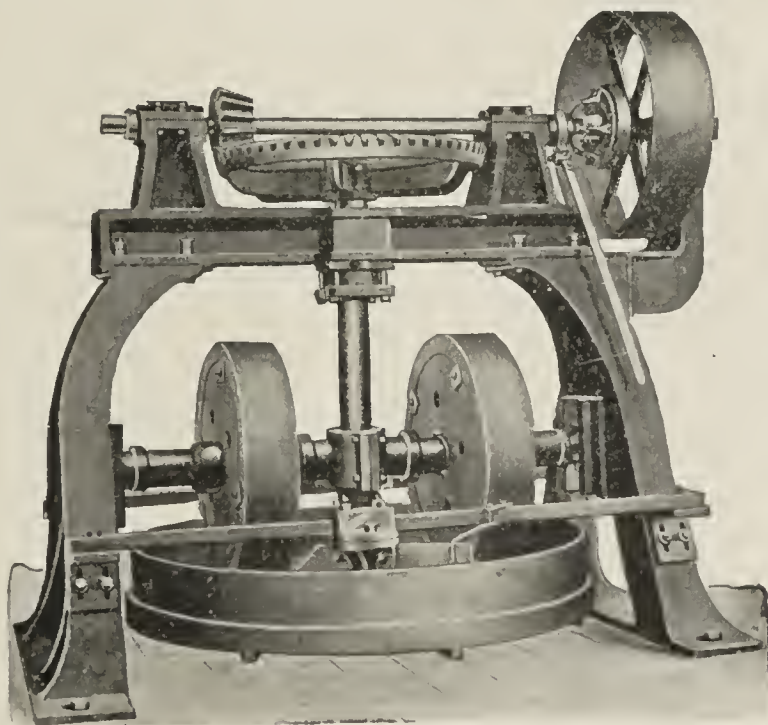
[Formerly J. P. Bradley & Co.]

New Cumberland, W. Va.

PHILLIPS & McLAREN CO.

PITTSBURG, PA.

Builders of
Pittsburg Standard
Dry and Wet
Grinding Pans
for Brick, Terra Cotta,
Sand, Cement, Ore,
Refractories, etc.
Also
Rock and Ore Crushers.



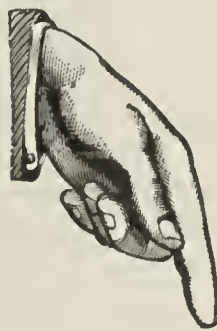
When writing for Prices state
kind of Clay or Material to be
ground and capacity desired.

Eastern Office,
Stephen Girard Bldg.,
Philadelphia, Pa.

\$2—The CLAY-WORKER One Year in Advance—\$2.

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," \$3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," \$5.00; tells how to glaze and enamel brick, and gives valuable recipes. "The Clayworker's Handbook," \$2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," \$5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," \$1.00; tells all about the best materials for and methods of manufacturing paving brick. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address, **T. A. RANDALL & CO.,**
Indianapolis, Ind.



If...

**You Want
to Sell
or Buy...**

Second-hand Clayworking Machinery, Tile Mills, or anything pertaining thereto.

**If...
You Want
a Man**

for any position or a position in any connection with the Clayworking Trades use the

**For Sale
and Want
Columns
of...**

**The...
Clay-Worker.**

RATES

For all transient advertisements, such as "For Sale," "Wanted," etc., the rate is 25 cents a line per insertion. Average of seven words to line. Head line counts as two lines.

**The Best, Quickest, Cheapest
Method of Securing Results.**

REMARKABLE OFFER.

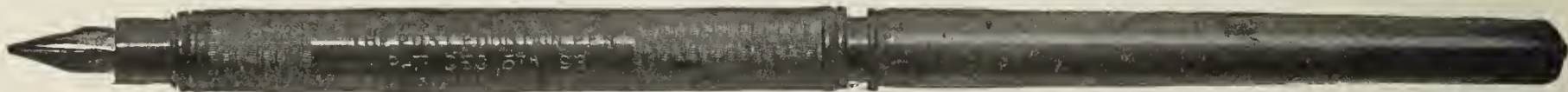
We will send this famous Gold Pointed pen, post paid, and The CLAY-WORKER for one year, to any address in the United States and Canada for

\$3.00



The New Way.

"POST" SELF FILLING CLEANING FOUNTAIN PEN.



The Latest Fountain Pen. Guaranteed by Makers.
NO FILLER. NO LOST TIME. NO SOILED FINGERS. PERFECT. SIMPLE.



The Old Way.

Gen. Lew. Wallace: The author of "Ben Hur" writes, "I have tried every kind in the market and unhesitatingly give the preference to the "Post."

Judge Luther L. Mills, Chicago: The "Post" Fountain Pen is the Best I have ever used; simple, reliable, durable.

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**The CLAY-WORKER, INDIANAPOLIS,
—INDIANA.**

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IT
NOW**

T. A. Randall & Co., Publishers The Clay-Worker, Indianapolis :

You will please send me THE "POST" FOUNTAIN PEN and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued, beginning with

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Name.....

Postoffice.....

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County..... State.....

E. WUERZ Kiln & Chimney Construction Co.



197 Havemeyer St.,
Brooklyn, N. Y.

KILNS for firing Brick, Lime,
Cement and Porcelain.

MUFFLE KILNS for Glaz-
ing and Enameling Brick.

CHIMNEYS with radial and
common brick, round or
square.

Old chimneys straightened,
pointed or bent without incon-
veniencing or delaying opera-
tions.

Estimates cheerfully fur-
nished on application.

Agents Wanted.

An Emergency Accident Cabinet

Free **On**

FOUR OF OUR
CABINETS for
FACTORY.
SHOP,
HOME, and
TRAVELER

90 **Days** **Trial**

FACTORY SIZE contains 150 yards of bandages of various widths and 34 other articles liable to be needed in case of accident.

Price, \$9.50. Sent on approval.

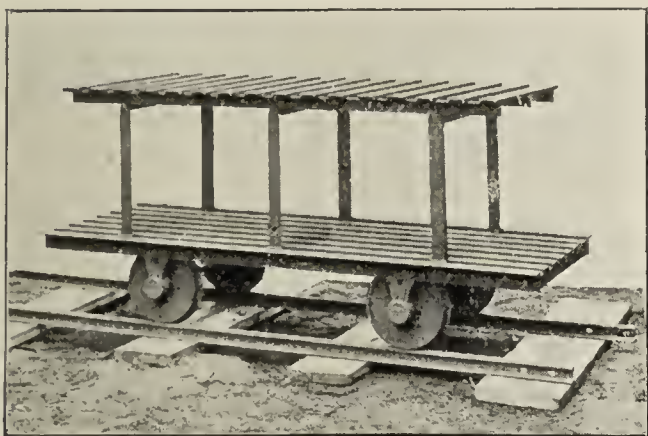
HOUSEHOLD SIZE contains 18 articles for First Aid. No home can afford to be without one. Price, \$2.00.

Ready Reference Chart sent with all cabinets shows at glance how to treat all cases until doctor arrives.

Agents wanted to handle these fast selling necessities.

The Accident Cabinet Co., Kalamazoo, Mich.

WHAT YOU ALL DOIN'.



No. 244.

Brick Cars	{	Single deck	Switches	Kiln Bands
		Double deck	Frogs	Pallets
		Triple deck	Rail	Anything in
Dump Cars		Transfers	Turntables	Special designs

Complete Estimates for Brick plants.



No. 52.

The Cleveland Car Company

West Park, Ohio, Suburb of Cleveland.

HAIGH'S NEW SYSTEM OF CONTINUOUS KILN.

Arranged to Suit All Locations. These Kilns Can be Seen Burning

Roofing Tile, Dry Pressed Facing,

Paving and Common Building Brick.

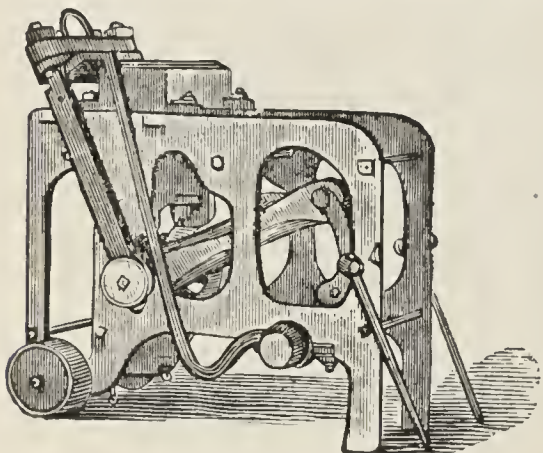
POINTS OF SUPERIORITY. Cheapness in Construction. Easy to Understand and Operate. Perfectly free from any Nuisance. Will save more than one-half of the fuel used on other kilns. Specially adapted for Utilizing Waste Heat for Drying Purposes, and which is being done most successfully.

HAIGH'S KILN ARCH RAISER—Every brickmaker who has kilns with an arch on should have one.

For further

particulars, address

H. HAIGH, Brick Works Engineer, Catskill, N. Y.

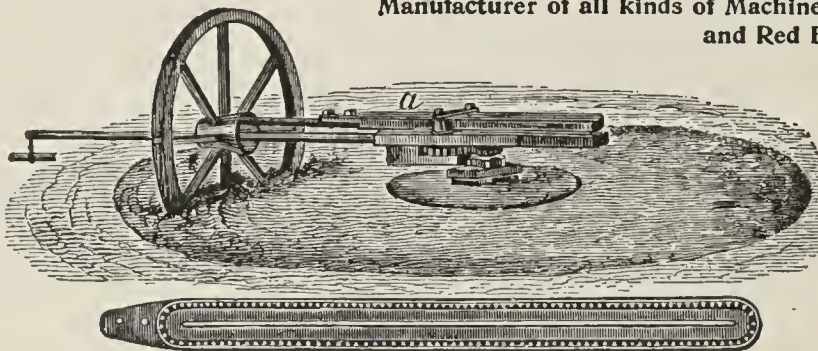


RED BRICK PRESS.

Philadelphia Brick Machine Works.

Fire and Red Brick Presses all Sizes. Machinists and Engineers.

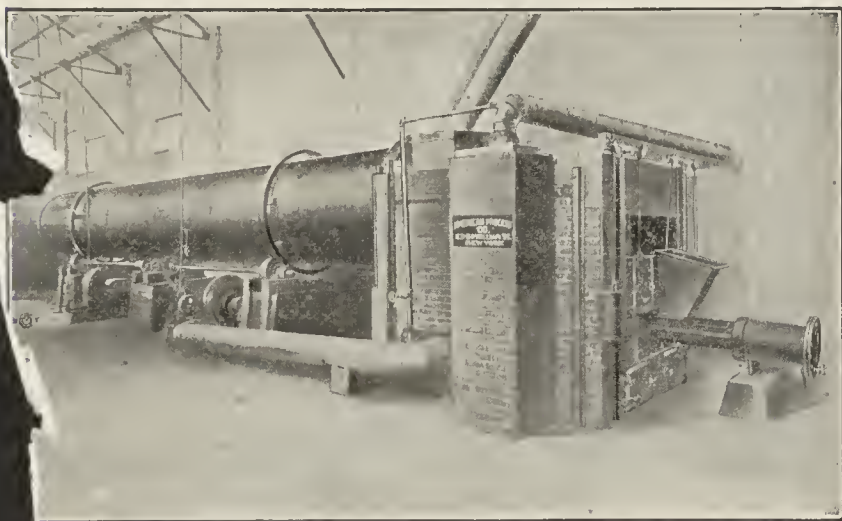
Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Send for Circular and Price List.

GEORGE CARNELL, 1819, 1821 and 1823 Germantown Ave. and Fifth St., PHILADELPHIA, PA.



Automatic Improved DRYERS

ECONOMICAL, EFFICIENT, GREAT CAPACITY.

For Clay, Coal, Sand, Marl, etc.

Send for Catalog "C. B."

AMERICAN PROCESS CO.,

62-64 William St., New York.

The Richardson-Lovejoy Engineering Company,

Consulting Engineers and Factory Architects.

Manufacturers of Controlling Apparatus and Special Machinery.

Geological Examination of Properties.
Mines and Mining.
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Clay Testing.
Plants Designed and Construction Superintended.
Dryers for Any Clay Product.
Kilns of Every Type.
Plants Modernized.



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Apparatus for Controlling the Drying of Clay Products.....	Free
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Drying Brick.....	\$.25
Burning Brick in Down Draft Kilns.....	1.00
Kiln Records.....	1.00
Scumming and Efflorescence.....	.50

TECHNICAL BUREAU FOR CLAYWORKERS, 1534 N. High St., Columbus, Ohio.

NO MECHANISM

of a complicated nature in connection with

The Pulsometer Steam Pump.

Handles GRITTY, MUDDY water without the slightest injury to the pump or any of its parts. Requires no engine, belt, oil or packing. Operates as well suspended as stationary.

Our free illustrated descriptive Catalogue tells all about them.



PULSOMETER STEAM PUMP COMPANY, 14 Battery Place,
New York.

The
**ROESSLER-HASSLACHER
CHEMICAL COMPANY,**

100 William Street,
NEW YORK.

As a Preventative of Scums Use

CARBONATE OF BARYTES

R. & H. PRECIPITATED.

Oxide Tin,
Oxide Cobalt,
Red Oxide Iron,
Green Oxide Chrome,
White Oxide Antimony,
Black Oxide Manganese
and all Chemicals used by the Clay Trades.

TERRA COTTA ROOFING TILES OF HIGHEST GRADES.

All the Standard and Interlocking Shapes in Semi-Glazed and Natural Reds;
Full, Matt or Sand-Blast Glazes in Greens, Yellow-Greens and Browns.

Unequaled facilities for prompt service from four large factories.

Catalogue and estimate furnished promptly on request.

Ludowici-Celadon Company,

General Sales Office—Chamber of Commerce Bldg., Chicago.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

GRASSY POINT, ROCKLAND CO., N. Y.

These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brick-making since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

Mention The Clay-Worker.

The Multiple Down-Draft Kiln.

AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

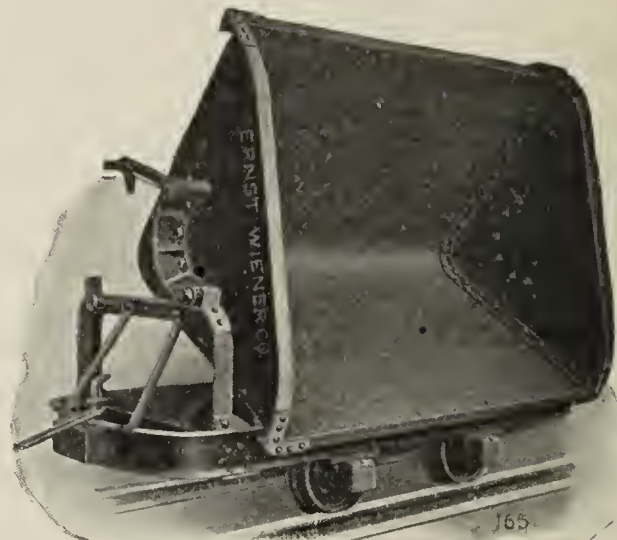
Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.]

Madison, Neb.

CLAY AND SAND CARS



The above cut shows one of our all-steel rocker type, double side dump cars. This car is so constructed that when the load is dumped it rights itself at once and is ready for the next load.

A LARGE STOCK

of Cars (all styles), Portable Track, Turntables, etc., for Brickyards, Sand-Lime Brick Plants, Sand, Pipe and Coal Yards ready for prompt shipment. Write for Catalog 2B.

RAILROAD SPECIALISTS FOR ALL INDUSTRIES.
ERNST WIENER
•COMPANY•

64-68 Broad Street, New York, N. Y.

WORKS

Youngstown, Ohio. Brooklyn, N. Y.
715 Hartford Bldg., Chicago. 402 Oliver Bldg., Boston.
Barnaby Bldg., Bisbee, Ariz. 333 Cooper Bldg., Denver, Col.



B. E. BECHTEL.

We Are PRACTICAL BRICKMAKERS.

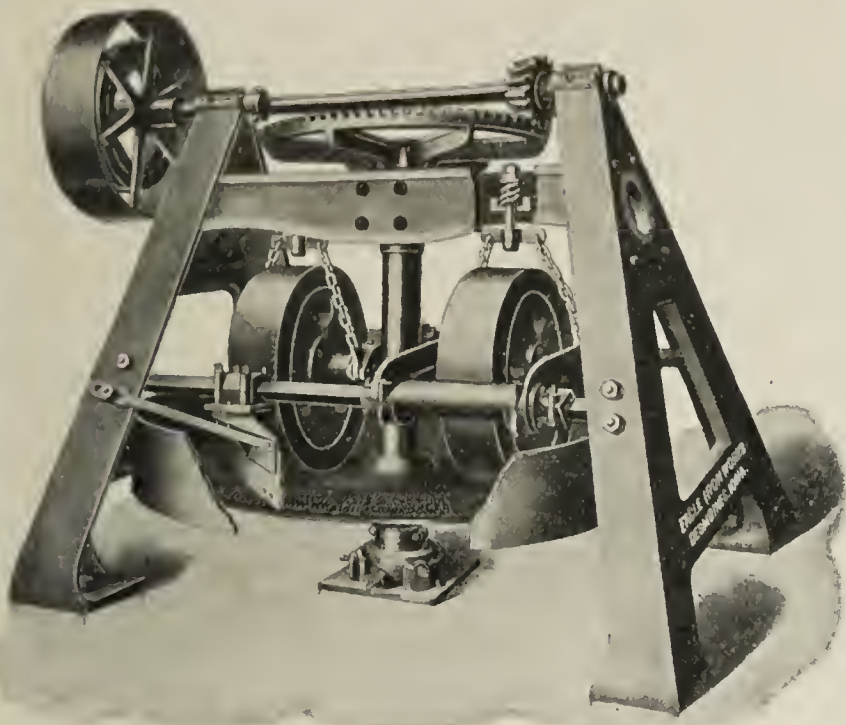
We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

BECHTEL'S,
Waterloo, Ont., Can.

Independent and Suspended Mullers

the distinguishing
feature of our **DRY PANS.**



Other valuable features which our catalogue fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

Hampton's Patent Down-Draft Kilns

BURN 99% HARD BRICK.

AMERICAN BRICK COMPANY.

Morenci, Mich., February 21, 1906

Pittsburg Kiln Construction Co.,
Mr. Thomas Hampton, Patentee,
West Elizabeth, Pa.

Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we get in the 30 ft. kiln, as we are in the habit of setting them:

On floor	3 tier	3 in. tile of 5,000 each,	15,000
2 "	4 "	" 3,000 "	6,000
1 "	5 "	" 2,040 "	2,040
2 "	10 "	" 550 "	1,100
2 "	12 "	" 415 "	830

Set in kiln ten tiers high.

The 5 ins.	are stuffed with 3 ins.
The 10 "	" 6 ins. and 4 ins.
The 12 "	" 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in.	7,100 4 in.	2,810 5 in.	1,100 6-in.
830 8-in.	1,100 10-in.	830 12-in.	

Coal consumed, 16 tons. Time required, 91 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am
Yours truly, H. A. YARGER
Manager.

Don't you want some? Plans furnished cheap.

Pittsburgh Kiln Construction Co.,
West Elizabeth, Pa.

FREE

An attractive and interesting book, illustrated from photographs, containing information which should be in the hands of every engineer, superintendent or owner of a manufacturing plant. This book puts some facts in such a way that—but then, send for it and see.

Please give firm name.

Main Belting Company,
1224 Carpenter Street, Philadelphia.
59 Market Street, Chicago.

THE BOSS SYSTEM OF BURNING BRICK.

A Testimonial Letter From
One of Our Customers.

Nashville, Tenn., Nov. 30, 1906.

Mr. John C. Boss, Elkhart, Ind.:

Dear Sir—We write to give expression of our experience with the BOSS SYSTEM of burning brick, and take pleasure in saying during the past year we have had the BOSS SYSTEM applied to five kilns. The results have been very satisfactory. The burning is better, time is reduced, and the amount of fuel is lessened. Very truly,

FULCHER BRICK CO.

R. H. Howell, Sec. and Treas.

Catalogue descriptive of the BOSS METHOD, containing testimonial letters to be had for the asking.

JOHN C. BOSS,

Office: Room 405 Monger Block.

ELKHART, IND.

BOOKS FOR CLAYWORKERS.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price \$3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Clay Glazes and Enamels, by Henry R. Griffen. Price \$5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application.

Clays; Their Occurrence, Properties and Uses, by Heinrich Ries. Price \$5.00.

A valuable and reliable treatise on the origin of clay, chemical and physical properties, kinds of clay, methods of mining and manufacture and distribution of clay in the United States, including a chapter devoted to Fuller's Earth, its distribution in the United States, mining and uses, etc. The book is well illustrated, which adds much to its value.

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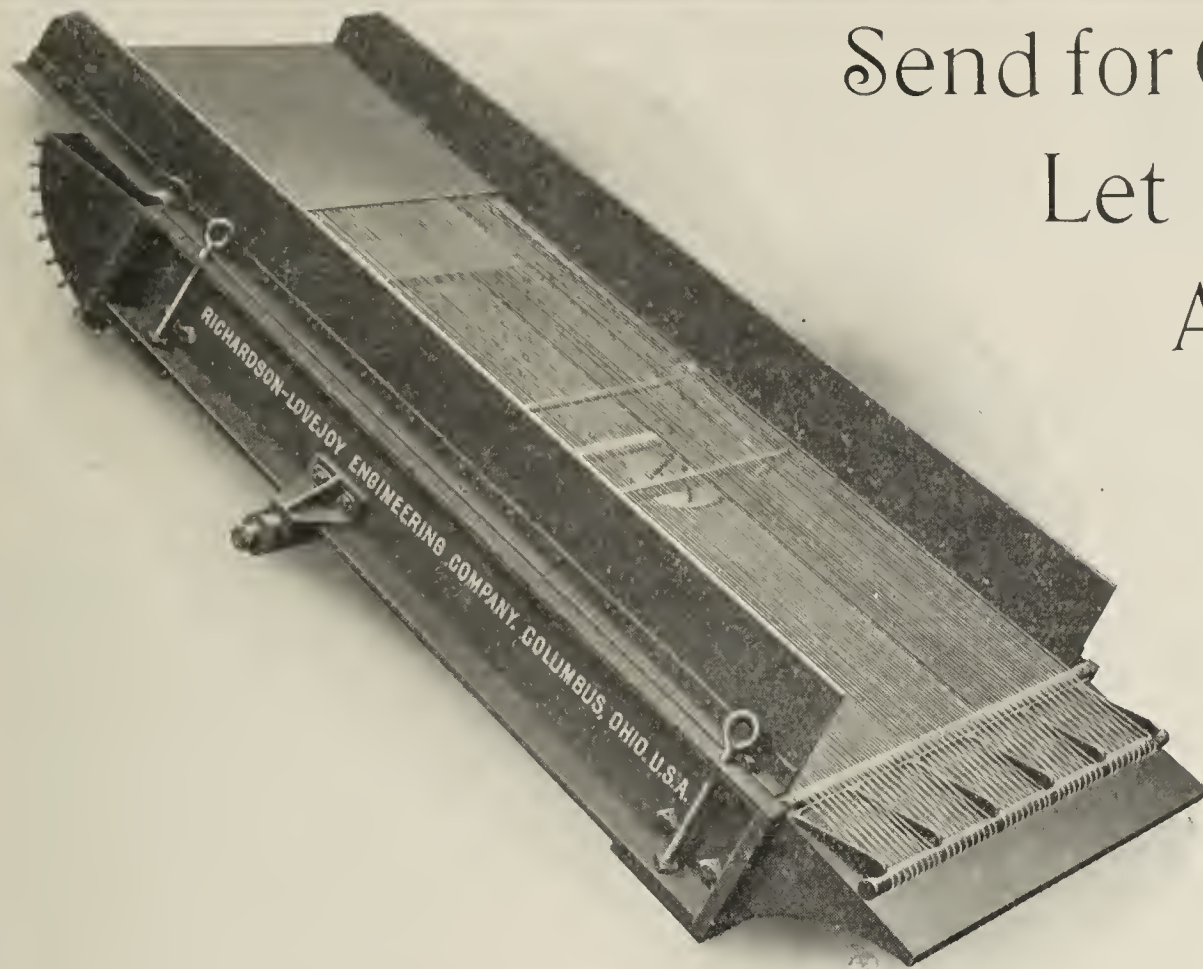
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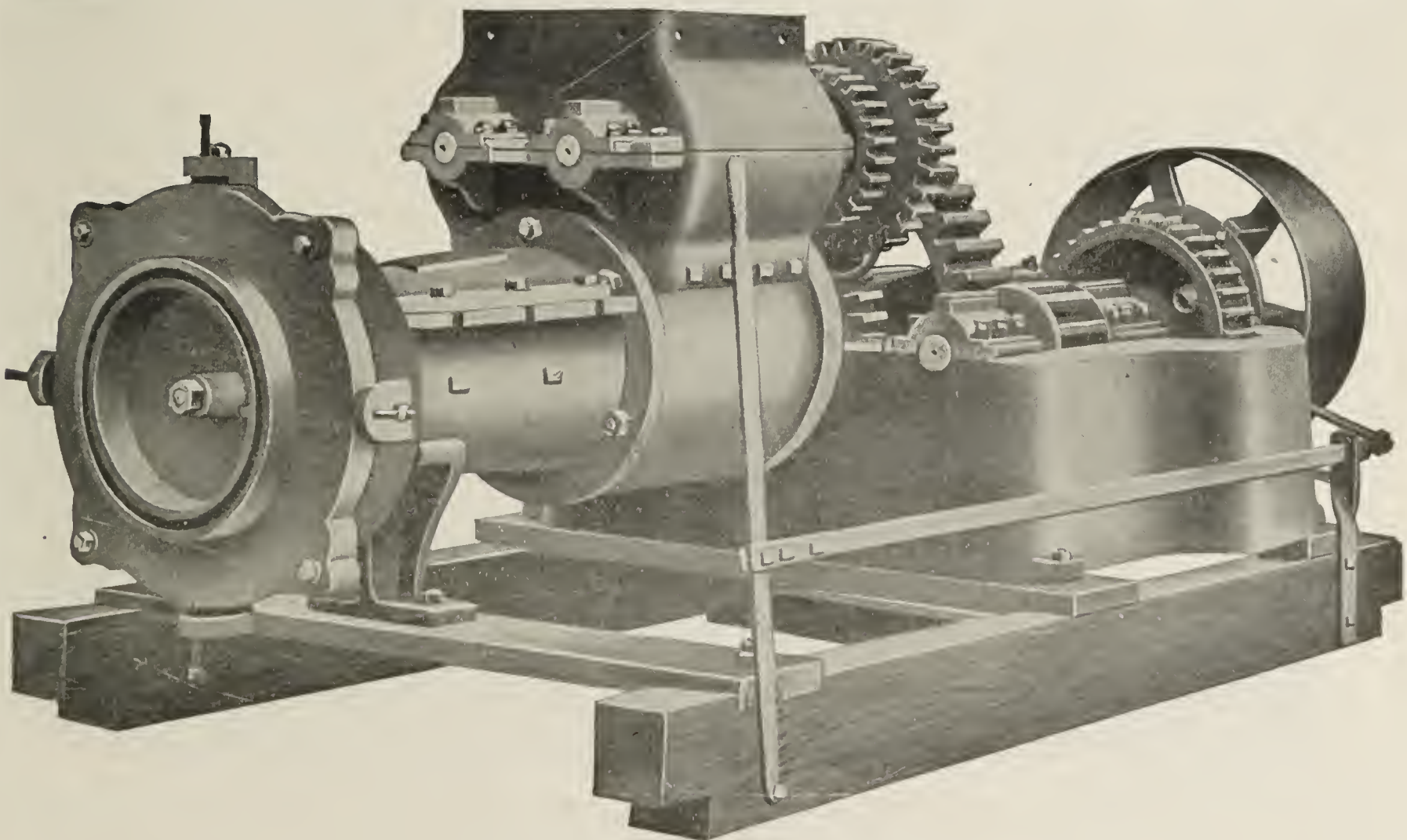
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NEW MODEL STIFF MUD MACHINE.

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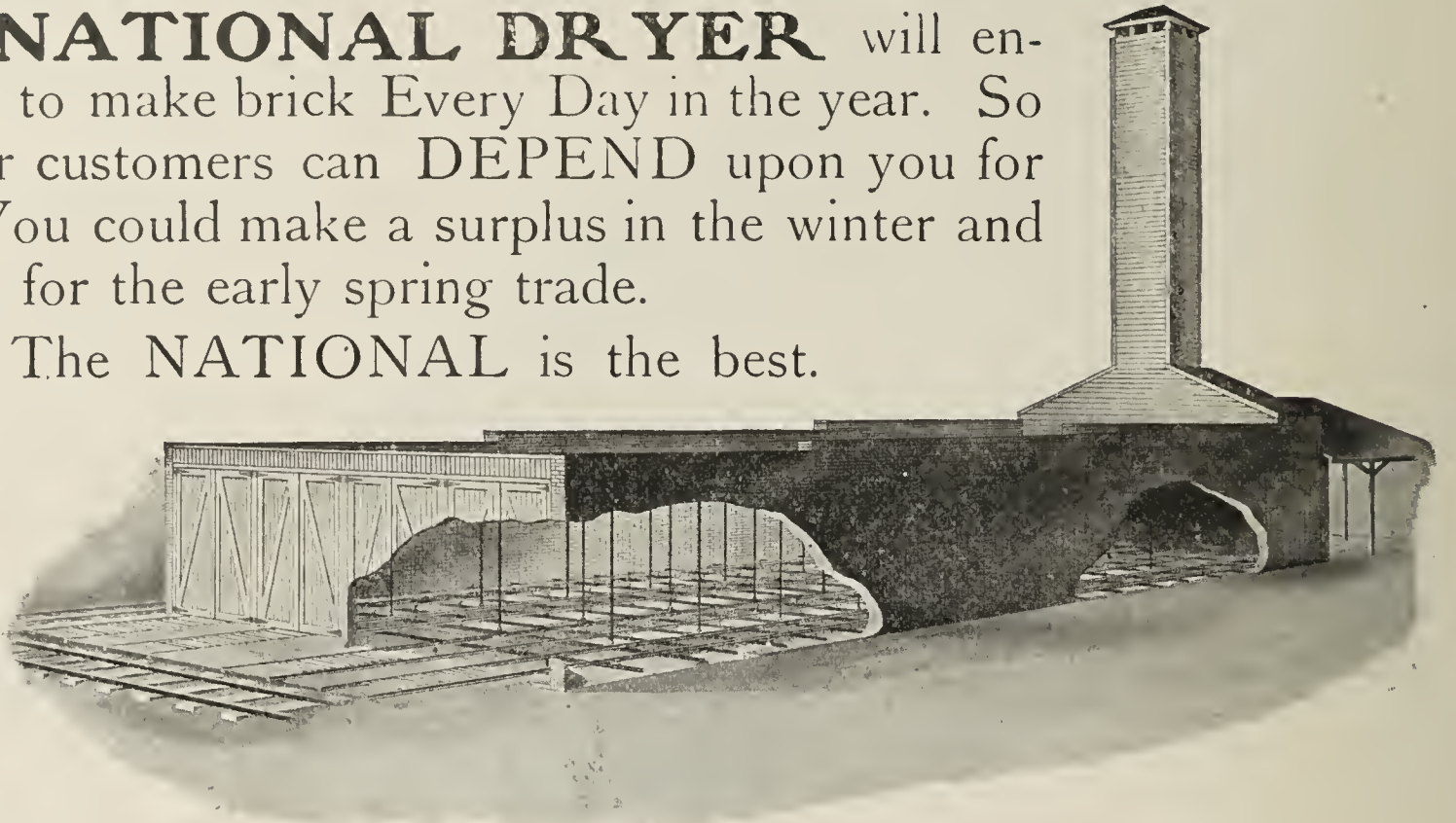
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And a **NATIONAL DRYER** will enable you to make brick Every Day in the year. So that your customers can **DEPEND** upon you for brick. You could make a surplus in the winter and be ready for the early spring trade.

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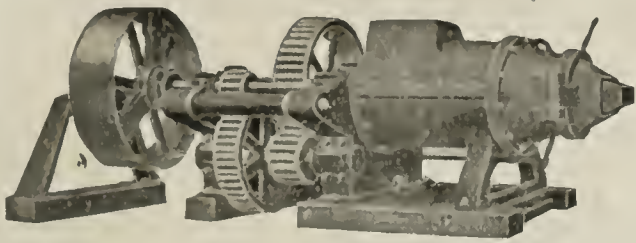
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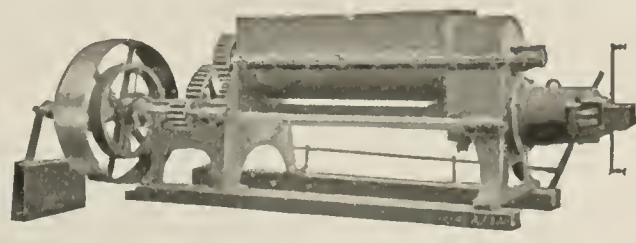
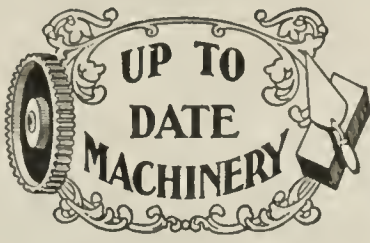
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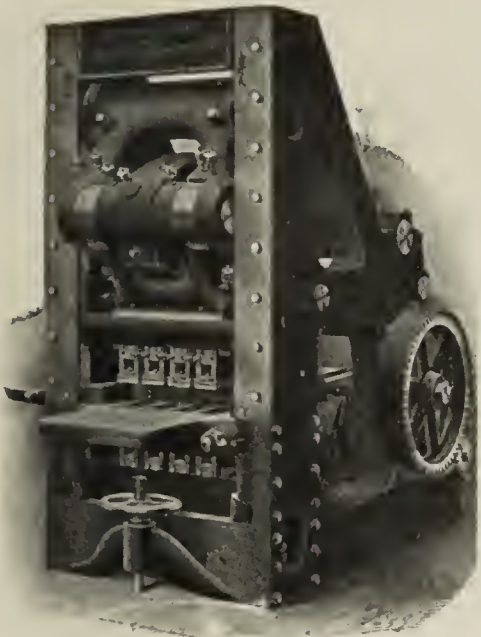
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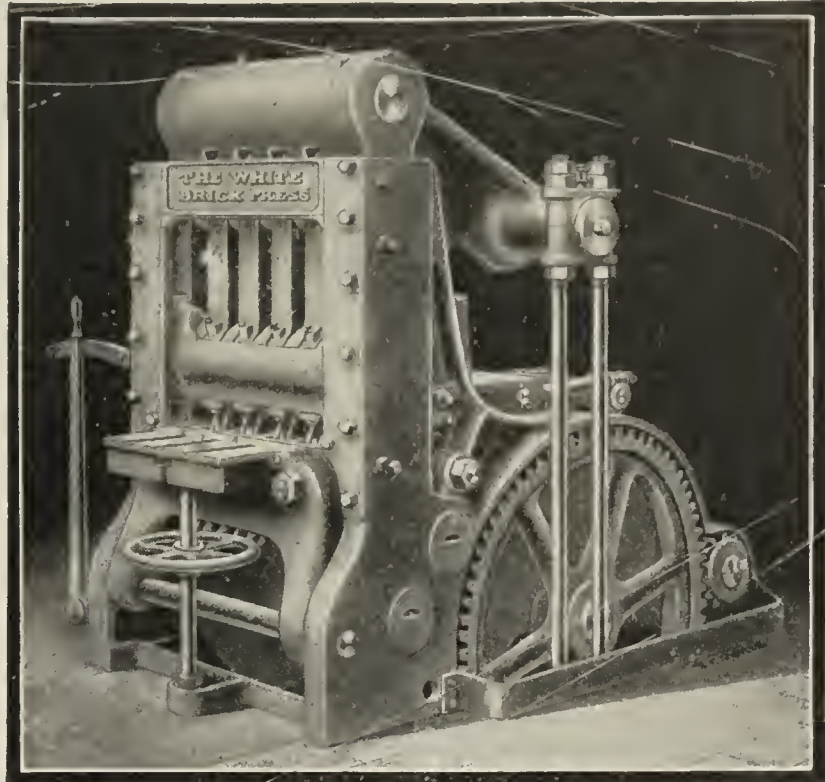
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Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

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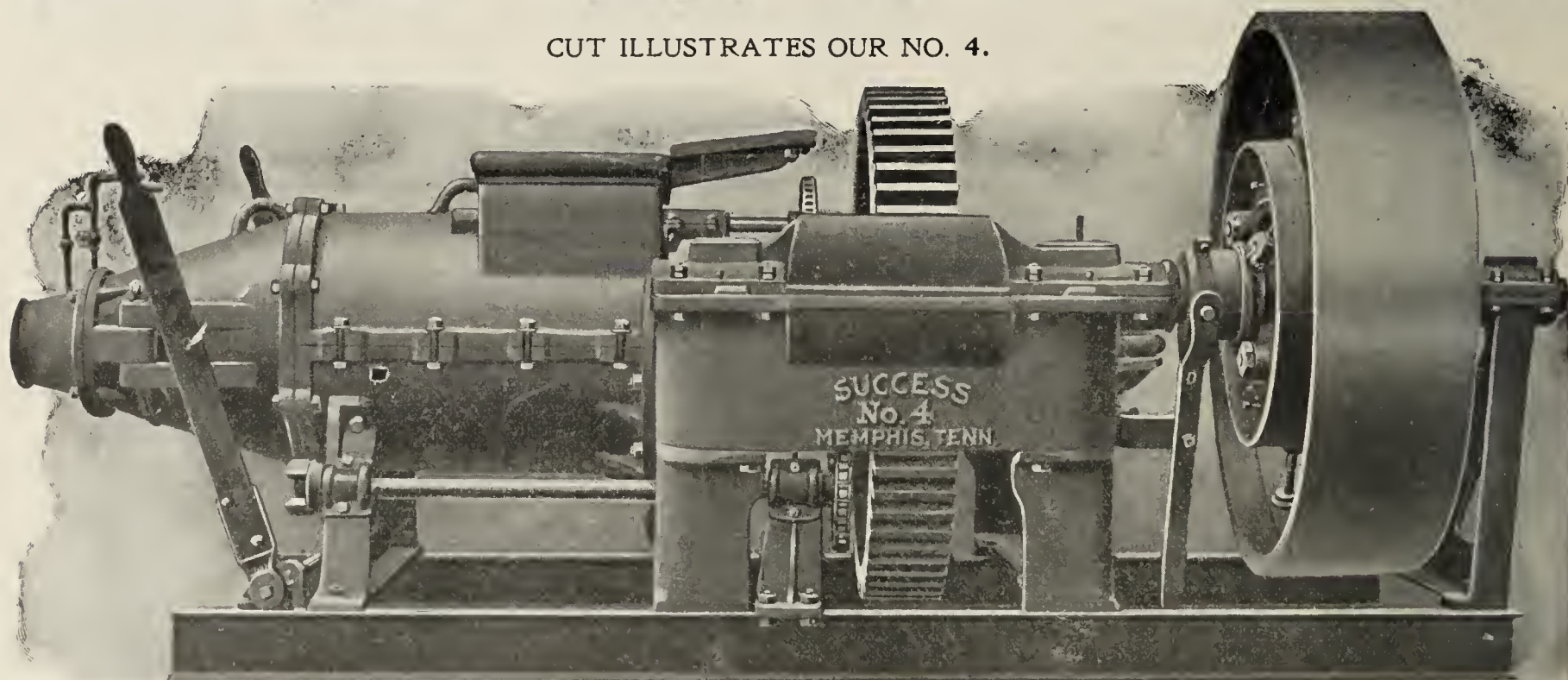
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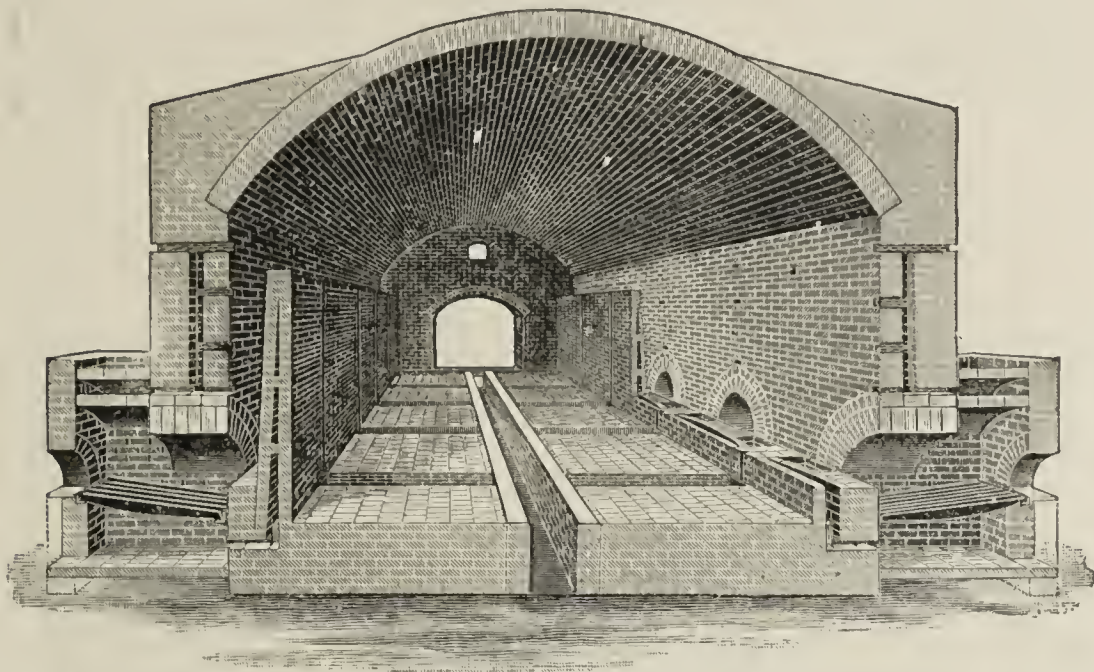
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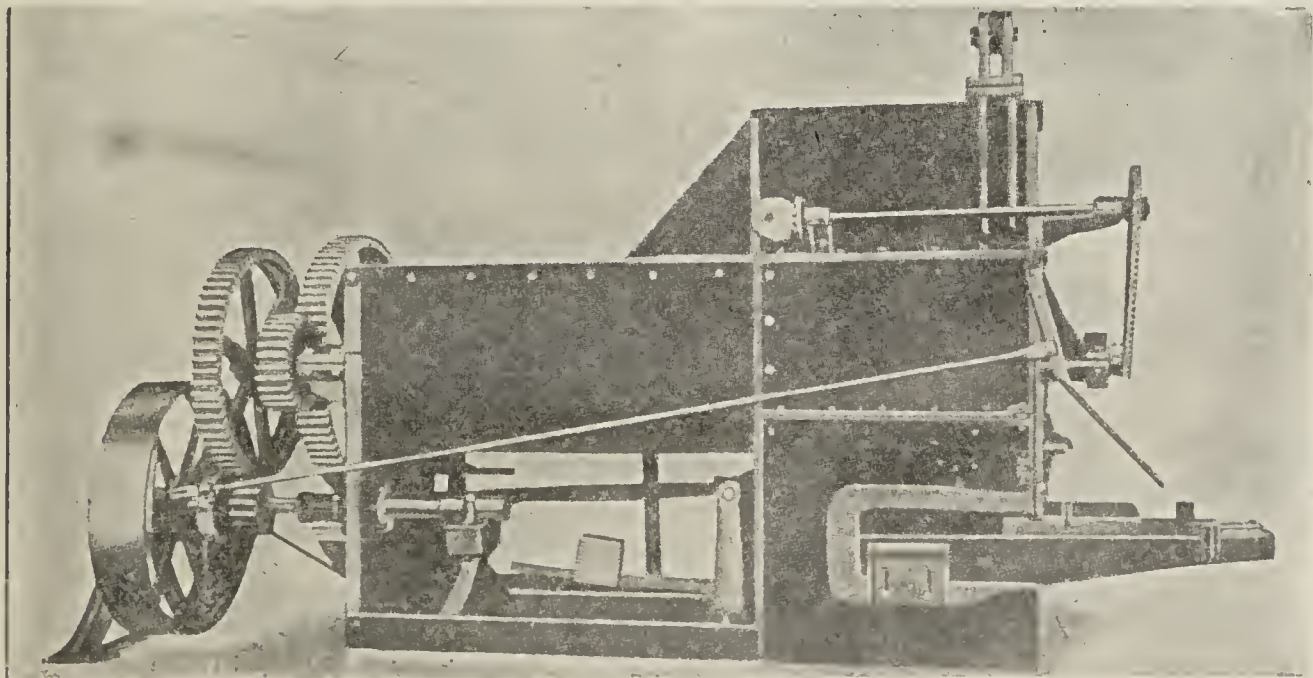
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We have been manufacturing brickmaking machinery a good many years, and naturally have been brought into contact with a variety of clays and conditions, and this experience has enabled us to produce machinery more nearly adapted to the requirements of every customer.

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Let me give you full particulars.
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If the fuel cost is an important item in your manufacturing expenses you should not fail to give this system your immediate attention.

This kiln is fired with producer gas which is generated from your ordinary coal in a producer, attached to the kiln, making the firing of your ware easy and the regulation of the heat most accurate.

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3. Swedging Awl.
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7. Hoof Hook.
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9. Screw Bit.



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Yard Superintendents,
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This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY
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Can be carried in the pocket and used as an ordinary knife, but is far stronger and more useful.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of
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This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for \$1.50.

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The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untying knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

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You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

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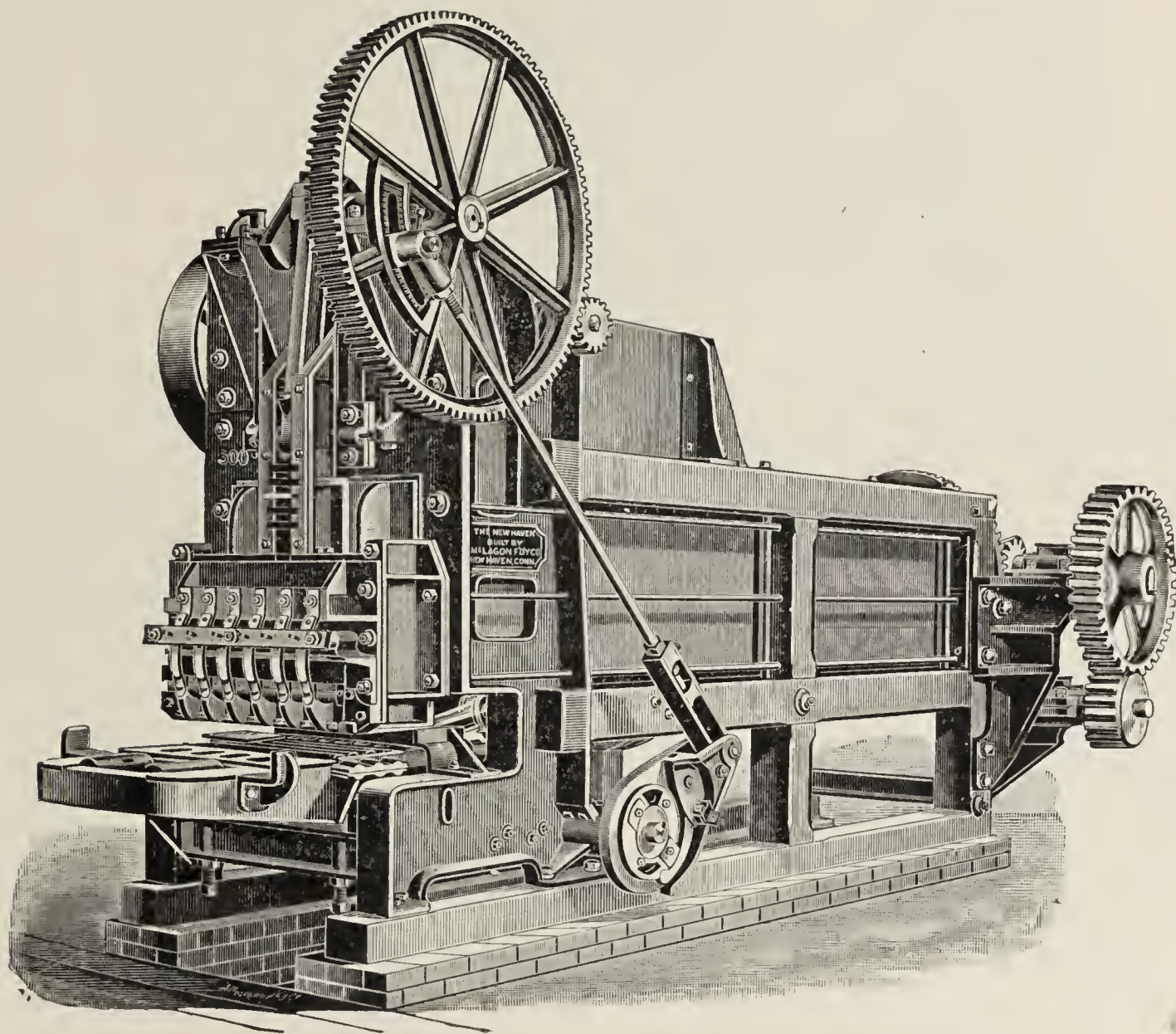
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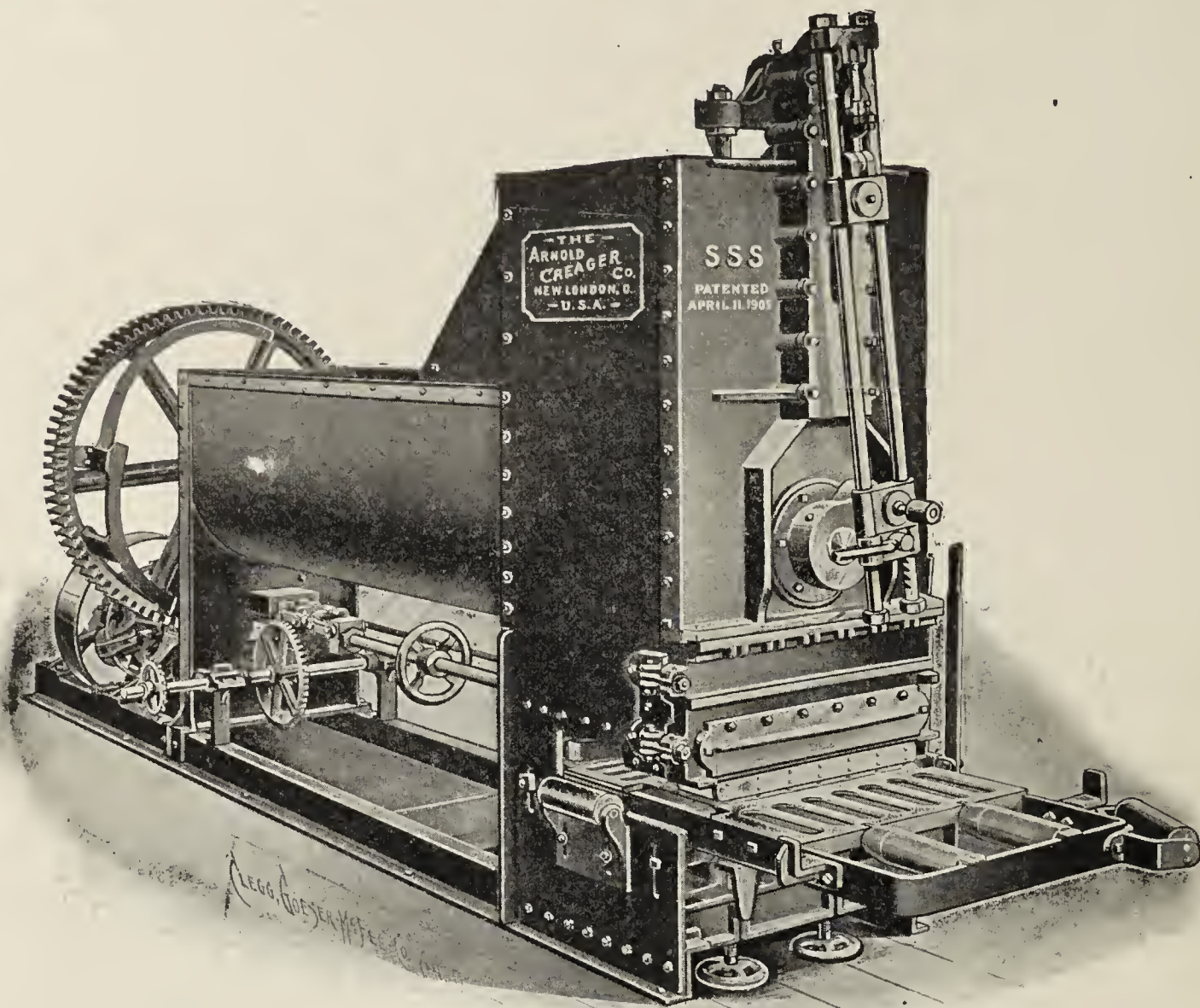
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HONESTY IS THE BEST POLICY.



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Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

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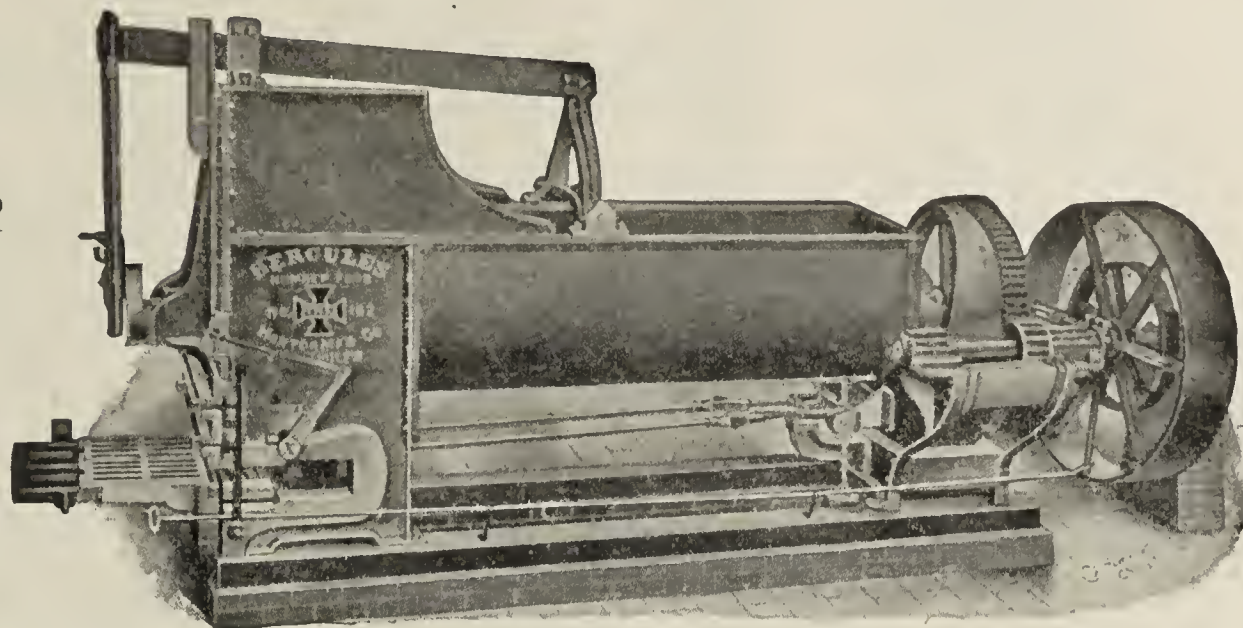
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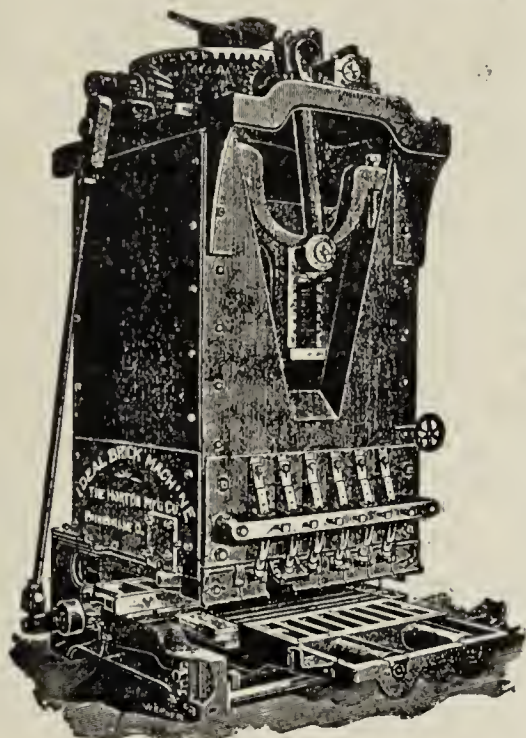
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THE LATEST
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MAKER
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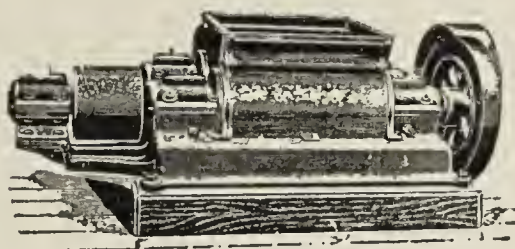
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Now is the time to get ready for
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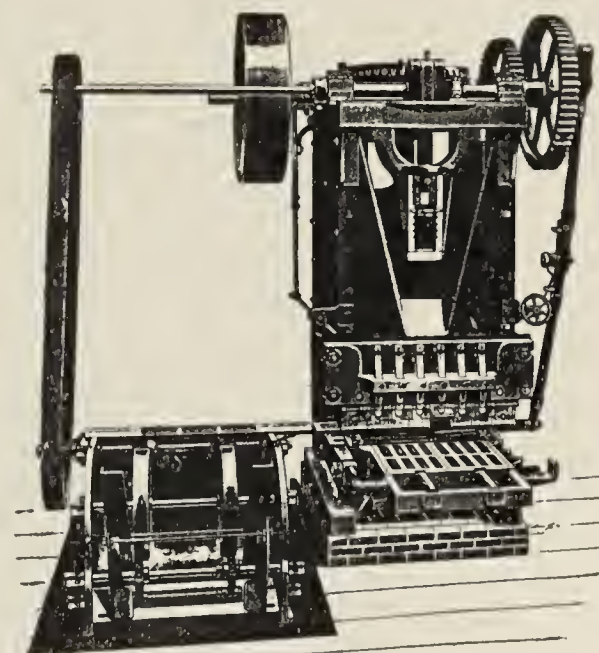


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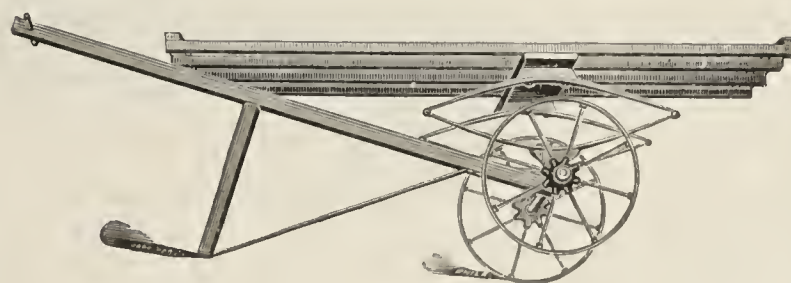
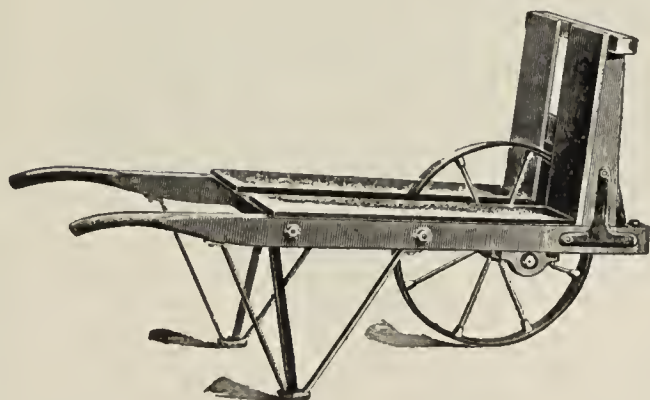
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We also make a full line of Crushers.



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WE MAKE A COMPLETE LINE OF BARROWS AND TRUCKS.



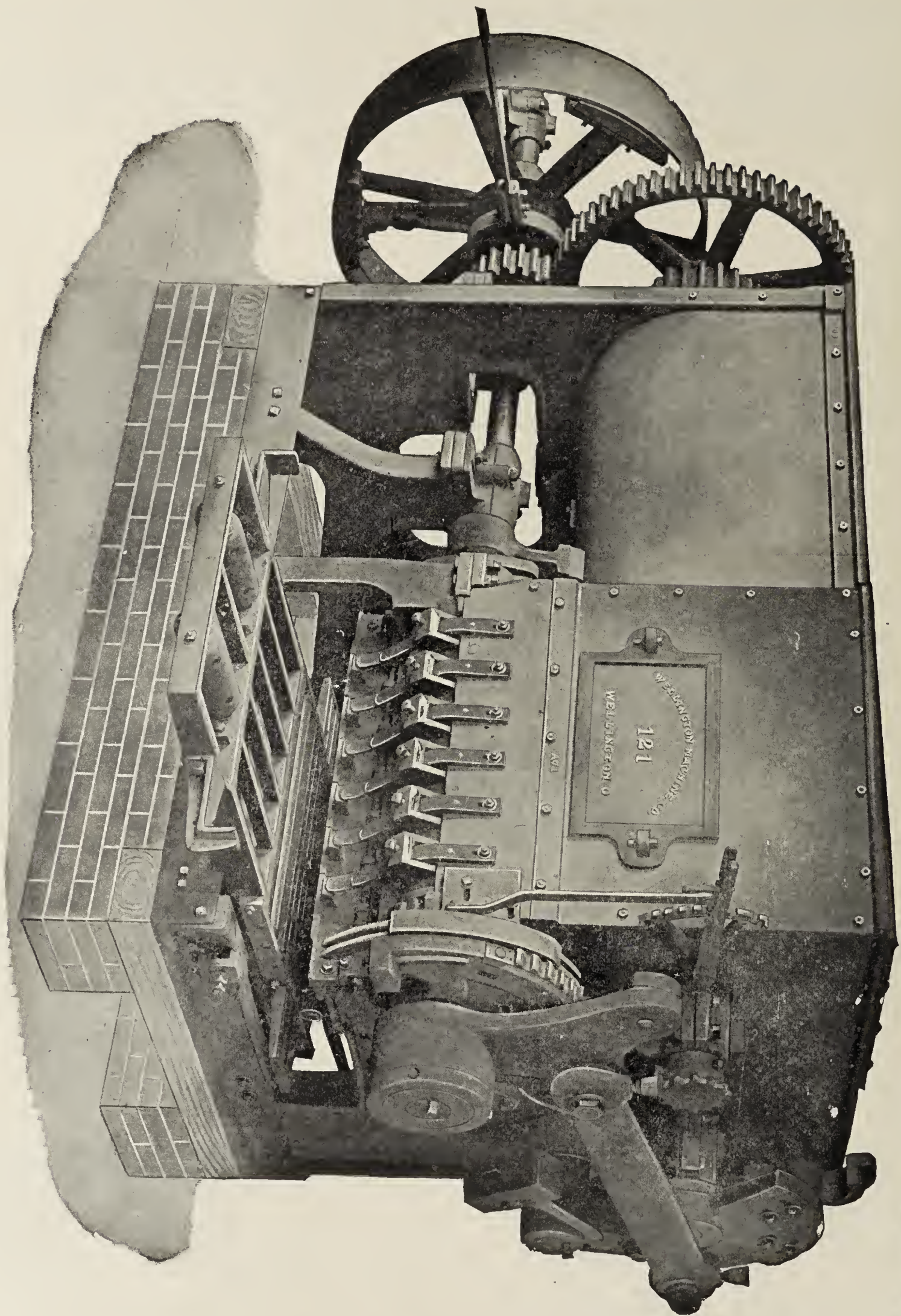
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This is a frequent source of complaint, if you allow *price* to be the *factor in deciding*. We want you to send us
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You are losing
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**ROLLER-BEARING
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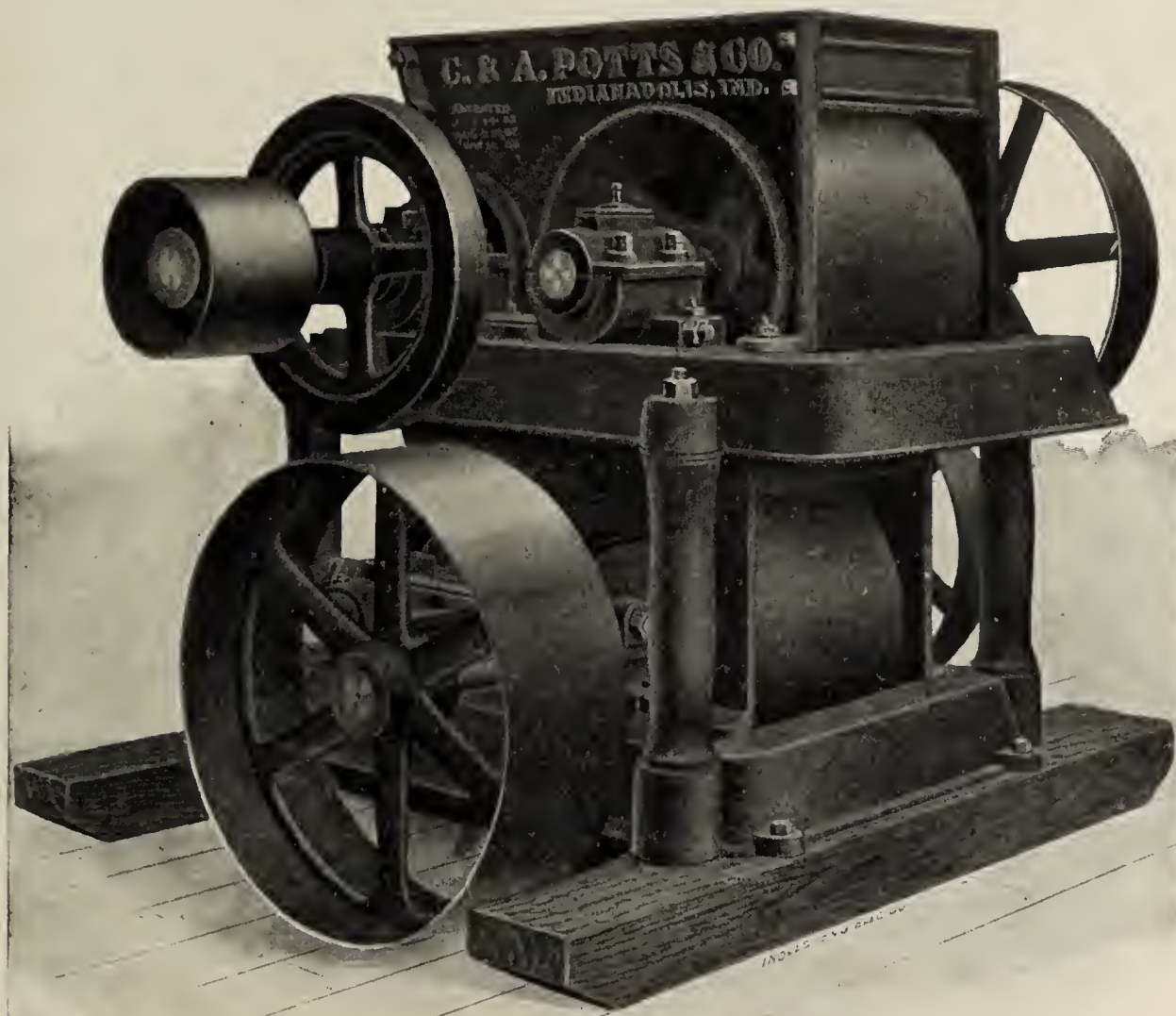
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Have a National Reputation as Being The
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**Capacity from
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Brick per Day.**



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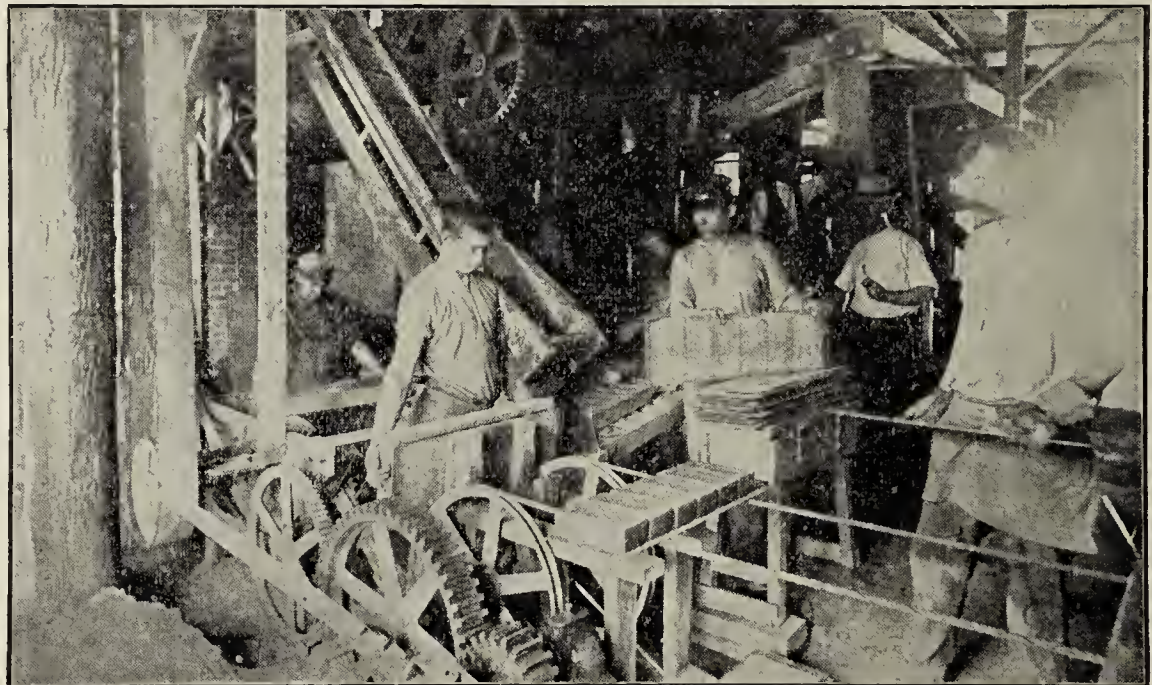
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WE WILL EXAMINE YOUR CLAY AND RE-
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==FOR THIS WE MAKE NO CHARGE==

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Come from a "Martin"
Machine==On Their
Way to the Dryer

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Plans Showing the
Best Way to Handle
the Product

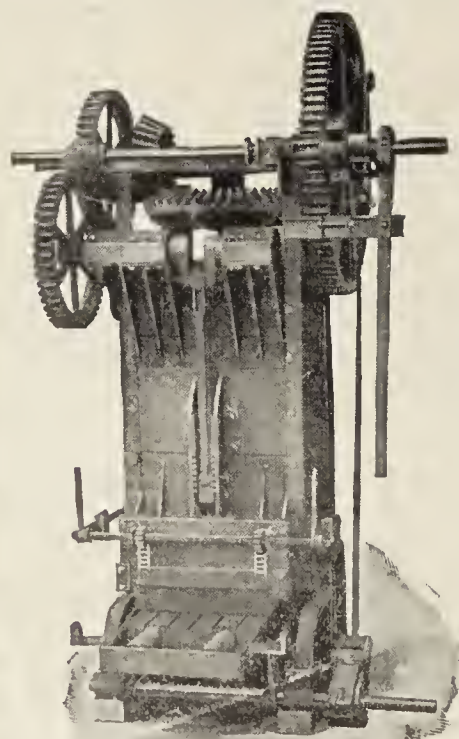


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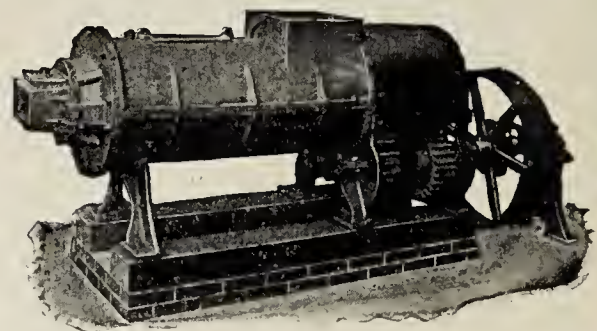
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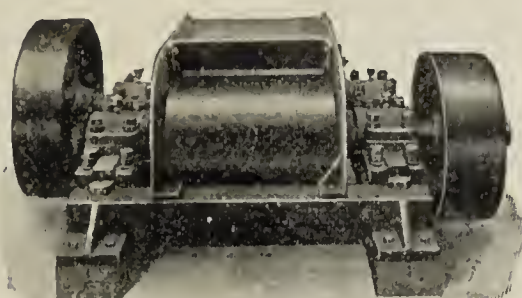


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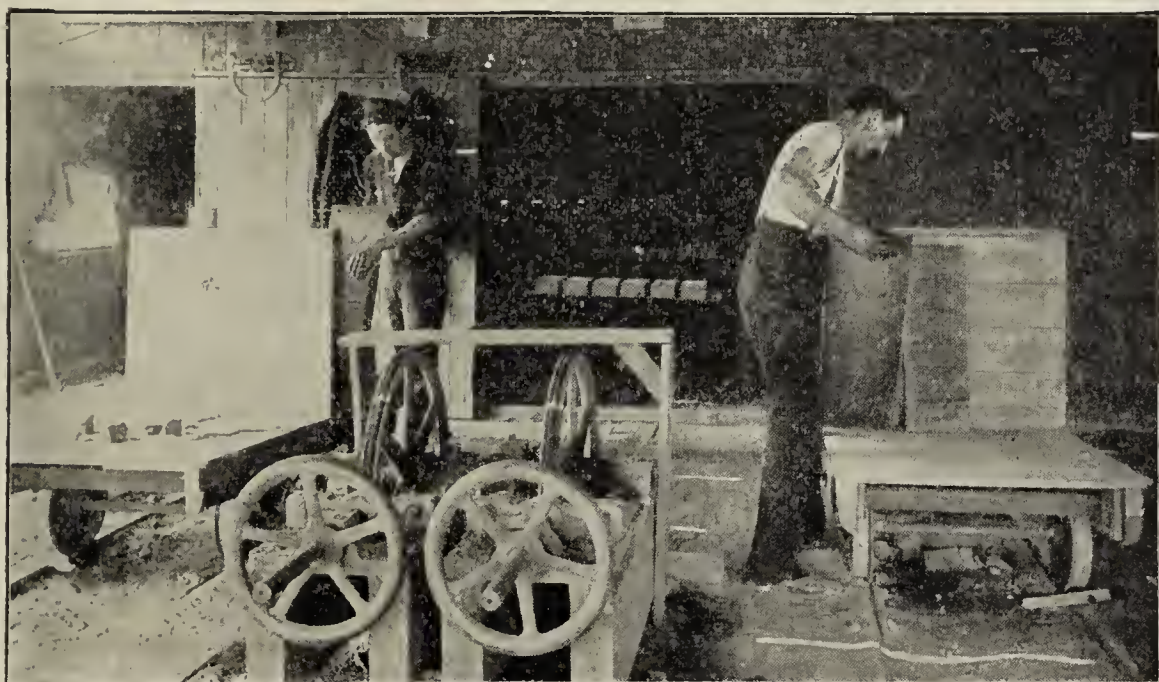
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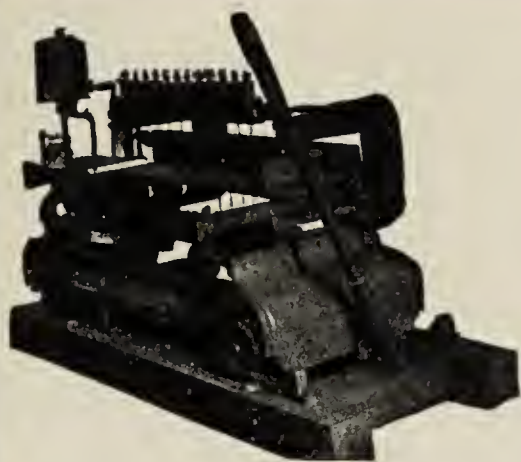
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MFG. CO., INC.==LANCASTER, PA.

ADAPTED FOR SOFT-MUD OR STIFF-MUD
BUILDING BRICK==LABOR-SAVING THROUGHOUT
NO FANS, BLOWERS, TUNNELS, ENGINES OR CARS



Note==The Brick
Coming from a "Martin
Patent System" Dryer
They Are All Bone Dry

The "Martin Patent
System" of Drying is
Superior in Every
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System==Quick to In-
stall and Low in
Price and Takes up
Very Little Yard Room



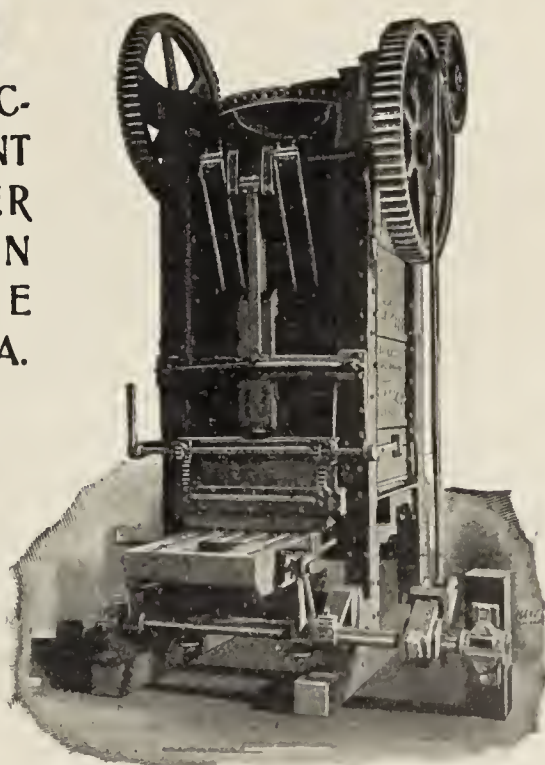
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THE SALE AND THE CONSTRUC-
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LET US MAKE
YOU AN INTER-
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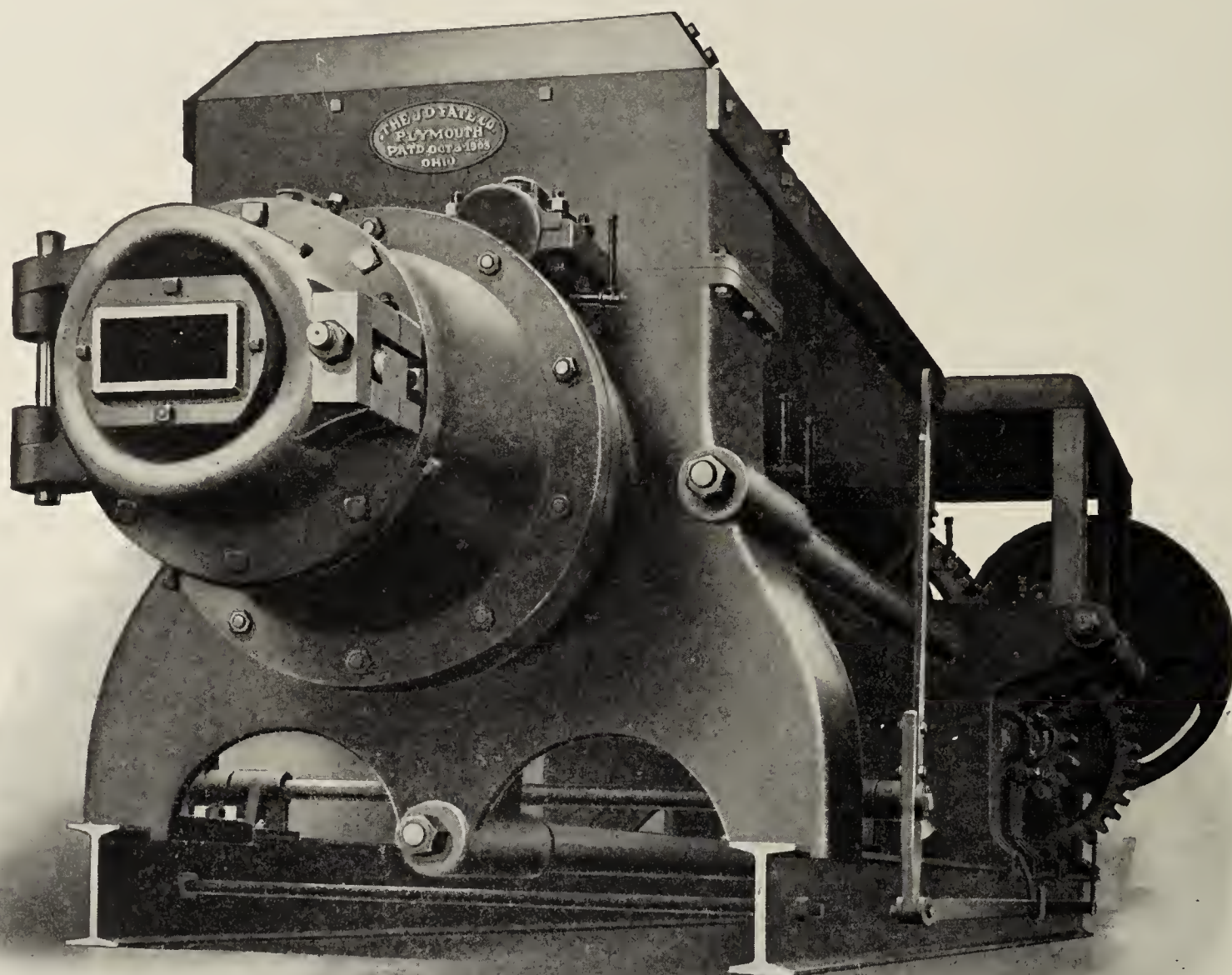
THE HENRY MARTIN
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LANCASTER, PA., U. S. A.



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THE FATE SPECIAL

The Largest Combined Brick Machine in the World.



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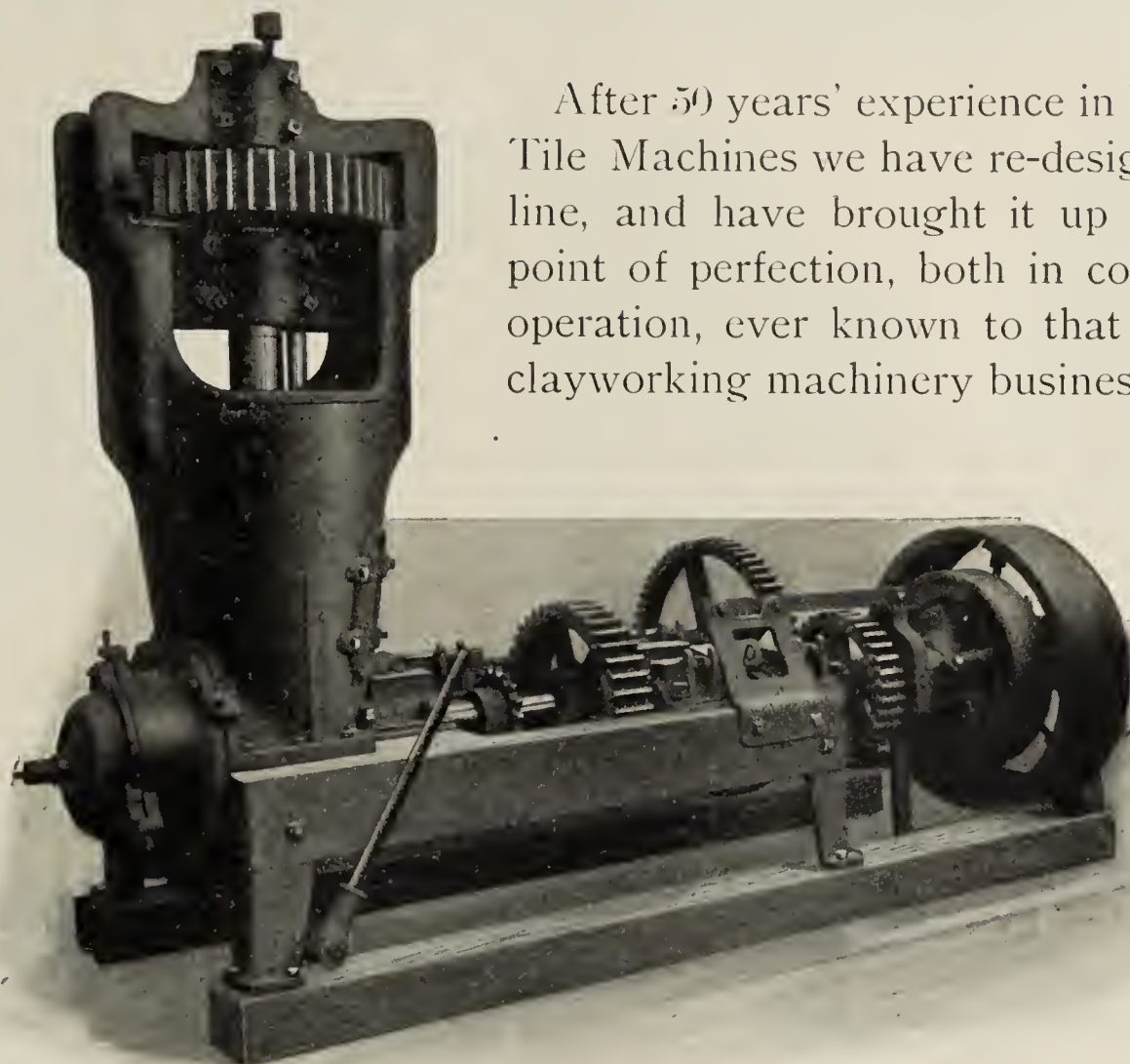
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Mention The Clay-Worker.

DRAIN TILE MACHINES



After 50 years' experience in building Drain Tile Machines we have re-designed our entire line, and have brought it up to the highest point of perfection, both in construction and operation, ever known to that branch of the clayworking machinery business.

The Brewer No. 9B

Is a reconstruction of the old No. 9A Pattern, which itself had no superior, but here is how we build it now. The No. 9B weighs 1,000 pounds more than the No. 9A; its shafts are larger, bearings longer, gears wider face. The entire upright portion is cast in one piece and machined to the frame. The knives are forged from hard high-carbon steel. The augurs and casings are made of white iron. The up-thrust is of the grooved Marine Pattern. The horizontal bearings are self oiling.

GO WHERE THEY MAKE A LOT OF DRAIN TILE AND YOU'LL FIND A LOT OF BREWER MACHINES.

If Marked



It's Good.

H. BREWER & CO.,

Tecumseh, Michigan.

If Marked

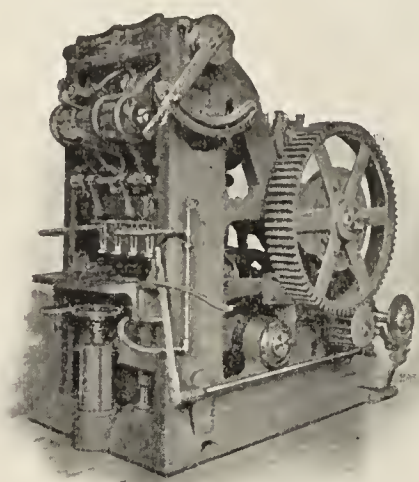


It's Good.

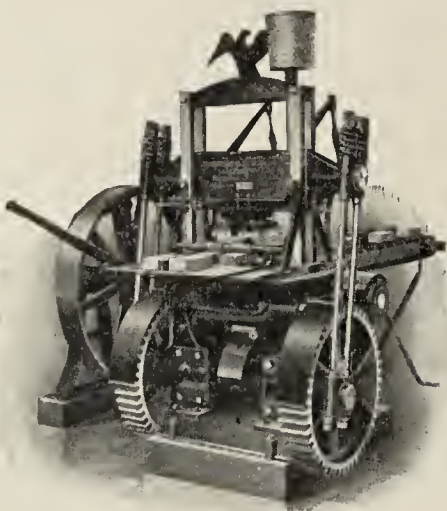
THE AMERICAN CLAY MACHINERY COMPANY

BUCYRUS OHIO, U.S.A.

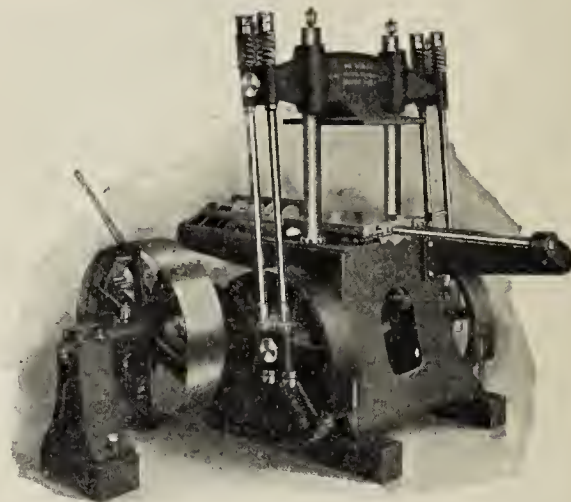
BUILT RIGHT RUN RIGHT



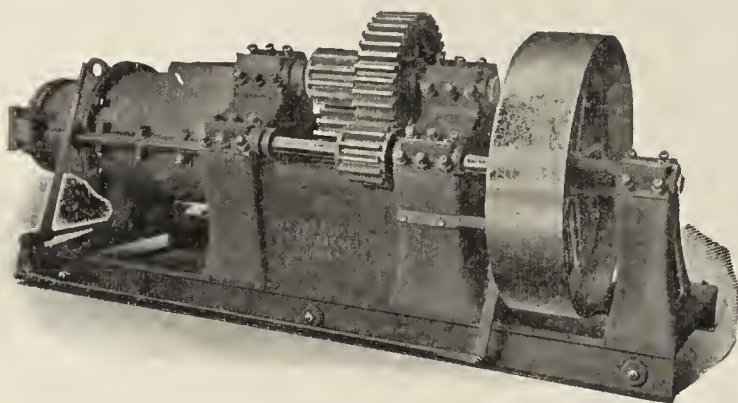
D-3 Dry Press



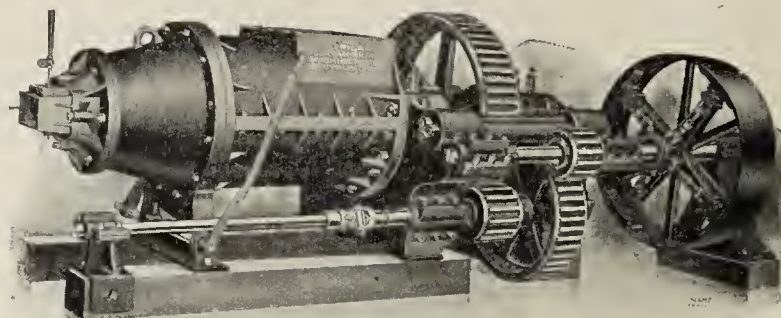
Eagle Reprass



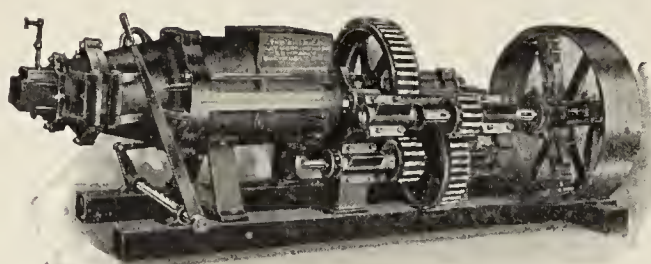
Roofing Tile Press



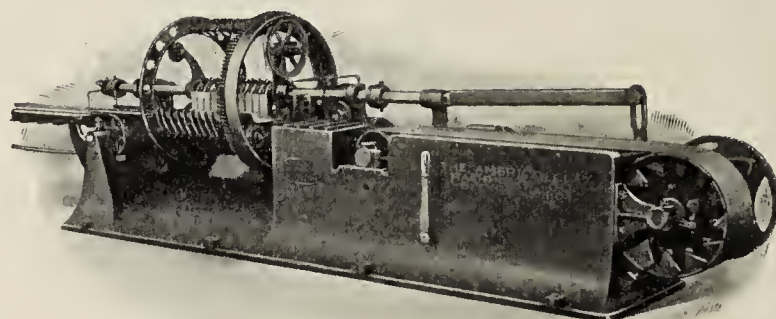
No. 65 Auger Brick Machine



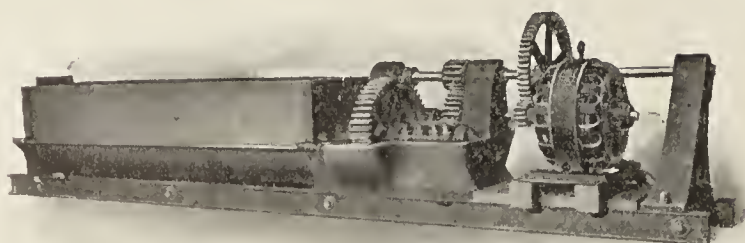
Special Giant Brick Machine



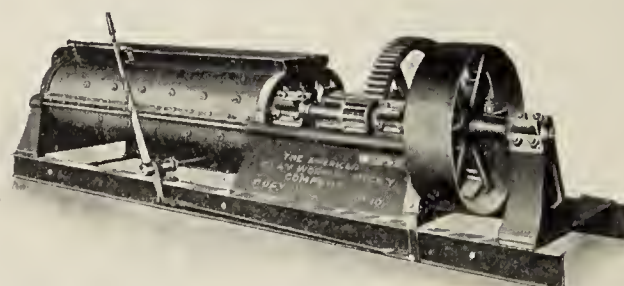
No. 2 Giant Brick Machine



No. 83 Automatic Cutter



No. 51 Electrical Driven Pug Mill



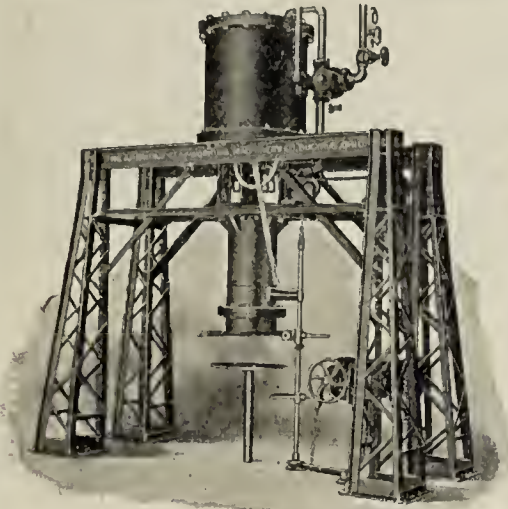
No. 38 Double Shaft Pug Mill

We Build Every Machine and Every Appliance Needed for the Manufacture of Every Class of Clay Products by Every Process.

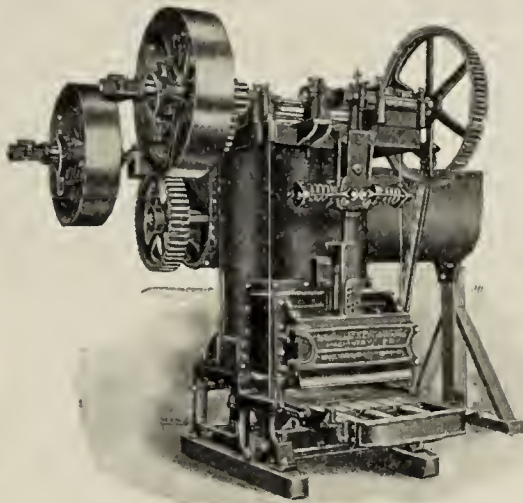
THE AMERICAN CLAY & MACHINERY COMPANY

BUCYRUS OHIO, U.S.A.

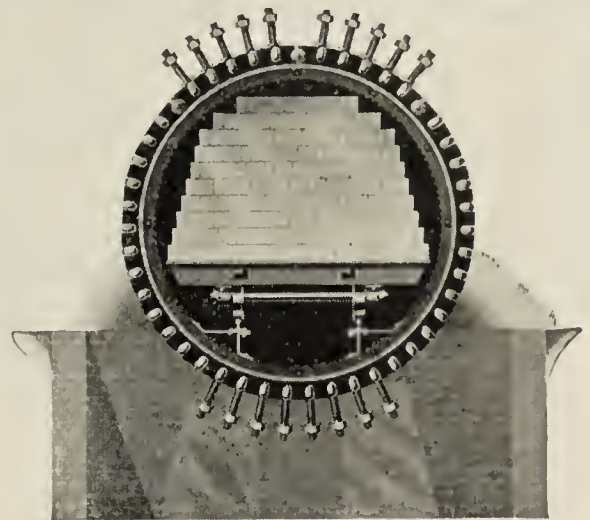
BUILT RIGHT RUN RIGHT



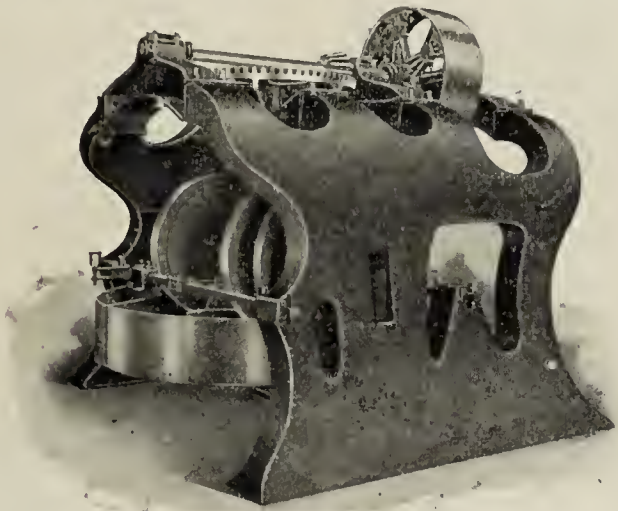
Sewer Pipe Machinery



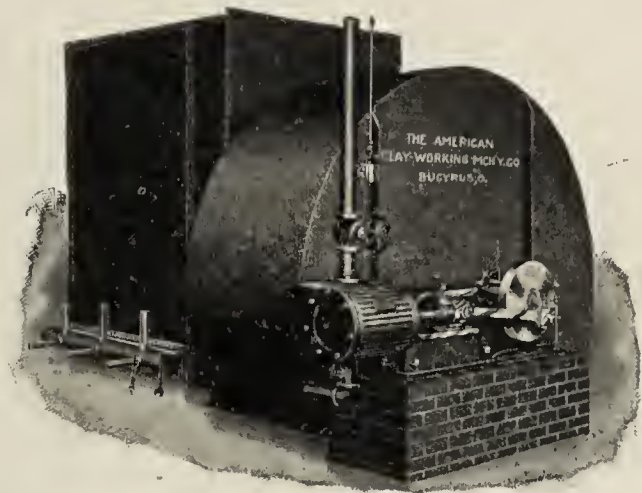
Upright Stock Brick Machine.



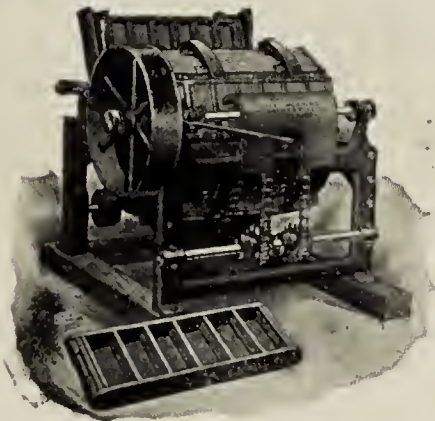
Sand-Lime Brick Machinery



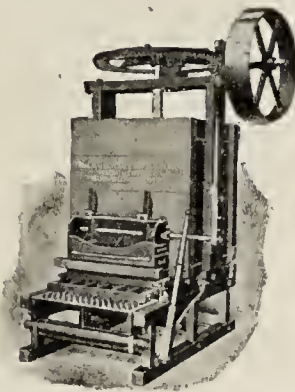
No. 64—9 Foot Wet Pan



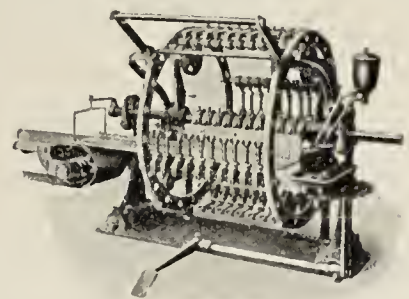
Blower Dryer Apparatus



Mold Sander



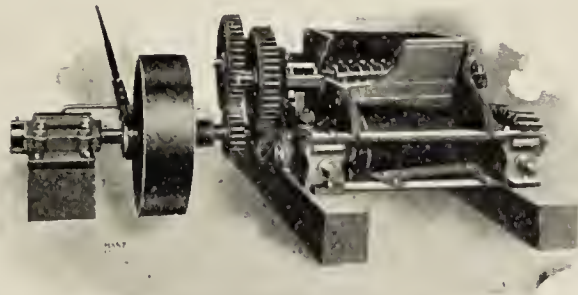
H. P. Brick Machine



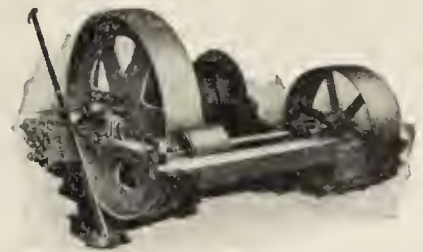
No. 62 Hand Power Cutter



Dry Cars



No. 25 Smooth Roll Crusher

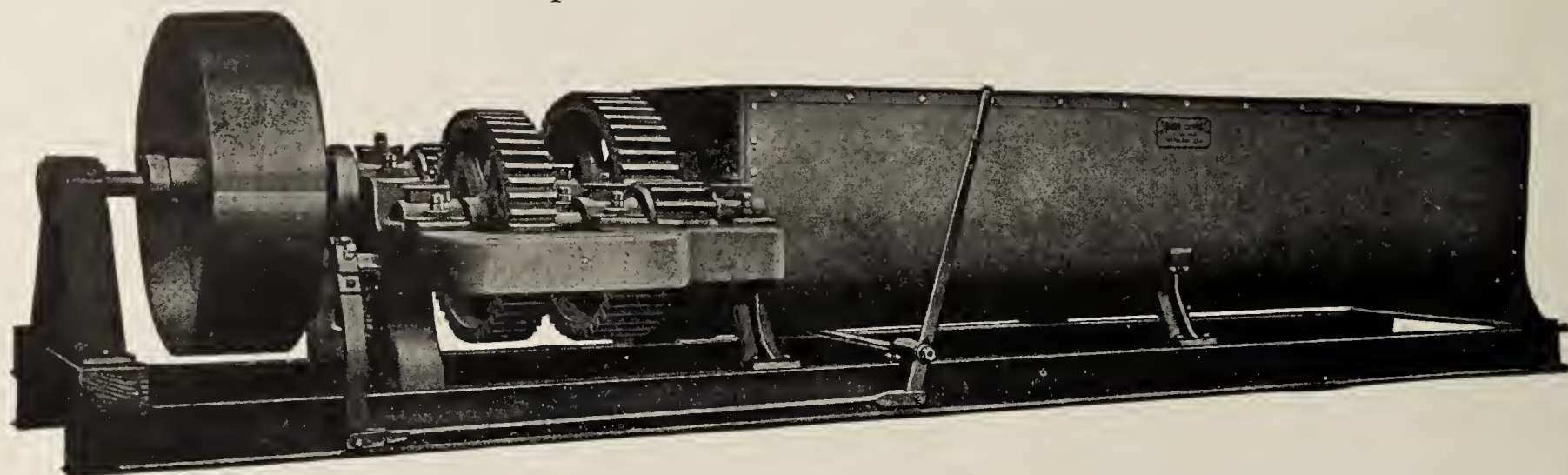


Winding Drums

We Are Much the Largest and Much the Most Extensive Manufacturers of Much the Best Clay-working Machinery in the World.

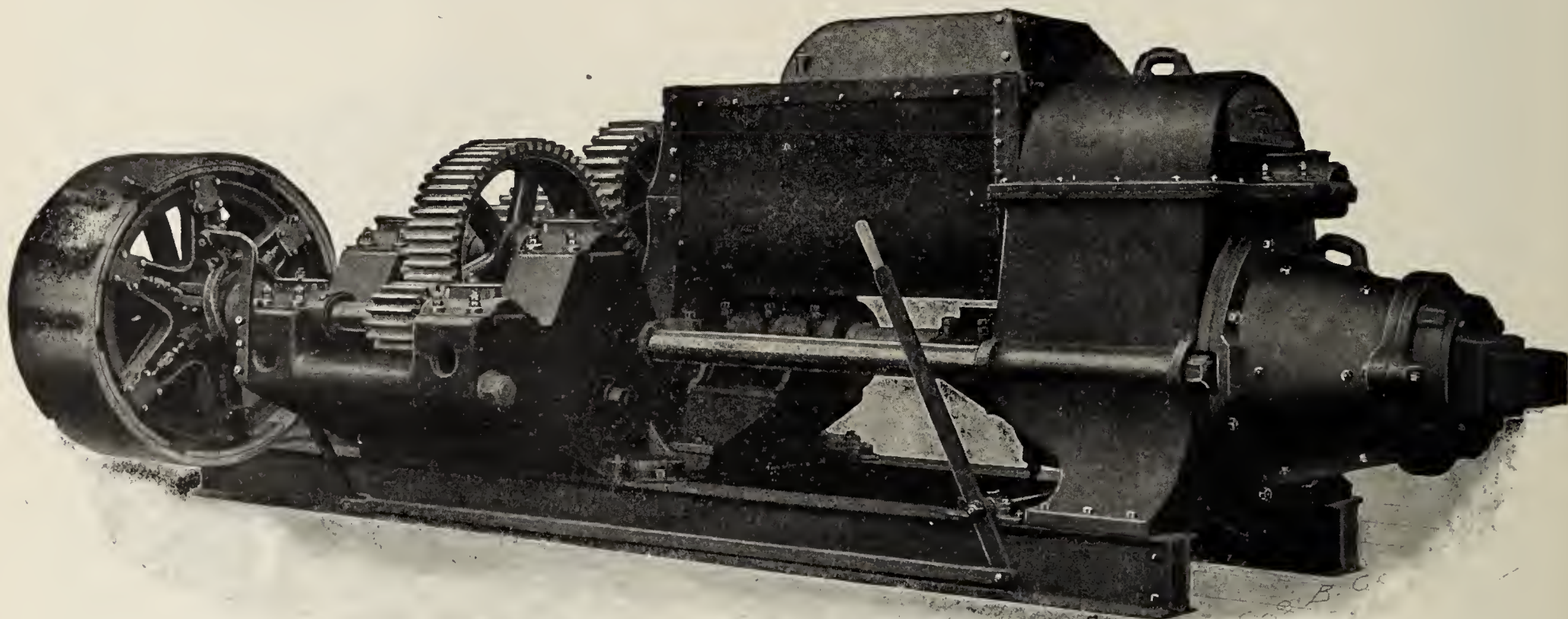
Modern Clayworking Machinery.

Complete Stiff Mud Equipment.



"C" Double Geared Pug Mill.

Heavy Gears and Shafting. Self Contained. Built any length, from 8 to 16 feet.



"Canton Special" Brick Machine.

Cut Steel Gears.

Heavy Shafting.

Self Contained.

Accessible.

Capacity, 150,000 brick per day.

Our Piano Wire Screens are doing excellent work.

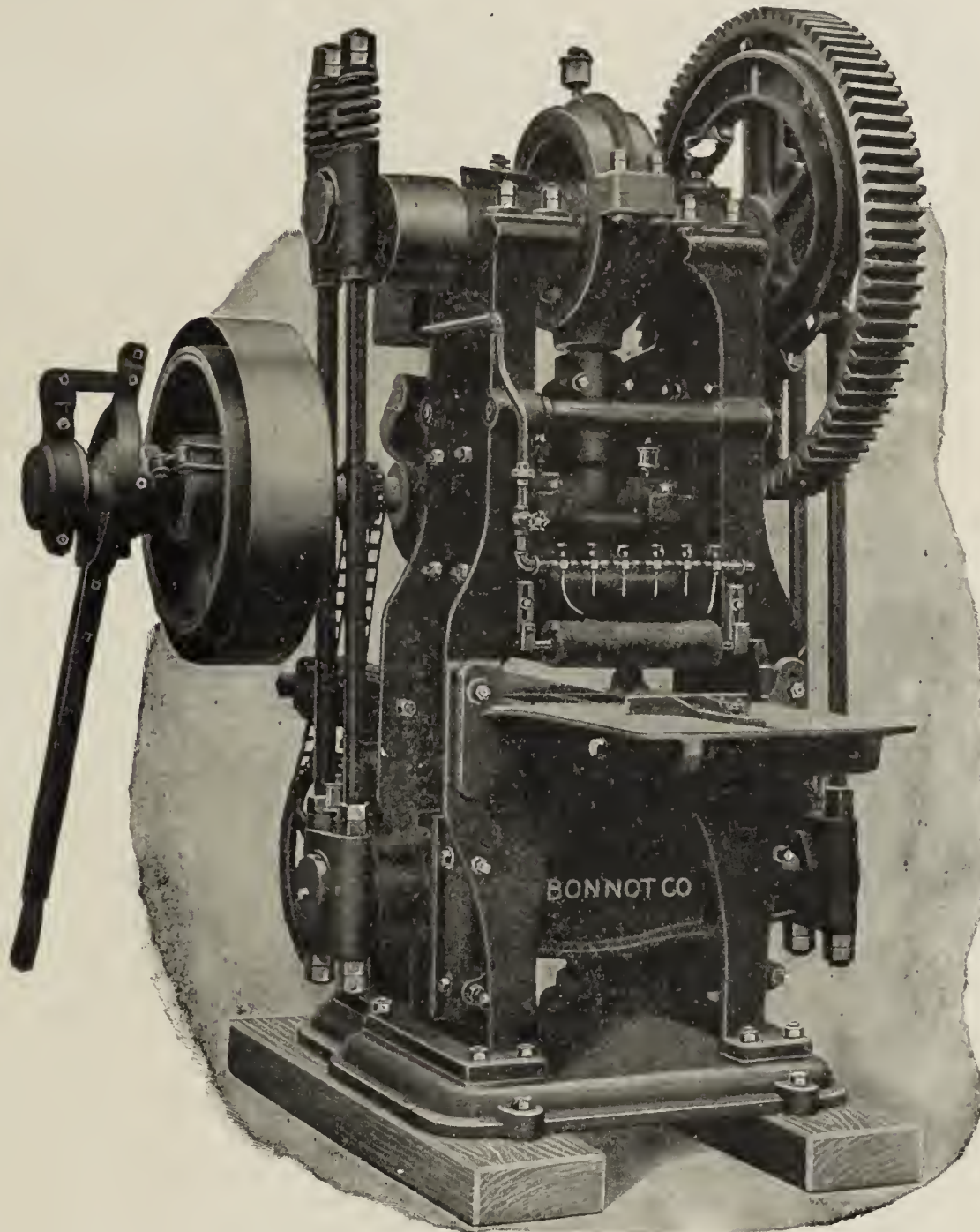
WRITE FOR FOLDER NUMBER TWELVE.

THE BONNOT COMPANY, Canton, Ohio.

SIMPLE, EFFICIENT, DURABLE.

All
Wearing
Parts
Above
Die.

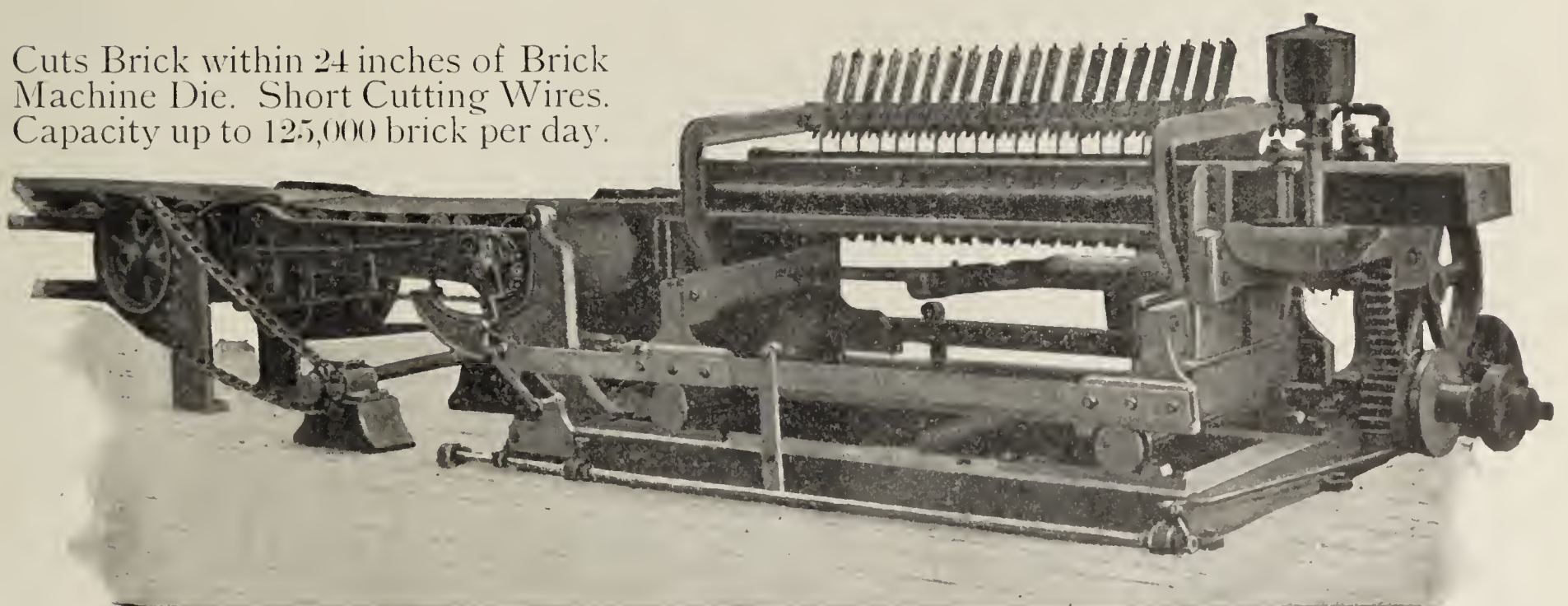
Capacity
2000
Brick
Per Hour.



Eccentric
and
Crank
Motions
Operate
Plungers
in
Mold Box.

THE "CANTON" DOUBLE DIE REPRESS.

Cuts Brick within 24 inches of Brick
Machine Die. Short Cutting Wires.
Capacity up to 125,000 brick per day.

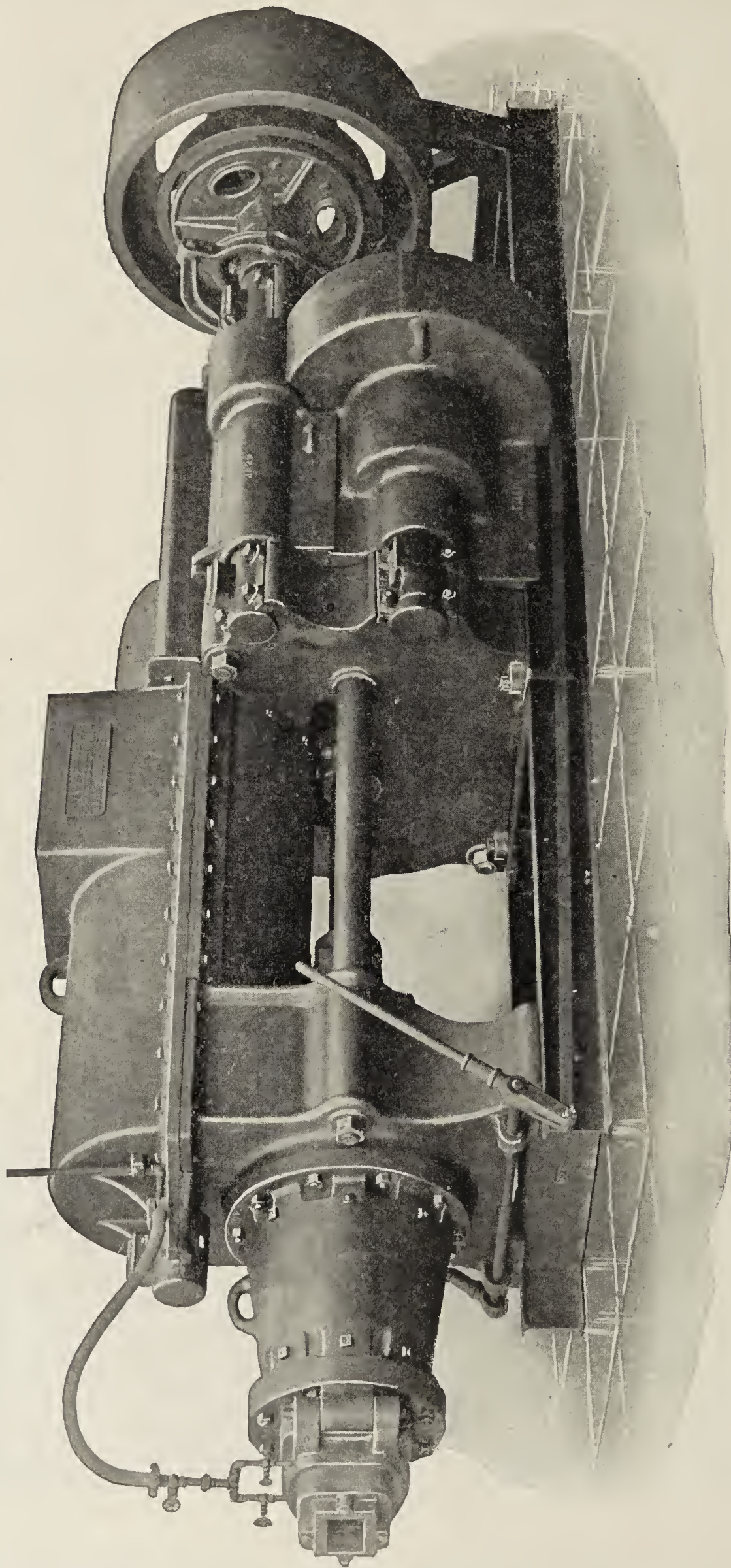


AUTOMATIC CUTTER.

THE BONNOT COMPANY, Canton, Ohio.

Be sure and mention THE CLAY-WORKER in answering ads.

Another Brick Machine.



This is a Brick Machine of massive proportions and of modern construction throughout, designed for large capacity and severe service. The gearing, shafting and other parts are very heavy. The gearing is protected by a removable dust and accident proof covering, hinged for convenient access to the interior. The feeding chamber is of ample diameter and length, and this result is obtained without excessive overhang of auger shaft. The auger shaft is supported by three journal bearings of sufficient distance apart to give it a substantial support. The part of the auger shaft in the clay chamber is about 4 feet in length, while the part outside is more than 9 feet long.

The machine is mounted on steel "I" beam sills between which are placed heavy cast iron spreaders with flanges, affording a substantial method of attaching the machine to its foundation. The outer end of the pulley shaft is supported by a rigid stand having an adjustable journal box.

Length of machine over all, 19 ft.

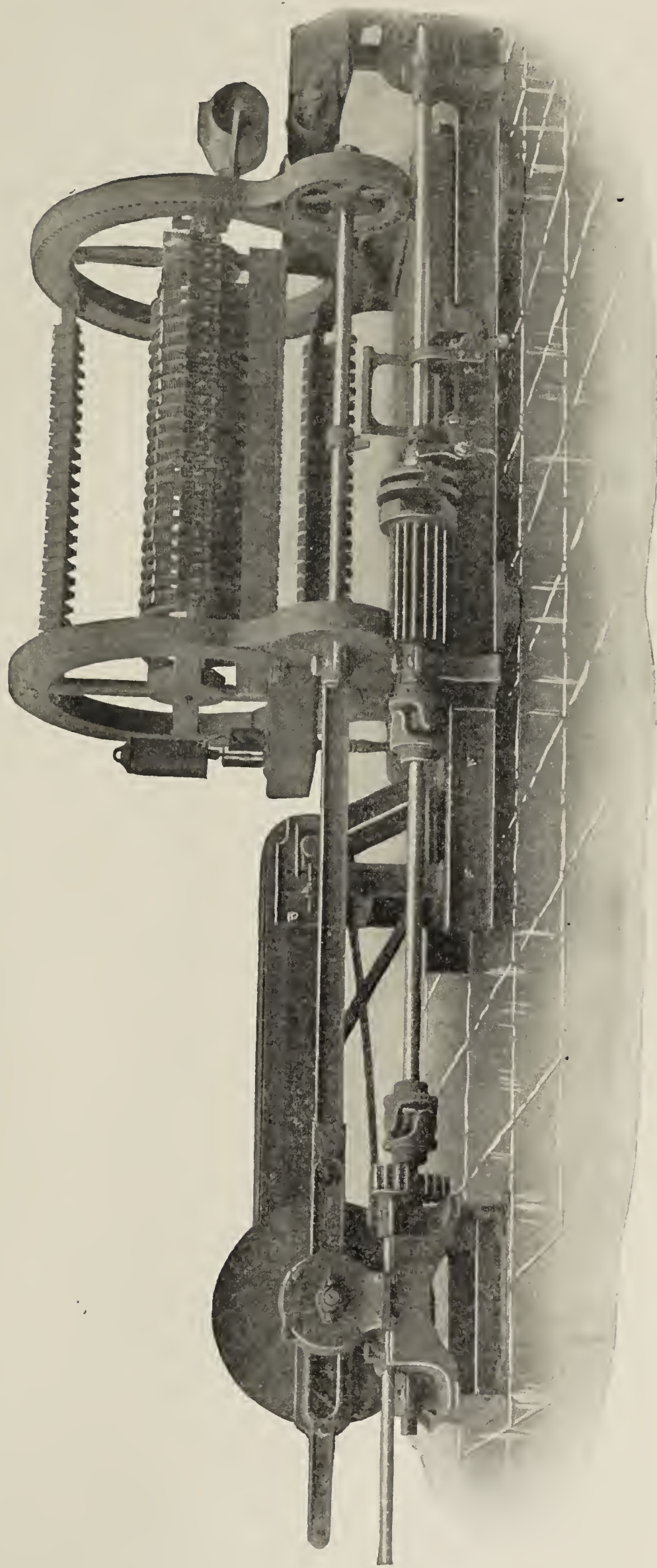
Height from floor to top of hopper, 5 ft. 8 in.

Size of hopper, 26-in. x 26-in. Weight of machine about 26,000 pounds.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



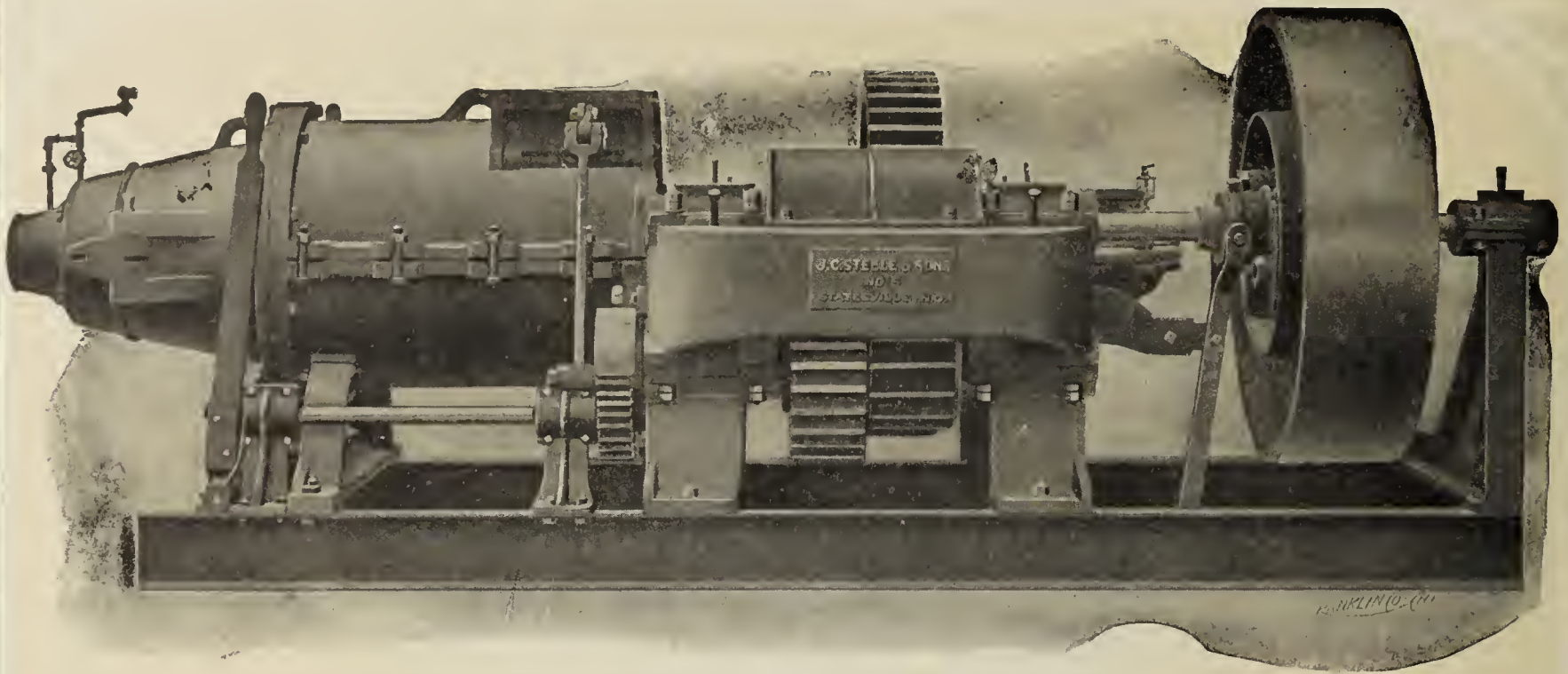
Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled. If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

(Mention The Clay-Worker.)

E. M. FRIESE & CO., Galion, Ohio.



No. 5. CAPACITY 50,000 to 100,000 PER DAY.

Built by people who have had
15 years experience with the
great variety of Southern
clays. Guaranteed the equal
of any machine on the market.

Wetumpka, Ala., Dec. 19, 1905.

Gentlemen:—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,

J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.

Save the Expense of a Dryer by using The

SCOTT
KILN
DRYING
SYSTEM



SCOTT
KILN
DRYING
SYSTEM

You can actually save at least 50% of labor expense about your yard by substituting the Scott Kiln Drying System for the old dryer method.

The expense and trouble of the dryer, with its accessories and complications, is entirely done away with. By a simple and rational method of conveying the bricks direct from the machine into the kiln and drying them there, all the trouble and expense of the dryer is saved, and you get better results than under the old system.

It has been proved that by substituting the Scott Kiln-Drying System for the old method, yards run at a loss have been made to return substantial profits.

The Scott-Kiln-Drying System strikes directly at the root of the extravagant labor-cost in the brickyard, and as an investment is the most attractive proposition before the brickmaker today.

Is it not worth while to investigate a system that will actually put hundreds of dollars in your pockets every year?

We publish a book giving full and complete description of every detail of the construction and operation of the Scott Kiln-Drying System. Send for it. Ask for Catalog 213C.

American Blower Company,

(Licensees Alex. A. Scott Patents)

Detroit, Mich.

141 Broadway,
New York.

1019 Empire Bldg.,
Atlanta.

1550 Marquette Bldg.,
Chicago.

Are You in the Market for Brick and Tile Machinery?

WE SUPPOSE THAT YOU DO NOT CARE TO PURCHASE SCRAP IRON.

Our machines are so constructed that while they are the most durable machines on the market they contain only about one-half the material used in other machines.

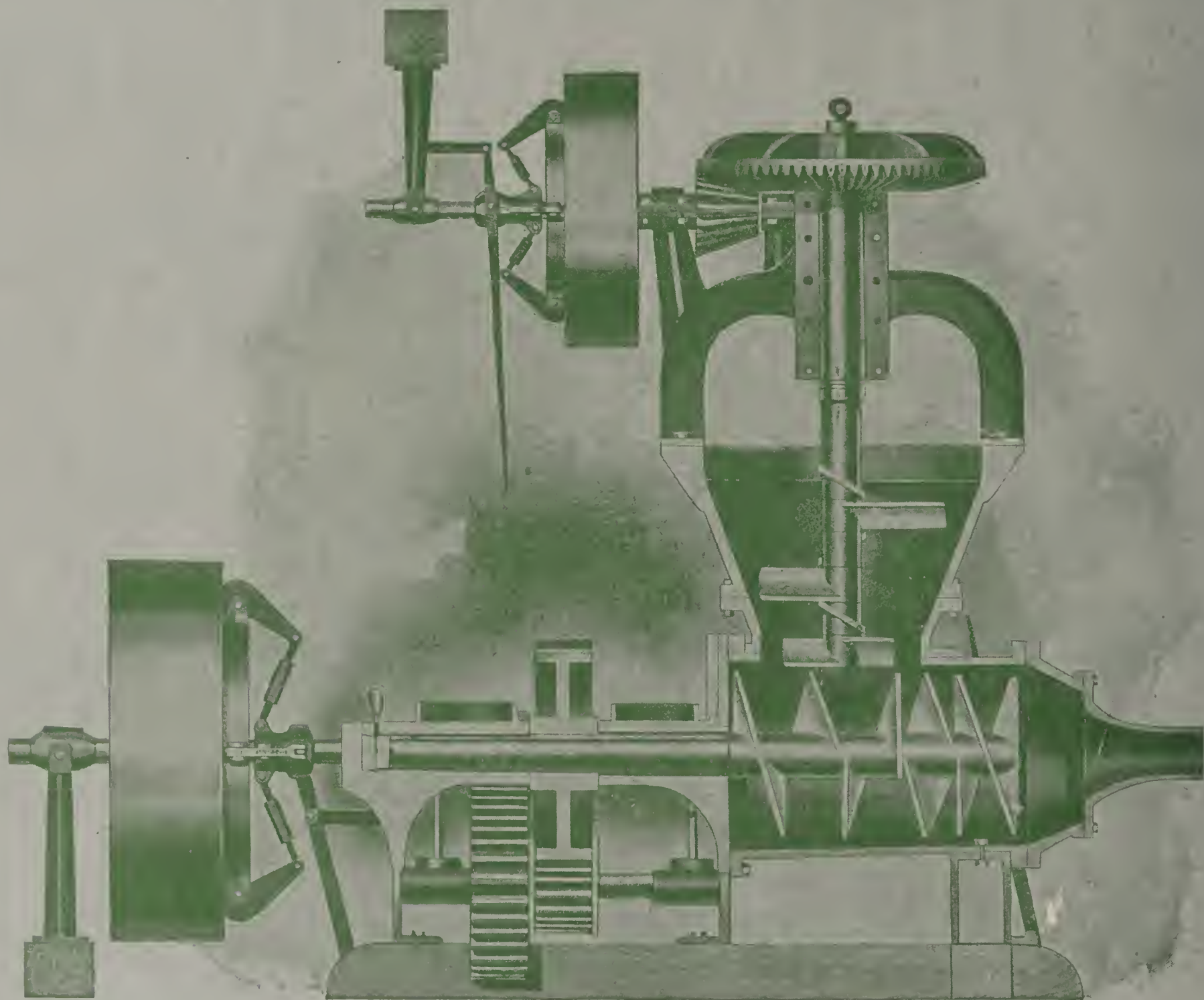
REDUCE YOUR FUEL BILLS.

You get the same results from our machines with half the power required by other machines. Fuel is expensive, and this great saving is worthy of your careful consideration.

OTHER MACHINES REQUIRE FROM 50 TO 60 H.P.

OUR SPECIAL "ELI" ONLY 30 H.P.,

making a difference of 20 to 30 h.p., or from one-half to three-quarters of a ton of coal for ten hours. This means that our machine saves you \$1.50 to \$2.25 per day in fuel.



SPECIAL "ELI" BRICK AND TILE MACHINE.

LATEST IMPROVED. LARGE CAPACITY. RUNS EASY.

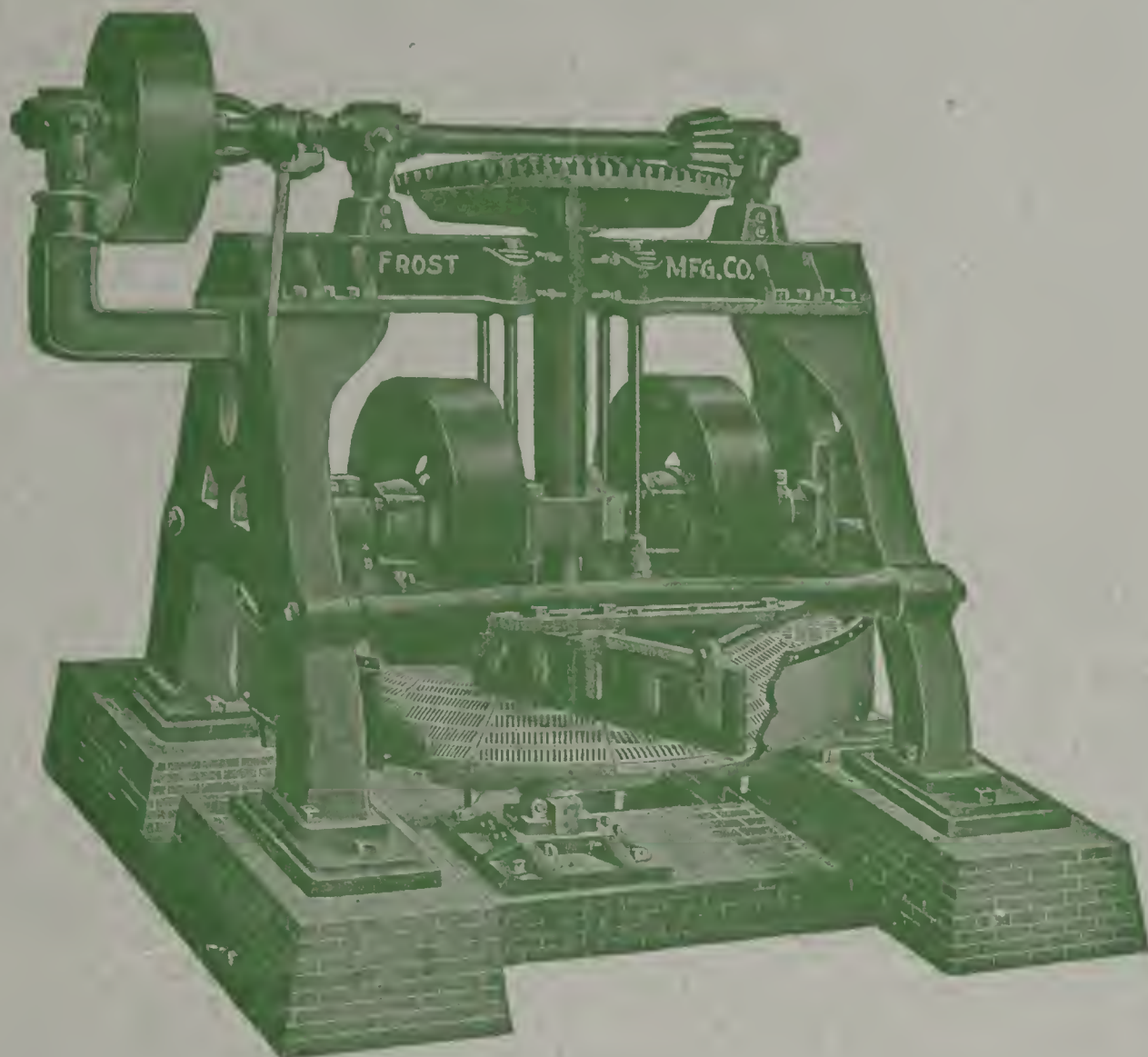
We have a full line of "ELI" Brick, Tile, Hollow Brick and Hollow Block Machines, ranging in capacity from 20,000 to 100,000 brick per day. Write for illustrated Catalog and full particulars.

MICHIGAN BRICK AND TILE MACHINE CO.,

[ESTABLISHED 1856]

MORENCI, MICH., U. S. A.

FROST DRY PAN



When you buy a Pan buy a FROST Pan. We also build the Highest Class of Engines and Boilers—the kind that give satisfaction and operate economically.

Send for our Illustrated Catalogues.

The Frost Manufacturing Co.

Works: GALESBURG, ILL.

SALES DEPARTMENT:

135 Adams St., CHICAGO, ILL.

Cable Address, "FROSTMANCO," Chicago.

WASTE HEAT FROM THE KILN

After the fires are out, a kiln holding 200,000 bricks will throw off more heat than a 100 h.p. boiler would require for two weeks' operation. Why waste this enormous amount of heat when it can be successfully utilized for drying purposes in an

"A B C" DRYER.

Shall we send you Catalogue No. 159C?

American Blower Co.
Detroit Mich.

The Perfect Clay Screen in a New Dress.



A piano wire plate that fits just the same as our perforated metal plates.

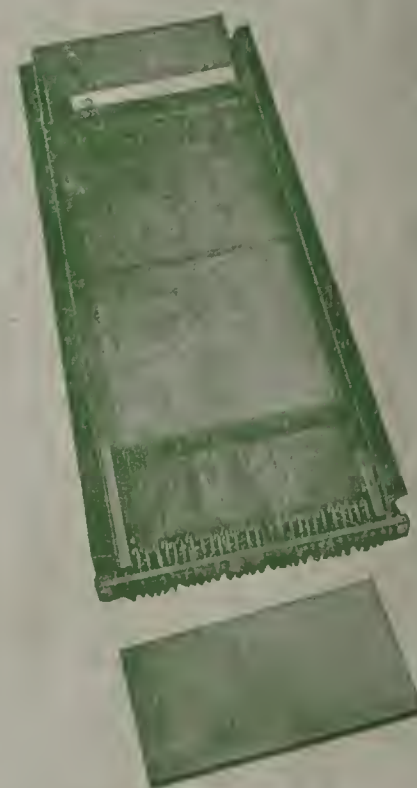
By using every third plate, you get more screening surface than is had with any other screen of this kind.

SPECIAL FEATURES. Short wires do not require high tension and are less liable to break. If a wire does break, take out the plate, put another one in its place. This can be done in an instant. If you want a piano wire screen without the frame and mechanical parts, four of our plates more than equal the area of any screen of this kind now offered. But with the mechanical features THE PERFECT CLAY SCREEN fills all requirements.

DUNLAP MFG. CO.,
Bloomington, Ill.

SCREENS

Do you want a
Screen that you
will not have to
think about?



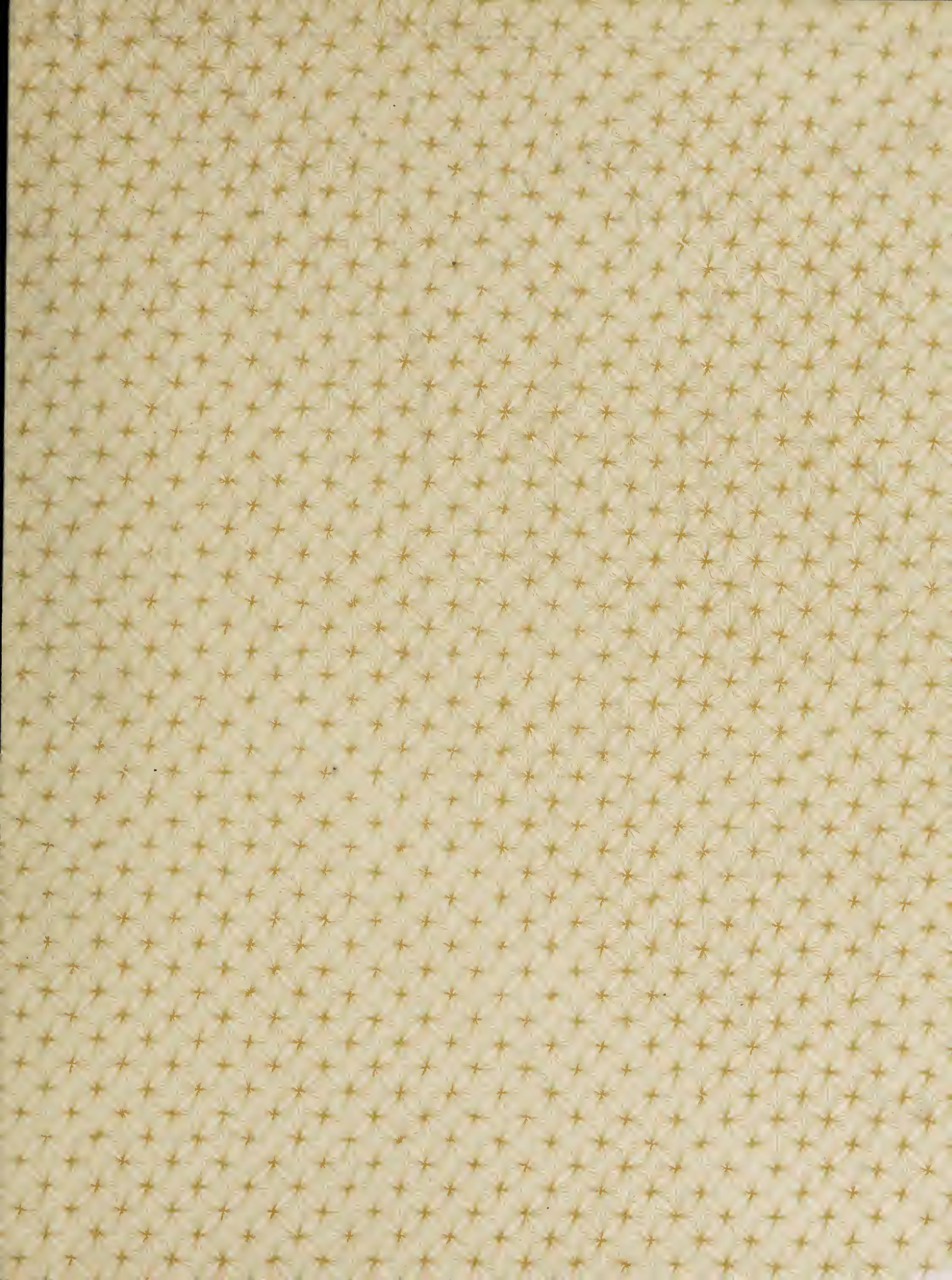
Write to

The Ohio Ceramic Engineering Co.
Cleveland, Ohio.

DRYER CARS — DRYERS — PRESSES.







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